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New suggested weighed score for evaluating impact of chronic liver diseases on health-related quality of life patients among a sample in Babylon Governorate in Iraq

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***Abstract*---**Objectives: This study aimed monitoring and creating a new suggested weighted score for evaluating specific health related quality of life for patients with chronic liver diseases through extracted significant factors, in order to developing of the studied score that was prepared by Yonossi in 1999 to assess the quality of life of patients with liver diseases. Methodology: A cross sectional study design was conducted to evaluate specific health related quality of life in patients with chronic liver diseases. A convenient sample targeted 133 patients with chronic liver diseases who had been diagnosed and treated by Hepatologist in the "Martyr Dr. Majid Hassan Al-Jubouri center for Gastrointestinal and Liver Diseases in Babylon Governorate". This study applied a suitable questionnaire. This instrument contents several domains, such that: "Abdominal Symptoms, Fatigue, Systemic Symptoms, Emotional Function, Activity and Worry ". Results: Studied patients have a differentiated assessments concerning specific health related quality of life on the level of studied domains, which showed a discrepancy in the levels of assess, requiring re-organization of its components to show the most important patterns from which these domains can be formed in the interpretation of the respondents'

attitudes towards the quality of their healthy life. This was achieved through extracted of significant factors that make up that organization. Recommendations: Applying the suggested developed score for evaluating health related quality of life for chronic liver disease patients, and for establishing an instructional program by taking into consideration the relative importance of proposed weighted score that resulted in this study condensing the aspects that the results of the scale components came into a more comprehensive degree.

***Keywords*---**specific health, quality of life, patients, chronic liver diseases**.**

Introduction

chronic liver diseases (CLD's) is a liver diseases that involves the destruction and regeneration of the liver parenchyma over time, leading to fibrosis and cirrhosis. Chronic liver disease refers to a liver disease that has lasted for at least six months[1]. Chronic liver disease includes a group of conditions marked by inflammation of the liver and the development of cirrhosis. Patients may have little or no symptoms in the early stages, but progressing to more severe complications can significantly impact their health-related quality of life (HR-QoL). [2] Chronic liver disease is becoming a serious public health concern across the world. After cardiovascular diseases, stroke, lung disease, and cancer, it is predicted to be the fifth leading cause of mortality. [3] HR-QoL is a multidimensional term that has been widely utilized in medical research, but its application in routine medical practice is growing. It's defined as a person's "perception of their own life in the context of their cultures and beliefs, as well as their personal goals and concerns." The HR-QoL evaluation takes into account important aspects such as physical and mental health, independence, and social interactions. [4]

Quality of Life has recently gained prominence in clinical patient management. The impact of healthcare interventions on a patient's daily life, rather than just their health, is being increasingly recognized. [5] With chronic illnesses, it's also crucial to understand how the patient feels about his disease and life quality, as this may be more significant to the patient than the length of his or her life. The impact or burden of chronic disorders like liver cirrhosis may be measured using health-related quality of life. These patients have fatigue, pruritis, low self-esteem, and sadness, all of which are poorly evaluated by clinical assessments. Measuring QoL allows for a more accurate assessment of these conditions. [6]

Objectives

To create a new measurement scoring scales for evaluating the *specific HR-QoL* for patients with chronic liver disease throughout the specific extracted significant factors.

Methodology

Setting of the study

A cross sectional study design for patients with chronic liver diseases was conducted starting between (2nd January 2022 to 4th April 2022) in Martyr Dr. Majid Hassan Al-Jubouri Center for Gastrointestinal and Liver Diseases in Babylon governorate.

The sample of the study

A convenient sample of 133 patient with chronic liver diseases (simple random sampling) who have been diagnosed and treated by hepatologist in Digestive and Liver Center in Babylon in Iraq where they admitted for treatment or other investigations.

Inclusion criteria

Patients who live in Babylon Governorate, had an established diagnosis of chronic liver diseases, at least after six months of diagnosis, were at least 18 years of age, oriented and able to communicate verbally well as completed scan and other investigations dependent to provide the medical diagnosis of any type of chronic liver diseases.

Steps of the Study

For evaluating health related quality of life in patients with chronic liver diseases concerning criteria "Specific “quality of life questionnaires. To assess patient's needs, this study use a reliable questionnaire format of Specific QoL Questionnaire which consists (29) items developed to measure one or more dimensions of health related QoL in chronic liver diseases patients, the specific questionnaire consist of (6) domains: Abdominal Symptoms, Fatigue, Systemic Symptoms, Activity, Emotional Function and Worry. The factor has been analyzed using (Principle component) method, for creating a new scoring scales for patients with CLD's diseases concerning *specific HR-QoL* in relative of different studied main domains of specific questionnaire through exploring which of them are reported consistent responding or not along studied of subject's sample, and how could be marketing the extracted significant factors for studying phenomenon issue and a similar cases subjects in future studies. For the abbreviations of the comparison significant (C.S.), we used the followings: - NS: Non significant at $P>0.05$ - S: Significant at $P<0.05$ - HS: Highly significant at $P<0.01$. The researcher interviewed patients, for 30 minutes for each patient to answer all questions.

Reliability of the questionnaire

Reliability of the questionnaire was used to determine the accuracy of the questionnaire, since the results showed a very good level of stability and internal consistency for the studying (HR-QoL), at the level of items of the applied questionnaire, all those were calculated by using the major statistical parameter :

Alpha Cronbach, through calculated the results that the questionnaire is successful, and that means designed of the questionnaire were valid to study the phenomenon on the same population at any time in the future under assumption of stationary conditions of the studied population.

Statistical Analysis

The following statistical data analysis approaches were used in order to analyze and assess the results of the study under application of the statistical package (SPSS) ver. (22.0):

Results

Respect to subjects of study (SDCv.) in the table (1), results show that significant differences are accounted in at least at P<0.05 among the observed distribution with their an expected outcomes in each variable, except with gender, which showed no significant different between males.

Table (1): Distribution of the studied patients according to (SDCv.) with comparisons significant (N=133)

SDCv.	*Categories*	*No.*	*%*	C.S. (*) P-value
Gender	Male	72	54.1	P=0.386 (NS)
	Female	61	45.9	
Age Groups yrs.	< 20	7	5.3	x^2= 34.947 P=0.000 (HS)
	20 _ 29	10	7.5	
	30 _ 39	17	12.8	
	40 _ 49	27	20.3	
	50 _ 59	32	24.1	
	60 _ 69	30	22.6	
	70 >	10	7.5	
	Mean ± SD	49.16 ± 15.81		
Marital Status	Married	95	71.4	x^2= 167.00 P=0.000 (HS)
	Single	30	22.6	
	Divorced	1	0.8	
	Widow	7	5.3	
Education level	Illiterate	20	15	x^2= 11.677 P=0.039 (S)
	Read & Write	21	15.8	
	Primary	33	24.8	
	Intermediate	28	21.1	
	Secondary	18	13.5	
	College & More	13	9.8	
Occupation	Highly professional	2	1.5	x^2= 194.632 P=0.000 (HS)
	Lower professionals	11	8.3	
	Unskilled workers	120	90.2	
Residency	Urban	81	60.9	P=0.015 (S)
	Rural	52	39.1	

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05;Non Sig. at P>0.05;Testing based on One-Sample Chi-Square test, and Binomial test.

Referring to the results of the general information's distribution tests (table 2), results showed that there are 22 smokers making up a ratio of (16.5%),and passive smoking was accounted 48(36.1%), and only 17(12%) of the studied patients are "Ex-smokers".With respect to chronic hepatitis types, 19(14.3%) of studied patients were morbidity with type-b, and 54(40.6%) of studied patients were morbidity with type-c, while 63 (47.4%) of them were morbidity with "Cirrhosis". As for the question whether the patients are under treatment now, the numbers of supporters for that has reached to 61 (45.9%), and most of them had currently treated by "Albumin" drug, and they are accounted 50 (37.6%). Regarding the question of having others chronic disease, 28(21.1%) had "Heart Disease", and 46(34.6%) who had "Diabetes mellitus", and 85(63.9%) who had a "Hypertension", and 8 (6.0%) who had a "Peptic ulcer", and 65 (48.9%) who had "Kidney Disease", and only 1 (0.8%) who had "Thyroid Disease".

Table (2):Distribution of the studied patients according to "Specific Information" in relation to studied "Health related–QoL" with comparisons significant (N=133)

General Information	*Responses*	*No.*	*%*	*C.S.* (*) *P-value*
Are you Smoker ?	Yes	22	16.5	P=0.000 HS
	No	111	83.5	
If yes, what is the type of smoking usually ?	NA	111	83.5	-
	Cigarette Tobacco	22	16.5	
what is the numbers of cigarettes or Narghile per day ?	NA	111	83.5	P=0.017 (S)
	Up to 20 cig.	5	3.8	
	> 20 cig.	17	12.8	
What is the duration of smoking ?	NA	111	83.5	x^2= 3.091 P=0.378 (NS)
	< 5 yrs.	4	3.0	
	5 _ 9	5	3.8	
	10 _ 19	4	3.0	
	> 20 yrs.	9	6.8	
Are you passive smoking ?	Yes	48	36.1	P=0.000 (HS)
	No	85	63.9	
If yes, what is the duration of passive smoking ?	NA	85	63.9	x^2= 7.739 P=0.052 (NS)
	< 5 yrs.	8	6.0	
	5 _ 9	14	10.2	
	10 _ 19	19	14.3	
	> 20 yrs.	7	5.3	
Are you Ex-Smoker ?	Yes	17	12	P=0.000 (HS)
	No	116	75.9	
If yes, what is the duration of ex-smoking ?	NA	116	87.2	x^2= 4.353 P=0.113 (NS)
	< 5 yrs.	2	1.5	
	5 _ 15	6	4.5	
	> 15 yrs.	9	6.8	
Do you drink alcohol	Yes	0	0.00	P=0.000 HS
	No	133	100	
Are you Ex-Alcoholic ?	Yes	6	4.5	P=0.000 HS
	No	128	96.2	
If yes, what is the duration of Ex-	NA	127	95.5	x^2= 0.000

Alcoholic ?	< 5 yrs.	2	1.5	P=1.000 (HS)
	5 _ 10	2	1.5	
	> 10 yrs.	2	1.5	

General Information	*Response*	*No.*	*%*	*C.S.(*) P-value*
Are you taking any sedative drugs ?	Yes	2	1.5	P=0.000 HS
	No	131	98.5	
If yes, what is the type of this drug ?	No	131	98.5	P=0.000 HS
	Psychiatric Drugs	2	1.5	
If yes, what is the duration of use this drug ?	NA	131	98.5	P=1.000 (NS)
	< 5 yrs.	1	0.8	
	> 5 yrs.	1	0.8	
What is the duration of onset CLD ?	< 1 yr.	17	12.8	x^2= 24.105 P=0.000 (HS)
	One yrs.	31	23.3	
	Two yrs.	32	24.1	
	Tree yrs.	15	11.3	
	Four yrs.	13	9.8	
	Five yrs.	11	8.3	
	> Five yrs.	14	10.5	
Chronically Hepatitis: B	No	114	85.7	P=0.000 HS
	Yes	19	14.3	
Chronically Hepatitis: C	No	79	59.4	P=0.037 S
	Yes	54	40.6	
Cirrhosis	No	70	52.6	P=0.603 NS
	Yes	63	47.4	
Are you under treatment now?	Yes	61	45.9	P=0.386 NS
	No	72	54.1	
If yes, what is the drugs are currently used?	NA	72	54.1	x^2= 65.541 P=0.000 (HS)
	Albumin	50	37.6	
	Albumin, and others	8	6	
	Others (**)	3	2.3	
Do you have Heart disease?	No	105	78.9	P=0.000 HS
	Yes	28	21.1	
Do you have Diabetes mellitus disease?	No	87	65.4	P=0.001 HS
	Yes	46	34.6	
Do you have Hypertension disease?	No	48	36.1	P=0.002 HS
	Yes	85	63.9	
Do you have Peptic ulcer disease?	No	125	94	P=0.000 HS
	Yes	8	6	
Do you have Kidney disease?	No	68	51.1	P=0.862 NS
	Yes	65	48.9	
Do you have Thyroid disease?	No	132	99.2	P=0.000 HS
	Yes	1	0.8	

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05;Non Sig. at P>0.05;Testing based on One-Sample Chi-Square test, and Binomial test; (NA): Not Applicable.

(**)Others drugs are currently used, such as : (Zofran, Aldactone, Claforan, Rifaximi).

Regarding to subjects of study main domains in the table (3), results show that a moderate to high evaluation are accounted for the studied patients with CLD's diseases, as well as an overall evaluation scored a moderate rating level close to the high level.

Table (3): Summary Statistics of Percentile Score Specific HR-QoL main domains for the studied patients (N=133)

Main Domains	*No.*	*Min.*	*Max.*	*PGMS*	*PSD*	*Ev.*
Abdominal Symptoms	133	0	100	52.13	30.39	M
Fatigue	133	0	100	67.74	25.54	H
Systemic Symptoms	133	0	90	41.20	18.51	L
Activity	133	0	100	70.30	32.78	H
Emotional Function	133	0	100	61.37	24.88	M
Worry	133	0	100	66.17	27.79	M
Overall Scale	133	14.31	93.33	59.82	15.07	M

PGMS: Percentile Grand Mean of Score; PSD: Pooled Standard deviation; and Ev. : Evaluation.

Table (4) shows in term simple correlation coefficients (Person's correlation coefficients) of studied main domains. There are a differentiated significant levels for extracted correlation coefficients among studied main domains, and that indicated meaningful interaction (The Covariance) that should be presented indeed.

Table (4): Simple Pearson's Correlation Coefficients among different responses of the studied Main Domains (N=133)

Corr. & P-value	Main Domains	Fatigue	Systemic Symptoms	Activity	Emotional Function	Worry
Correlation	Abdominal Symptoms	0.353	0.117	0.100	0.350	0.280
	Fatigue		0.350	0.444	0.245	-0.077
	Systemic Symptoms			0.153	-0.013	-0.191
	Activity				0.143	-0.145
	Emotional Function					0.495
P-value	Abdominal Symptoms	0.000	0.091	0.126	0.000	0.001
	Fatigue		0.000	0.000	0.002	0.188
	Systemic Symptoms			0.039	0.439	0.014
	Activity				0.050	0.048
	Emotional Function					0.000

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: No Sig. at P>0.05; Statistical hypothesis are based on Pearson's Coefficient test.

Table (5) deals with studied main domains, which were extracted in two meaningful and significant interactions, and has a suggested named " Psycho-Somatic Factor, and Weariness Factor". That extracted factors ordered in more powerful significant, with a slight advantage at the first factor in (54.81%) of total covariance explained, then followed by a second factor (45.19%) of total covariance.

Table (5): Extracted Factors matrix in Rotated method with the suggested named for studying group (N=133)

Component Matrix	*Components*	
	1	*2*
Abdominal Symptoms	0.654	
Fatigue		0.817
Systemic Symptoms		0.647
Activity		0.689
Emotional Function	0.824	
Worry	0.793	
Initial Eigen values	1.983	1.635
% total of covariance	54.809	45.190
Suggested Named of extracted Factors	Psycho-Somatic Factor	Weariness Factor

(*)Cogitation and implementation by Emeritus Prof. (Dr.) Al-Naqeeb Abdulkhaleq A Ali Ghalib; Rotation Method: Varimax with Kaiser Normalization.

Discussion of results

Part one: Distribution of Socio-Demographical Characteristics of Stroke patients (SDCv.) (table 1)

The current study revealed that chronic liver disease appeared in a very close to equal percentage in males and females, where the percentage of males was 54.1 and the percentage of females was 45.9, this could be attributed to an equal attendance by males and females at "Martyr Dr. Majid Hassan Al-Jubouri Center for Gastrointestinal and Liver Diseases", where the sample was taken. The dominant age group of study sample is within (50-69) years old, this result was in agreement with the finding of the study done in Egypt [7], which stated that Most of patients were aged between 50 and 60 years old with percentage of 46% .Male to female ratio was almost equal. Seventy-one of the studied sample were married, and this finding agree with finding of another study conducted in Egypt [8], which report that, most of their sample were married to assess the Quality of life among elderly patients with CLDs. And another study consistent with our study by [3], where the highest percentage of the sample are married.

Concerning the level of education, most of the studied sample were primary study. Such result is an ordinary outcome for our society as a result of the tragedy of the political events, which the country had passed through. This result conflicting with study conducted in Brazil [9] showed that the highest percentage

of education in the study sample was primary school. So poor awareness of low educational may lead to exposure to some of chronic liver disease at any time because they cannot correctly decide when they need counseling or medical help. Relative to employment, the results indicate that the highest percentage of the study sample are non-occupied and retired, this finding is similar to study done in Egypt [10] they find that the highest percentage of their study sample regarding employment in term of current professional status were retired and non-occupied. Regarding residency the results indicate that more than half of the study sample are living in urban area. This study is not compatible with the study conducted by [10], which observed that the greatest percentage of residency of their study sample living in rural area, this can be explained by the high attendance of patients who were from urban areas during the study period.

The Present study, recorded that (16.5%) of patients were currently smokers and about twelve percent were ex-smoker, this could be due to environmental and social habit, which is agree with the study conducted in Italy by [11], where 24.9 were smoker and 19.2 were ex-smoker. Another study is in agreement with our study regarding the current smoking done in Nepal by [12]. Most of the studied sample had recorded duration of illness less than 5 years. The same finding were observed in study conducted in Egypt by [8], showed that most of studied patients recorded duration of illness less than 5 years. Also, another study was done in Nepal by [12] is in agreement with our study.

The majority of the study sample were suffering from liver cirrhosis, then chronic hepatitis c, and then chronic hepatitis b. These results are in accordance to those seen from study conducted in Egypt by [8], which showed that the majority of the participants in their study had liver cirrhosis, then followed with chronic hepatitis c, then finally with chronic hepatitis b. Concerning the presence of others chronic diseases, most of the studied patients were diagnosed with hypertension, which represent the highest percentage of other included chronically diseases. The findings of current study agree with results of a study done by [12]. The findings of the current study in table (3) showed that Specific quality of life for the studied patients assigned that observed responses are moderate mostly, and they are accounted (55.17%), and items of having a high level evaluation accounted (37.93%), these finding showed agreement with a study done in 2021 in Egypt which found that most of responses are moderately (55.1%) [8].

Results showed in the table (4) that there was relationship was accounted among the worry and systemic symptoms, and the worry and activity, since significant relationship are accounted at $P<0.05$, where the relationships were reversed obtained, whenever the emotional function increased that mean decreased of the systemic symptoms and vice versa as for other domains. There was relationship accounted between the fatigue and abdominal symptoms, since significant relationship are accounted at $P<0.05$, where the relationship was positively accounted, increased in the fatigue leading to increase of abdominal symptoms, and so on for the rest of the studied domains. These results were consistent with the previous report in China by [13] in their study found that all CLD questionnaire's domains were significantly associated with each other except the correlation between the fatigue and worry, also the correlation between the

emotional function and systemic symptoms, and the abdominal symptoms with the activity.

In the current study, a new measurement scale was created for measuring the QoL concerning chronic liver diseases patient's by using the factor analysis for HR-QoL specific scales. Table (5) shows analysis of factor loading that related to *specific HR-QoL* concerning chronic liver disease patient's domains. In this factor analysis, two components were identified to explain the variation of variables. Which were extracted in two meaningful and significant interactions, and has a suggested named "Psychosomatic Factor, and Weariness Factor". That extracted factors ordered in more powerful significant, with slightly advantage at the first factor in (54.81%) of total covariance explained, then followed by second factor in (45.19%) of total covariance. These two creating factors (components) will represent the new scale which can be used in the future for further measurement of the *specific HR-QoL* concerning chronic liver diseases patient's. Unfortunately, there are no studies found, in contrast of those findings to make discussion of such outcomes.

Recommendations

Applying the suggested developed score for evaluating health related quality of life for chronic liver disease patients, and for establishing an instructional program by taking into consideration the relative importance of proposed weighted score that resulted in this study condensing the aspects that the results of the scale components came into a more comprehensive degree.

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