# Quality of life among Vietnamese patients with chronic hepatitis B: A cross-sectional study based on a self-report survey

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## ABSTRACT

Background: Quality of life (QoL) is a multi-factorial construct that aids in describing how individuals perceive their social, psychological, and physical functioning. The central purpose of this study was to examine the correlation between the stages of chronic hepatitis B (CHB) and health related QoL (HRQoL) among afflicted patients in the Vietnamese context. This research also explored how psychological symptoms affect the HRQoL of the patients.

Methods: This cross-sectional study used the EuroQoL five dimensions (EQ-5D) self-report questionnaire with a visual analogue scale (VAS) to probe into the health utility of patients who are at different stages of CHB. The questionnaire was administered to 432 patients, among whom 115 agreed to additionally participate in interviews regarding their experiences with anxiety and depression.

Results: The mean EQ-5D score of the patients was 0.56±0.26, and their mean VAS score was 54.78±26.05. The asymptomatic hepatitis patients exhibited better HRQoL than did the post-liver transplant patients. The more severe the disease, the lower the HRQoL of the respondents. Anxiety, depression, and fatigue were negatively correlated with health utility.

Conclusion: In Vietnam, local and national healthcare systems should implement sensitization programs intended to increase the number of patients seeking antiviral therapy. This approach is anticipated to reduce anxiety while enhancing patients' social function and mental health.

Keywords: anxiety, depression, fatigue, quality of life, utility, Vietnam.

## INTRODUCTION

Chronic hepatitis B (CHB) is a contagious liver infection caused by the hepatitis B virus (HBV) (ul Haq *et al.*, 2012). The disease currently afflicts over 257 million individuals worldwide, according to recent statistical reports, and accounts for increasing mortality rates (or reduced life expectancy and the presence of CHB-related comorbidities), as indicated in additional confirmations. In particular, viral hepatitis causes approximately 1.34 million deaths around the world each year (Woo *et al.*, 2012). In the majority of developing countries, 5% to 15% of patients suffering from chronic illnesses are infected with HBV. One such country is Vietnam, which experiences considerable CHB-related burdens—a situation that underscores the need to prioritize the development of pragmatic strategies (Abbas and Siddiqui, 2011; Zhuang *et al.*, 2014).

Although the incidence of CHB has decreased significantly since the recent introduction of a universal infant vaccination program targeted toward HBV (Nguyen, 2012), the condition continues to be highly discriminated and stigmatized in the Vietnamese context (Nguyen, 2012; Dam *et al.*, 2016). Scholarly observations suggested that in an area such as Ho Chi Minh, the country's largest city, as many as 43% of residents are likely to avoid close contact with HBV-infected patients (Lee *et al.*, 2011; Li *et al.*, 2012). This adverse trend is attributed to low levels of

vaccination (Lee *et al.*, 2016) and misconceptions regarding transmission routes (Enescu *et al.*, 2014). HBV is transmitted via mother-to-child pathways, sexual intercourse, and blood, yet the majority of populations are subconsciously afraid of contracting the disease through activities that involve casual contact, such as kissing, hugging, and sharing eating utensils (Modabbernia *et al.*, 2013; EASL 2017 Clinical Practice Guidelines on the management of hepatitis B virus infection, 2017). This observation was supported by studies conducted in Canada and the US, where a knowledge deficit regarding HBV transmission was observed in different populations (Modabbernia *et al.*, 2013; Vedio *et al.*, 2017). The stigma attached to individuals infected with HBV also cause negative effects on the psychological health and behaviors of patients (Valizadeh *et al.*, 2016; Liu *et al.*, 2018). The correlation between CHB stages and the quality of life (QoL) of patients is of clinical relevance because insights into such association can inform decision making in the healthcare industry, especially with regard to the management of the disease (Levy *et al.*, 2008; Lam *et al.*, 2009; EASL clinical practice guidelines: Management of chronic hepatitis B virus infection, 2012; World Health Organization, 2017). Despite this importance, however, many studies indicated that this issue has been inadequately characterized (Levy *et al.*, 2008; Lam *et al.*,

2009; EASL clinical practice guidelines: Management of chronic hepatitis B virus infection, 2012; World Health Organization, 2017). QoL is a multi-factorial construct that aids in describing how individuals perceive their social, psychological, and physical functioning (EASL clinical practice guidelines: Management of chronic hepatitis B virus infection, 2012). This definition implies that QoL initiatives revolve around a holistic plan of assessment rather than an emphasis on clinical features. Given that the immediate concern with respect to chronic diseases is not mortality but the well-being and functional health of patients, QoL has continued to receive scholarly attention, especially amid the need to reinforce the effectiveness of early healthcare interventions (Lee *et al.*, 2011). For CHB, considerations of well-being and functional health have been insightful because of the condition's inherent complexity and progression in various phases (Woo *et al.*, 2012; World Health Organization, 2017). The characterization of the health related QoL (HRQoL) of CHB patients has also significantly affected how patients perceive the overall management of their condition. Finally, HRQoL shapes the degree to which CHB patients seek treatment, comply with follow-up care, and perceive the importance of medical care (Levy *et al.*, 2008; Lee *et al.*, 2011; Woo *et al.*, 2012). With consideration for these issues, the current research was carried out primarily to unravel the correlation between CHB stages and HRQoL among Vietnamese patients. The study also inquired into the manner by which psychological symptoms affect the HRQoL of the such individuals.

## MATERIALS AND METHODS

### Study design and participants

This cross-sectional study was conducted at Lam Dong General Hospital in Lam Dong Province, Vietnam from May to June 2019. The institution is a tertiary hospital that specializes in hepatology and gastroenterology. The criteria for sample selection were a definitive diagnosis of CHB, the presence of hepatitis B surface antigens in the blood for at least six months, ages of 16 and above, and the ability to independently complete a questionnaire.

The sample selection and sampling frame were implemented on the basis of simple random sampling. Before and after physician appointments, each patient was asked to fill in the EuroQoL five dimensions (EQ-5D) self-report questionnaire. EQ-5D is a self-administered instrument, but six pharmacists were recruited and trained by the research team to help patients who have difficulty understanding the questions. Following the literature, patient stratification was based on clinical features that reflected states such as post-liver transplant, hepatocellular carcinoma, decompensated and compensated cirrhosis, CHB, and asymptomatic CHB (Wong *et al.*, 2008; Lam *et al.*, 2009; Nguyen, 2012; Lee *et al.*, 2016).

In the first stage of the survey, those who reported experiencing depression or anxiety were invited to participate in the second stage. In this telephone-based stage, the patients were asked to specify how they grappled with anxiety, depression, and fatigue and the degree of social support that they received on a scale of 0 to 20, where 0 represents the best status and 20 indicates the worst.

### Study instruments

EQ-5D was used to measure the HRQoL of the patients. As a standardized generic HRQoL instrument developed by the EuroQoL group, EQ-5D provides a simple descriptive summary and a single index value for health status. It has also been translated into 27 languages (Lam *et al.*, 2009). The utility values generated by this questionnaire range from –0.5900 to 1.0000, with 0 corresponding to death and the highest end of the range denoting the best imaginable state of health. EQ-5D consists of five domains (i.e., mobility, self-care, usual activities, pain/discomfort, and anxiety/depression), each further categorized into three levels of severity (no problems/some or moderate problems/extreme problems). A total of 226 health-related responses can be used to describe the health status of respondents. Accompanying EQ-5D is a visual analog scale (VAS), which consists of a 20 cm health meter with two distinct end points: 100, which signifies the best imaginable state of health, and 0, which represents the worst. The internal consistency and validity of the Vietnamese version of the questionnaire were confirmed in a previous study (Vu *et al.*, 2018).

### Data analysis

The VAS scores and the scores related to depression, anxiety, fatigue, and social support were presented as means and standard deviations (SDs) given the normal distribution of the data. The EQ-5D scores were presented as percentages for each domain and mean±SD. The mean scores at specific CHB stages were compared using one-way analysis of variance (ANOVA) with post hoc analysis. The percentages in one domain were compared using Pearson's chi square test, and the association among the EQ-5D scores, VAS scores, and scores with respect to symptoms was explored on the basis of Pearson's correlation. The Statistical Package for the Social Sciences (SPSS version 13.0) was used to perform the statistical analyses, with 0.05 set as the degree of statistical significance.

### Ethical considerations

The study protocol was approved by the Scientific Research Council of Lam Dong General Hospital. The patients were required to provide informed consent before participating in the data provision process. Data were entirely anonymous and used only for scientific purposes.

## RESULTS

The number of questionnaires received for outcome interpretation and analysis was 432. Out of these HBV patients, 22 had a post-liver transplant, and 22, 24, 66, 142, and 156 presented with hepatocellular carcinoma, decompensated cirrhosis, compensated cirrhosis, CHB, and asymptomatic hepatitis, respectively. **Table 1** shows the demographic characteristics of the participants.

**Table 1.** Participant characteristics (N = 432)

| Characteristics | N (%) | Characteristics | N (%) |
|---|---|---|---|
| **Gender** | | **Employment status** | |
| Male | 308 (71.3) | Not specified | 6 (1.4) |
| Female | 124 (28.7) | Public sector personnel | 11 (2.7) |
| **Marital status** | | Private sector personnel | 291 (67.4) |
| Not specified | 4 (0.9) | Housewife | 35 (8.1) |
| Widowed | 9 (2.1) | Full-time student | 11 (2.7) |
| Separated/ divorced | 7 (1.7) | Retired persons | 58 (13.4) |
| Married | 331 (76.6) | Unemployed | 21 (4.9) |
| Single | 81 (20.0) | **Stage of disease** | |
| **Level of education** | | Post-liver transplant | 22 (5.1) |
| Not specified | 13 (3.0) | Hepatocellular carcinoma | 22 (5.1) |
| High school or above | 209 (48.4) | Decompensated cirrhosis | 24 (5.6) |
| Secondary | 162 (37.5) | Compensated cirrhosis | 66 (15.3) |
| Primary | 43 (10.0) | Chronic hepatitis B | 142 (32.9) |
| | | Asymptomatic hepatitis | 156 (36.1) |

**Table 2** summarizes the results of the VAS and EQ-5D score analysis in relation to the various HRQoL-related domains investigated in the Vietnamese context. The mean EQ-5D and VAS scores were approximately consistent, with the former being 0.56±0.26 and the latter being 54.78±26.05. We found no significant difference between HRQoL levels in connection to each domain, except for depression or anxiety ($p < 0.05$).

To explore the associations between the EQ-5D and VAS scores and CHB stages, ANOVA was performed. No significant difference between these relationships was found. The post hoc analysis revealed that the asymptomatic hepatitis and post-liver transplant patients differed as regards their EQ-5D mean scores. The VAS findings reflected a significant difference in mean scores between the patients suffering from hepatocellular carcinoma, decompensated cirrhosis, and compensated cirrhosis. As suggested by this outcome, the greater the severity of the disease, the lower the health utility of the patients. **Figure 1** illustrates the mean utility levels of the six patient groups at different stages of the disease.

**Table 2.** Descriptive data and percentages related to EQ-5D dimensions (N = 432)

| EQ5D domains | N (%) | p-value* |
|---|---|---|
| **Depression or anxiety** | | 0.009 |
| Extreme depression or anxiety | 6 (1.4) | |
| Moderate depression or anxiety | 114 (26.4) | |
| No depression or anxiety | 312 (72.1) | |
| **Pain or discomfort** | | 0.740 |
| Extreme discomfort or pain | - | |
| Moderate pain or discomfort | 59 (13.6) | |
| No pain or discomfort | 373 (86.4) | |
| **Usual activities** | | 0.070 |
| Extreme problems | - | |
| Some problems | 16 (3.6) | |
| No problems | 416 (96.4) | |
| **Self-care** | | 0.091 |
| Extreme problems | - | |
| Some problems | 3 (0.7) | |
| No problems | 429 (99.3) | |
| **Mobility** | | 0.700 |
| Extreme problems | - | |
| Some problems | 13 (2.9) | |
| No problems | 419 (97.1) | |
| **EQ5D score** (mean±SD) | 0.56±0.26 | |
| **VAS score** (mean±SD) | 54.78±26.05 | |

*Note: *Chi-square test*
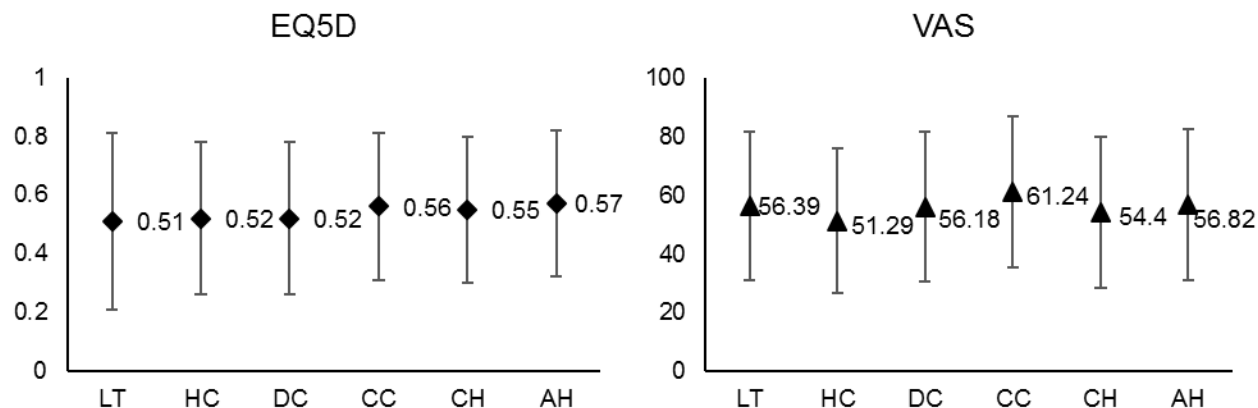
**Figure 1.** EQ-5D and VAS scores of multiple-stage CHB patients
*Abbreviations:* LT, post-liver transplant; HC, hepatocellular carcinoma; DC, decompensated cirrhosis;
CC, compensated cirrhosis; CH, chronic hepatitis B; AH, asymptomatic hepatitis.

Among the 120 patients who reported experiencing depression or anxiety (domain 1), 115 agreed to participate in interviews regarding these symptoms. A scale of 0 to 20 was used to rate each of the items, of which fatigue received the highest score given the considerable percentage of patients who grappled with moderate to severe exhaustion. Social support was scored the lowest, suggesting that the CHB patients do not receive enough concern from people around them. Pearson's correlation test was conducted to determine the relationships between these symptoms and HRQoL. A negative correlation ($p < 0.05$) was found between fatigue, depression, and anxiety and HRQoL (at $r_s = -0.541, -0.683$, and $-0.550$, respectively).

**Table 3.** Experiences with anxiety and depression (N = 115)

| Symptom experience | n (%) | Mean±SD | $r_s$* (p-value) |
|---|---|---|---|
| **Anxiety** | | | |
| Moderate to severe | 16 (13.9) | | -0.550 |
| Mild to moderate | 49 (42.6) | 10.98±8.56 | (p=0.025) |
| Mild | 50 (43.5) | | |
| **Depression** | | | |
| Moderate to severe | 7 (6.1) | | -0.683 |
| Mild to moderate | 21 (18.3) | 9.76±5.71 | (p=0.036) |
| Mild | 87 (75.6) | | |
| **Fatigue** | | | |
| Moderate to severe | 98 (85.2) | | -0.541 |
| Mild to moderate | 17 (14.8) | 13.43±7.46 | (p=0.005) |
| **Social support** | | | |
| High | 2 (1.7) | | 0.439 |
| Moderate | 50 (43.5) | 5.38±0.80 | (p=0.671) |
| Low | 63 (53.8) | | |

*Note: *Pearson's correlation coefficients between mean score of depression symptoms and EQ5D mean score.*

## DISCUSSION

The majority of extant studies suggested that the HRQoL levels of CHB patients differ depending on socio-demographic features. In many investigations that employed various scales, the HRQoL of such individuals is shaped by factors such as the receipt of antiviral therapy, the duration of the disease, annual income level, education period, age, and educational level (Lee *et al.*, 2011; EASL clinical practice guidelines: Management of chronic hepatitis B virus infection, 2012; Nasrin *et al.*, 2018). The current research's results revealed significantly lower HRQoL scores in patients diagnosed with other chronic conditions, those who are single, and female patients. These outcomes agree with those of previous works that focused on similar social, demographic, economic, and geographic contexts as those observed in Vietnam (Levy *et al.*, 2008; Wong *et al.*, 2008; Lam *et al.*, 2009; Schwarzenberg *et al.*, 2017). Most of the women in

many parts of the world, especially those experiencing the chronic variant of CHB, have been documented to be less likely to access social support services than their male counterparts (Lee *et al.*, 2011; Li *et al.*, 2012; Modabbernia *et al.*, 2013; Lee *et al.*, 2016; EASL 2017 Clinical Practice Guidelines on the management of hepatitis B virus infection, 2017).

Apart from gender variations, a difference in HRQoL on the basis of marital status was also found among the CHB patients. The literature indicated that being married paves the way for access to economic, psychological, and social support (Abbas and Siddiqui, 2011; Woo *et al.*, 2012), yielding improvements in opportunities through which individuals can live healthier lives (Modabbernia *et al.*, 2013; Valizadeh *et al.*, 2016; Liu *et al.*, 2018). In the present study, most of the single patients had a difficult time overcoming the comorbidities of CHB, thereby causing rapid deterioration in their HRQoL. Among selected cases, CHB-related comorbidities reduced the HRQoL to a greater extent than did the primary disorder itself. Additionally, when the frequency of referral to hospitals increased, CHB-related comorbidities also rose and, in turn, compromised the patients' HRQoL. Similarly, we could infer from the findings that an increase in the CHB patients' physical mobility diminished their self-sufficiency, which is a predictor of self-care. Accordingly, the patients were prevented from optimally using multiple therapies, ultimately contributing to the deterioration of their health and HRQoL scores.

The test on the hypotheses uncovered that fatigue, depression, and anxiety were negatively correlated with the interviewees' QoL, consistent with the findings of most previous studies. Other research reported that some of the important and commonly occurring symptoms that accompany CHB are anxiety and depression (Modabbernia *et al.*, 2013; Valizadeh *et al.*, 2016; Vedio *et al.*, 2017; Liu, A., *et al.*, 2018). In particular, these studies indicated that the aforementioned psychiatric disorders tend to occur in CHB patients within three months of disease onset and that the exacerbation or comorbidities with which these symptoms are associated compromise QoL. In Vietnam, the implication of such results for local and national healthcare systems centers on the necessity of monitoring CHB patients for anxiety and depressive symptoms, especially during the course of medical care. Such monitoring enables the timely provision of relevant psychological care, eventually avoiding the worsening of the condition or associated comorbidities, as well as re-hospitalization.

This study's outcomes, especially those that were gained from the follow-up interviews, suggested that a decrease in the CHB patients' QoL correlated with psychiatric disorders, such as low self-esteem and mood swings. However, the interview results do not support most of the literature in terms of the correlation between social support and QoL. Whereas past examinations asserted an unfavorable association between low social support and mental health (Lee *et al.*, 2011; Li *et al.*, 2012; Dam *et al.*, 2016; Lee *et al.*, 2016), the current work was unable to verify such relationship to a significant level. In previous studies, the relationship between high levels of social support and improvements in the QoL of CHB patients has been attributed to the significant improvement in the population's adherence to

antiviral regimens owing to encouragement derived from social support. With virologic responses obtained, significant QoL improvements tend to be reported—a trend that the current research failed to establish in the follow-up interviews.

The outcomes of this research also implied that CHB activation decreased the patients' HRQoL through the predictive mechanism of moderating factors that range from clinical features to socio-demographic characteristics. During the condition's active term, the patients receiving therapy tended to experience body pain. Nevertheless, access to therapy translates into increased HRQoL because this avoids the development of CHB-related complications. The increase in these patients' HRQoL, despite the presence of body pain, is attributed to a given intervention's effectiveness in reducing anxiety while improving social function and mental status. These benefits are especially prominent when antiviral therapy is implemented.

One of the limitations of the research is that the sample comprised CHB patients from a tertiary healthcare institution, which means that the data revolve around patients with complicated or advanced liver disease. Ultimately, this composition points to the possibility of biased outcomes. The study also examined the correlation between HRQoL and the possible role of HBV infection and socio-demographic factors but disregarded the impact of possible moderating factors, such as abnormality in laboratory tests. Finally, the study did not employ a disease-specific instrument, yet such an approach is more sensitive or responsive to HRQoL comparisons among target disease groups (Abbas and Siddiqui, 2011; Lee *et al.*, 2011; EASL clinical practice guidelines: Management of chronic hepatitis B virus infection, 2012; Nasrin *et al.*, 2018).

## CONCLUSION

The asymptomatic hepatitis patients exhibited better HRQoL than that shown by the post-liver transplant patients. The greater the severity of CHB, the lower the HRQoL of the patients. Anxiety, depression, and fatigue were negatively correlated with health utility. Given this backdrop, an imperative for the local and national healthcare systems of Vietnam is to implement sensitization programs designed to increase the number of patients seeking antiviral therapy as this is expected to minimize anxiety while improving the social functioning and mental health of afflicted individuals.

## CONFLICTS OF INTERESTS

The authors have no conflicts of interests to declare.

## ACKNOWLEDGMENTS

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