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# **Health-Related Quality of Life Assessment in Patients with Hepatitis: A Case of Pakistan**

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## **Abstract**

The intention of this study is to dig out the demographic, medical, economic, and psychological factors that affect the health related quality of life of the hepatitis B and C patient in district Sargodha. 120 patients of hepatitis B and C virus are interviewed. WHOQOL-BREF questionnaire is followed for the construction of health-related quality of life (HRQOL) instrument. Age of the patient, disease severity, use of drug, pain, depression, financial hindrance and threat of death negatively affect the HRQOL of the hepatitis patient while, vaccination, income, education, sleep, opportunity of leisure and better living condition affect HRQOL positively.

**Key words:** HRQOL, HBV, HCV, Pakistan.

## **Introduction**

Many mortal diseases have become chronic, in spite of enhancement in medical technology. During past years some researchers paid their concentrations towards health related quality of life (HRQOL) of patients. HRQOL generally means the impact of disease on social, psychosocial and physical life of the patient. The World Health Organization (WHO) defines quality of life as;

*“Individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”* (WHO, 1996).

It is a wide concept that incorporates persons' physical health, psychological position, level of independence, social relationships, personal thinking and relationships to the environment. This definition reproduces the vision that quality of life refers to a subjective assessment, which is entrenched in a cultural, social and environmental context. Quality of life cannot be associated merely with the requisites health condition, life style, life satisfaction, mental condition or well-being. World health organization quality of life (WHOQOL) instrument hubs upon patient's "apparent" quality of life, it is not projected to give a means of evaluating in any comprehensive fashion indications, diseases or circumstances, nor disability as impartially arbitrator, but quite the apparent effects of disease and health intercession on the persons quality of life.

No doubt patient's physical, emotional and social functioning is affected by disease. Hepatitis is one of the fatal diseases, which spoils quality of life of the patient. Hepatitis (inflammation of the liver) viruses like A, B, C, D and E are the responsible of this disease. 102, 813 people died due to HBV and 53,769 died due to HCV across globe, every year. In world's ranking Pakistan is at 53<sup>rd</sup> and 63<sup>rd</sup> number regarding HBV and HCV, causing 2,340 deaths and 925 deaths respectively (World Life Expectancy, 2009).

The distribution on Hepatitis patients in Pakistan varies provincially and regionally. Sargodha is the eighth largest district of Punjab, out of total population (10, 81,459), 0.8% people were diagnosed with hepatitis above the average of Punjab province which stood at 0.7% (MICS 2007-08). Poor hygienic conditions, injecting drugs through injections, insecure injection

practices and blood transfusion, un-fair sexual relations, poor drainage and sanitary systems, drinking water quality and food items etc are the major origins of hepatitis.

Only about 1.1% people of Sargodha use boil water and 35.2% drinking water of the district is affected with harmful bacteria. In Sargodha district around 44.4% of sewerage is connected to open drain, while 37.9% is with open fields. Sargodha is among the few districts of the province which has hepatitis disease level above the average of the Punjab (MICS 2007-08). Figure 1 shows the diagnosed hepatitis patients at the district level in the province of Punjab.

Various studies show that HRQOL is fragile in patients with chronic liver disease (CLD), hepatitis C (HCV) and hepatitis B (HBV). Many studies that show a cheap HRQOL in hematology, comparatively few studies inspect the causes that influence HRQOL. Depression, itch, anxiety, muscle cramps, joint pain, memory problems, fatigue, financial troubles, sexual functioning problems etc, are among the important factors that affect patient's quality of life. At macro level, demographic, economic and psychosocial factors also affect HRQOL. In this study WHOQOL-BREF questionnaire, along with some modifications was used. The study aims to highlight the determinants of HRQOL in the patients' of hepatitis B and C in district Sargodha. Moreover, study endeavors the demographic, economic, medical, physical and psychosocial factors that affect the HRQOL of hepatitis patient in district Sargodha.

The rest balance of paper is designed as: part two explains the HRQOL instrument, part three investigates data sources and methodology of this study; part four presents and interprets the empirical results. Finally, part five presents the conclusions and also provides some policy implications.

## **1. Health-related quality of life instrument**

HRQOL is a wide concept which represents that how the disease affect the patient's physical, psychological, social and environmental health. Disease severity, age, disease treatment etc affect patient's HRQOL. The purpose of the medicine is to cure the patient from disease and its symptoms. Patient's well-being is an important aspect of health care and assessment of HRQOL will help in focusing the different aspects of health care. WHO developed WHOQOL-100 questionnaire for the assessment of patient's HRQOL. Out of 236 questions, 100 questions were selected after conducting a pilot project. This questionnaire consists on six domains namely, physical, psychological, and level of independence, environment, social relationships and spirituality. Then SF-36 was developed because WHOQOL-100 requires lot of time. SF-36 is the short form of WHOQOL-100 and consists on 36 questions. The main drawback of this questionnaire is that it is failed to incorporate a sleep variable. Therefore, WHOQOL-BREF questionnaire was developed. It is consist on 26 questions and four domains namely, physical, psychological, social relationships and environment. Physical domain discovers that how the bodily pain, medication, sleeps, energy and work are disturbing the life of patient. Psychological domain explores that how positive or negative feelings, happiness, person's expectation about themselves and his bodily look affect his mental health. Disease will definitely affect the patient's economic condition. Social relationships domain observes how patient's family, friends and relatives give support to him. Environmental domain observes the feelings of a patient about his financial position, life security, and place of living, leisure opportunity and learning of new skills (WHOQOL-BREF, 2004).

## **Data Sources and Methodology**

The study includes HBV and HCV patients because both types of hepatitis affect the patient life more severely than other types. Also because HBV and HCV are relatively common viruses found in patients of Sargodha District. HCV contaminate liver cells and responsible for inflammation of liver and certain other diseases. 100 million people are chronically infected with HCV virus (<http://www.who.int>). This virus comes in different forms and is not easy to identify. In this study, 120 patients of HBV and HCV were selected and interviewed from Sargodha district. For this intention different private and public hospitals were visited. WHOQOL-BREF questionnaire was used in this study for the development of HRQOL instrument. To identify the impact of demographic, social, economic and medical variables on HRQOL of hepatitis patients, data on age, disease severity, gender, education, vaccination, income, region and drug addiction was collected. Multiple linear regression analysis is performed to explore the factors that affect HRQOL of hepatitis patients. In the first model, effect of demographics factors are investigated while in second, third and fourth model; medical, economic, physical and psychosocial factors contributions to HRQOL are examined.

## **Results**

### ***4.1 Descriptive Analysis***

Out of 120 patients, 66 are male and 54 are females, in which 61 patients belonged to urban and 59 are from rural areas, 55 patients are HBV while 65 are HCV infected. 76 years is the maximum age that has been interviewed, while minimum age is 14 years and mean age is 36 years (see table 1).

Variable of disease severity is obtained by asking the time period of patient's disease. 8 years is the maximum disease period for hepatitis patients, while minimum is 0.3 year and the mean is 2.52 years. 89 patients are vaccinated but 31 of them are not vaccinated. Out of 120 patients 46 are smokers, while 74 patients never use any type of drug (see table 2).

Maximum household income is 50,000 Pakistani rupees per month, while minimum is 2,500 Pakistani rupees per month and the mean income is 12,725 rupees (see table 3).

Out of 120 patients, 93.3% of the patients are caught by pain due to HBV and HCV. 94.4% feel depression and 49.2% patients feel problems and not satisfied to their sleep. 89.2% patients face financial hindrances and not have enough money to meet their needs. 76.7% patients are facing the threat of death due to HBV and HCV. Only 50.8% patients have an opportunity of leisure, while 40% are not satisfied to their living conditions (see table 4).

#### ***4.2 HRQOL Scores***

Domains are scored through collective scaling. Each item has an equal share to the domain score. Scaling is in the direction of the domain, determined by whether the domain is positively or negatively framed. Some domains holds questions which need to be reverse scored and some contains negatively structured constituent questions. HRQOL instrument contains collective share of each domain.

Table 5 present the mean, maximum and minimum score HRQOL instrument and its four domains. Patients with hepatitis get maximum score of physical health about 85.71, whereas its mean value is 39.22. These illustrate that due to hepatitis B and C virus, patient's physical health is very much destroyed. Mean score of psychological health is somewhat demonstrate a better condition, which is 46.18, while its minimum score is 4.17 that show the patient, is suffering

with severe psychological problems. Maximum score of social relationships is 100, which shows that patient's social relationships are not affected by disease. Mean score of social relationships is also better than physical and psychological health scores. Environmental score explains that patient's opportunity of leisure, information, and facilities to services is affected due to hepatitis. If we want to contrast the affect of all four domains, it is very much apparent that hepatitis firstly affects the physical life of the patient and secondly environmental factors. To investigate the range of HRQOL instrument we convert the score of HRQOL instrument in 0-100 ranges. Zero means that patient is living with poorest quality of life along with disease, as he moves towards 100 his quality of life improves. Our results illustrate that minimum score of HRQOL instrument (10.53) meaning that the patient is living with poor quality of life. Mean score also is not showing a good picture, which are only 46.66 (see table 5).

Urban patients are enjoying better HRQOL than the rural patients. In all domains and in HRQOL instrument urban patients scores are high. Social relationship domain illustrate that there is no discrepancy among the hepatitis patients of rural and urban areas. Moreover, mean scores of the urban patients are also high as compared to rural patients of hepatitis (see table 6).

The physical and psychological health of male patients is relatively better than females (see for example; Table 7). Again social relationship domain shows the same maximum score for both male and female. Mean scores of HRQOL domains and HRQOL instrument highlight that male patients are in better condition as compared to female patients.

#### ***4.3 Multiple Regression Analysis Results***

Table 8 explains the regression analysis results in which HRQOL is the dependant variable whereas gender, age of the patient, region, disease severity, vaccination and use of drugs are the independent variables. All the variables are significant. Positive sign of male shows that male

have better HRQOL than female, while negative sign of age of the patient shows that HRQOL deteriorates with increase in patient's age. Positive sign of region shows that people who are living in urban areas enjoy better HRQOL than people live in rural areas.

Under medical variables disease severity is negatively significantly related to dependant variable. Disease severity was obtained by measuring the age of hepatitis disease. When we interpret this we say that increase in one year in the age of disease, will decrease patient's HRQOL by 2.25 units. The patients who use drugs their HRQOL will decrease as compared to the patient who does not use any type of drug (smoking etc).

Table 9 explains the impact of economic, physical and psychological variables on the patients HRQOL. All the signs of the variables are according to expectation. Income is positively significant with dependant variable. The patients having depression will affect their HRQOL negatively. Negative sign of depression shows that a patient who faces depression its HRQOL will decrease but a patient who is free from depression enjoy better HRQOL. Better sleep, good living condition and opportunity of leisure are significantly positively related to patient's HRQOL. Negative sign of death threat shows HRQOL decrease for a patient who faces threat of death as compared to that patient who has no fear of death.

## **2. Conclusions**

The rationale of this paper is to find out the determinants that affect HRQOL of hepatitis B and C patients. The study used WHOQOL-BREF questionnaire and 120 patients of hepatitis are interviewed in the public and private hospitals of the Sargodha district. Multiple regression results shows that age of the patient, disease severity, use of drug, pain, depression, financial hindrances and threat of death negatively affect HRQOL of the hepatitis patient while;

vaccination, income, education, sleep, opportunity of leisure and better living condition affect HRQOL positively. The study gives several suggestions on the basis of present analysis. With the advancement of medical technologies the treatment also should focus on those aspects that increase patients HRQOL, like by giving the opportunity of leisure to patients. Financial assistance from government will also help in removing their financial hindrances. Government and concerning authorities should focus on controlling drugs among the people. Death threat and depression may be control by teaching the patients and by giving them cognitive behavioral therapy.

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## Appendix

**Table 1: Descriptive of Demographic variables.**

| Demographic variables |        |        |        |       |           |    |                 |      |       |
|-----------------------|--------|--------|--------|-------|-----------|----|-----------------|------|-------|
| N                     | Gender |        | Region |       | Hepatitis |    | Age of patients |      |       |
| 120                   | Male   | Female | Urban  | Rural | B         | C  | Max.            | Min. | Mean  |
|                       | 66     | 54     | 61     | 59    | 55        | 65 | 76              | 14   | 36.09 |

**Table 2: Descriptive of Medical variables.**

| Medical variables |                  |      |      |             |    |              |    |
|-------------------|------------------|------|------|-------------|----|--------------|----|
| N                 | Disease severity |      |      | Vaccination |    | Type of Drug |    |
|                   | Max.             | Min. | Mean | Yes         | No | Smoking      | No |
| 120               | 8                | 0.3  | 2.52 | 89          | 31 | 46           | 74 |

**Table 3: Descriptive of Economic variables.**

| Economic variables |                          |      |       |                      |    |
|--------------------|--------------------------|------|-------|----------------------|----|
| N                  | Income of the house hold |      |       | Financial hindrances |    |
|                    | Max.                     | Min. | Mean  | Yes                  | No |
| 120                | 50000                    | 2500 | 12725 | 107                  | 13 |

**Table 4: Descriptive of Physical and Psychosocial variables.**

| Physical and Psychosocial variables |     |            |
|-------------------------------------|-----|------------|
|                                     | N   | Percentage |
| <b>Pain</b>                         | 120 | 93.3       |
| <b>Depression</b>                   | 120 | 94.4       |
| <b>Sleep</b>                        | 120 | 49.2       |
| <b>Death threat</b>                 | 120 | 76.7       |
| <b>Opportunity of leisure</b>       | 120 | 50.8       |
| <b>Living condition</b>             | 120 | 40         |

**Table 5: Descriptive of Health related quality of life scores.**

| Health related quality of life scores |     |       |       |       |
|---------------------------------------|-----|-------|-------|-------|
| Domains                               | N   | Max.  | Min.  | Mean  |
| <b>Physical health</b>                | 120 | 85.71 | 0.00  | 39.22 |
| <b>Psychological health</b>           | 120 | 95.83 | 4.17  | 46.18 |
| <b>Social relationship</b>            | 120 | 100   | 0.00  | 61.14 |
| <b>Environmental</b>                  | 120 | 87.50 | 3.13  | 40.10 |
| <b>HRQOL instrument</b>               | 120 | 82.78 | 10.53 | 46.66 |

**Table 6: Descriptive of Health related quality of life scores by region.**

| Health related quality of life scores by region |       |        |       |       |       |        |      |       |
|---|-------|--------|-------|-------|-------|--------|------|-------|
| Domains   | Rural |        |       |       | Urban |        |      |       |
|   | N     | Max.   | Min.  | Mean  | N     | Max.   | Min. | Mean  |
| <b>Physical health</b>                          | 59    | 78.57  | 0.00  | 34.62 | 61    | 85.71  | 0.00 | 43.67 |
| <b>Psychological health</b>                     | 59    | 83.33  | 16.67 | 42.44 | 61    | 95.83  | 4.17 | 49.79 |
| <b>Social relationship</b>                      | 59    | 100.00 | 12.50 | 59.11 | 61    | 100.00 | 0.00 | 63.11 |
| <b>Environmental</b>                            | 59    | 62.50  | 3.13  | 32.89 | 61    | 87.50  | 6.25 | 47.07 |

|                         |    |       |       |       |    |       |           |       |
|-------------------------|----|-------|-------|-------|----|-------|-----------|-------|
| <b>HRQOL instrument</b> | 59 | 74.85 | 17.82 | 42.26 | 61 | 82.78 | 10.5<br>3 | 50.91 |
|-------------------------|----|-------|-------|-------|----|-------|-----------|-------|

**Table 7: Descriptive of Health related quality of life scores by sex.**

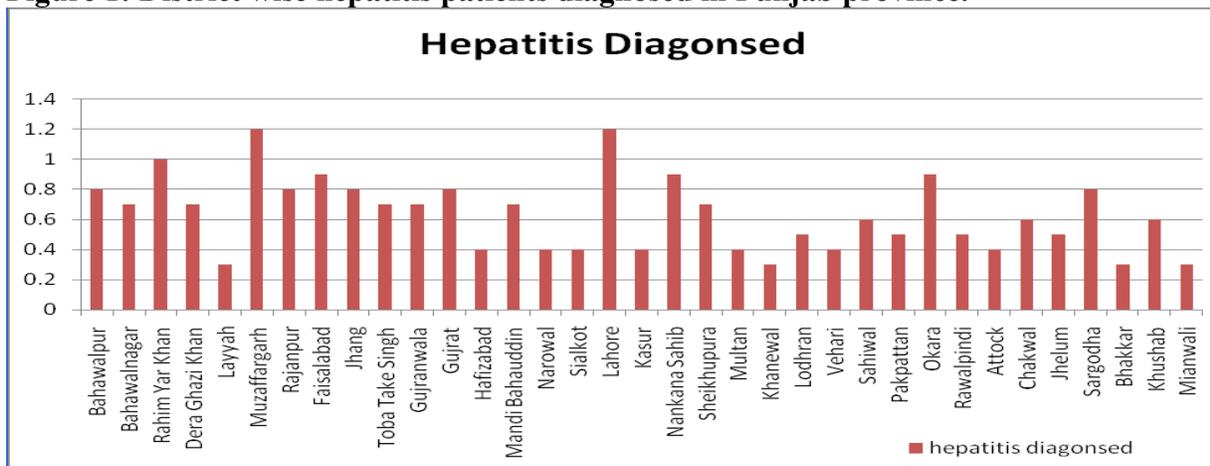
| <b>Health related quality of life scores by sex</b> |             |             |             |             |               |             |             |             |
|---|-------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|
|   | <b>Male</b> |             |             |             | <b>Female</b> |             |             |             |
| <b>Domains</b>                                      | <b>N</b>    | <b>Max.</b> | <b>Min.</b> | <b>Mean</b> | <b>N</b>      | <b>Max.</b> | <b>Min.</b> | <b>Mean</b> |
| <b>Physical health</b>                              | 66          | 85.71       | 0.00        | 41.07       | 5<br>4        | 78.57       | 0.00        | 36.97       |
| <b>Psychological health</b>                         | 66          | 95.83       | 12.50       | 47.72       | 5<br>4        | 83.33       | 4.17        | 44.29       |
| <b>Social relationship</b>                          | 66          | 100.00      | 16.67       | 63.25       | 5<br>4        | 100.00      | .00         | 58.56       |
| <b>Environmental</b>                                | 66          | 87.50       | 6.25        | 41.28       | 5<br>4        | 87.50       | 3.13        | 38.65       |
| <b>HRQOL instrument</b>                             | 66          | 82.78       | 10.53       | 48.33       | 5<br>4        | 82.40       | 14.2<br>5   | 44.62       |

**Table 8: Multiple regression results.**

| <b>Demographic variables Model</b> |         |
|------------------------------------|---------|
| <b>Constant</b>                    | 66.46** |
| <b>Gender (Male=1, Female=0)</b>   | 0.94    |
| <b>Age of the patient</b>          | -0.68** |
| <b>Region (Urban=1, Rural=0)</b>   | 8.57**  |
| <b>R<sup>2</sup></b>               | 0.26    |
| <b>F-Statistics</b>                | 10.56   |
| <b>SER</b>                         | 9.87    |
| <b>Medical variables Model</b>     |         |
| <b>Constant</b>                    | 53.77** |
| <b>Disease severity</b>            | -2.25*  |
| <b>Vaccination (Yes=1, No=0)</b>   | 1.58    |
| <b>Use of drug (Yes=1, No=0)</b>   | -6.43*  |
| <b>R<sup>2</sup></b>               | 0.09    |
| <b>F-Statistics</b>                | 10.21   |
| <b>SER</b>                         | 14.28   |

| <b>Economic variables Model</b>                         |          |
|---|----------|
| <b>Constant</b>   | 47.72**  |
| <b>Income</b>   | 0.001**  |
| <b>Financial hindrances (Yes=1, No=0)</b>               | -9.52*   |
| <b>R<sup>2</sup></b>                                    | 0.20     |
| <b>F-Statistics</b>                                     | 16.39    |
| <b>SER</b>  | 13.33    |
| <b>Physical and Psychological variables Model</b>       |          |
| <b>Constant</b>   | 57.32**  |
| <b>Pain (Yes=1, No=0)</b>                               | -6.06    |
| <b>Depression (Yes=1, No=0)</b>                         | -11.41*  |
| <b>Sleep (Satisfied=1, Dissatisfied=0)</b>              | 10.90**  |
| <b>Living condition (Satisfied=1, Dissatisfied=0)</b>   | 7.97**   |
| <b>Death threat (Yes=1, No=0)</b>                       | -11.19** |
| <b>Opportunity of leisure (Yes=1, No=0)</b>             | 11.36**  |
| <b>R<sup>2</sup></b>                                    | 0.66     |
| <b>F-Statistics</b>                                     | 9.64     |
| <b>SER</b>  | 9.28     |
| **=99% significance level and *= 95% significance level |          |

**Figure 1: District wise hepatitis patients diagnosed in Punjab province.**



Source: MICS 2007-08