

## Original Article

# Determinants of quality of life among COVID-19 patients in Southwestern region of Bangladesh

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## ABSTRACT

**Objectives:** The outbreak of COVID-19 has caused an unprecedented health crisis and dramatically changed human lives. This study aims to identify risk factors related to health-related quality of life (HRQoL) among COVID-19 patients who were discharged from the hospital.

**Material and Methods:** A total of 557 COVID-19 patients of Jhenaidah district of Bangladesh who had tested positive before February 1 of 2021 were selected for this cross-sectional study. The EuroQol 5-dimensional-5 level questionnaire was used to measure the HRQoL. Thai value set was used to assess the full health status. Chi-square test was used to find out the association of HRQoL with sociodemographic and clinical factors. Finally, logistic regression was used to find out the predictors of the dimensions of HRQoL.

**Results:** Using the Thai value set, it is observed that 57.27% of participants had reported that they had experienced moderate or severe health problems. About 40.57% of the respondent reported anxiety or depression, whereas 39.14% of the participants had experienced moderate or severe pain or discomfort. The result of the logistic regression showed that age, gender, occupation, place of care, heart problems, and diabetes significantly affect various dimensions of the HRQoL.

**Conclusion:** The COVID-19 significantly depletes the health condition of the patients in both mental and physical aspects. Therefore, the policy-makers and government should need to come with comprehensive strategies to reduce the psychological and physical health woe of COVID-19 patients.

**Keywords:** Health-related quality of life, EuroQol 5-dimensional-5 levels, COVID-19, Mental health, Physical health

## INTRODUCTION

“The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus” was initially discovered in Wuhan, Hubei Province, China, on December 31, 2019; within just 3½ months, March 11, 2020, the WHO needed to declare as pandemic.<sup>[1]</sup> To prevent worldwide transmission, several public health measures including home confinement, quarantine, lockdown, border closure, entry ban, physical distancing, hospitalization, isolation, and closure of academic and non-academic institutions are adopted globally.<sup>[2]</sup> Undoubtedly, the status of health emergency and quarantine has a high interest in monitoring the pandemic spread. However, everything has its own demerits. Patients’ daily lifestyle including life satisfaction and social participation hamper for all the public health interventions.

The virus is rapidly spread worldwide being a reason for thousands of human deaths. In just less than 4 months (April

25, 2020) since the first detection, this infectious disease has extended to 210 countries and regions throughout the world.<sup>[1]</sup> Worldwide, the total infected cases were at 181,344,244 and 3,934,252 deaths, as of July 28, 2021.<sup>[3]</sup> Bangladesh is trying to cope with the pandemic situation like other countries, but the lower-middle economy, population density, and million refugees make the task more complicated. A total of 904,436 confirmed cases of COVID-19 and 14,388 total deaths were reported up to July 28, 2021.<sup>[3]</sup>

COVID-19 deteriorates the physical health and psychiatric conditions of the patients. It affects patients’ pulmonary system, multiple organ systems including cardiovascular, neurological, hematopoietic, and psychological.<sup>[4]</sup> Moreover, tremendous and uncountable losses of the economic growth throughout the world in 1 year have been shaken up their economic and social life. As a result, in addition to the

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physical problem, they face post-traumatic stress disorder symptoms, infection fears, anxiety, boredom, depression, confusion, anger, and insomnia on a regular basis for a long duration of quarantine, inadequate supplies, and financial and information loss.<sup>[1,2,4]</sup> Therefore, it is essential to measure the health status of COVID-19 patients in a multidimensional prospective that covers physical, psychological, and social domains.

Health-related quality of life (HRQoL) is a vital measure for assessing both the quantity (life years) and quality (health status) of health.<sup>[2]</sup> Several methods were developed to quantify HRQoL. In outcome and clinical research, a common tool named the EuroQol 5-dimensional-5 levels (EQ-5D-5L) is commonly used to measure HRQoL by assembling five health dimensions (self-care, usual activities, mobility, depression/anxiety, and pain/discomfort).<sup>[1]</sup> It is developed by the popular EuroQol group. Using the EQ-5D Bangla version, the health-related of quality of life of COVID-19 patients and its predictors were assessed in this study.

## MATERIAL AND METHODS

### Study design and participants

This cross-sectional study was conducted on COVID-19 patients of Jhenaidah district, Bangladesh. Jhenaidah is located in the southwestern part of Bangladesh with an area of 1,964.77 km<sup>2</sup> and 1,771,304 populations. The survey was conducted on COVID-19-positive patients from March 1, 2021, to March 21, 2021. Information was collected through computer-assisted telephone interviews using a structured questionnaire. The participants were recruited through social media (e.g., Facebook). A total of 557 interviews were taken. Each of the interviews was recorded by a recorder along with completing the Google Forms of the questionnaire manually to assure the accuracy of the data. Participation was voluntary. The person who avoided the phone calls, who were disturbed to participate, performed incomplete interviews, and who were untraceable were excluded from the study.

### Sample size

Since in this study, HRQoL outcome was measured as a binary outcome, the following formula, which is recommended by Walters (2002),<sup>[5]</sup> has been used to determine the sample size,

$$n_{OR} = \frac{2(Z_{1-\alpha/2} + Z_{1-\beta})^2 / (\log OR_{binary})^2}{\bar{\pi}(1-\bar{\pi})}$$

Where,

$n_{OR}$  = Sample size

$Z_{1-\alpha/2}$  = Value of standard normal distribution for the 100(1- $\alpha/2$ ) percentiles.

$Z_{1-\beta}$  = Value of standard normal distribution for the 100(1- $\beta$ ).

$OR_{Binary}$  = Odds ratio

$\bar{\pi}$  = average proportion on the different group.

About 5% level of significance and 90% power were considered for the study. Since there was no previous study in Bangladesh on HRQoL of COVID-19 patients using the EQ-5D-5L instrument in Bangladesh, odds ratio and average proportion were used of Ping (2020)<sup>[6]</sup> which were used in this study. The odds ratio of the Ping's (2020)<sup>[6]</sup> study was ranging from 0.166 ( $\bar{\pi} = 0.013$ ) and 9.156 ( $\bar{\pi} = 0.017$ ). Using those values at 5% level of significance and 90% power, we get sample sizes 508 and 257. Finally, in a computer-assisted telephone survey conducted in 2019,<sup>[7]</sup> the overall response rate among the known eligible respondent was 89.0%. Adjusting the response rate, we got the sample size 570 and 288. Considering the complex nature of the HRQoL, we have chosen 570 as the final sample size of this study.

### Data collection

Data were collected from March 1, 2021, to March 21, 2021, in Jhenaidah, Bangladesh, during home confinement through telephone (or mobile) interviews and records review. We used an online structural questionnaire related to HRQoL of COVID-19 patients. We recorded each interview by a recorder and completed the Google Forms of the questionnaire manually to assure the accuracy of the data. By briefing the actual motive of the data collection, informed consent was attained from the participant. Hence, the participation was voluntary. We have made the phone call to 570 patients. Among those patients, 13 patients, who avoided the phone calls or were disturbed to participate or performed incomplete interviews, or were untraceable, were excluded from the study. Therefore, the final study population was 557.

### Measures

#### HRQoL

We used the instrument EuroQol 5D (EQ-5D)<sup>[8]</sup> for assessing the HRQoL of the COVID-19 affected patients. It is a common instrument developed by the EuroQol group.<sup>[8]</sup> The instrument comprises a descriptive system and a visual analog scale (EQ-VAS).<sup>[2]</sup> This descriptive system consists of five health dimensions: Mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The overall health status of the patients can be determined by the EQ-5D instrument. To measure patients' response, each of the dimensions for defining all possible health states has five levels (no problems, slight problems, moderate problems, severe problems, and unable to/extreme problems).<sup>[1]</sup> The EQ-VAS was a hash marked scale and had a range from 0 to 100, where, 0 presents the worst imaginable health and 100 for the best imaginable health.<sup>[2]</sup> There are many applicable

values sets to determine the values of overall health states such as the Iranian interim EQ-5D-5L value set, the Vietnam EQ-5D value set, nonetheless, we used the Thai value set.<sup>[9]</sup>

### Sociodemographic and clinical factors

The independent variables used in this study were categorized as sociodemographic and clinical factors such as gender, age, education, occupation, physical exercise, body mass index (BMI), comorbidities, and place of care.

### Statistical analysis

Frequency and percentage distribution were used to show the descriptive nature. Chi-square test was deployed to find out the association between the domains of HRQoL and sociodemographic and clinical factors. Finally, binary logistic regression was fitted to find out the predictors of HRQoL. All the statistical analyses were performed using R-programming version 4.0.

### Ethical statement

The participation of COVID-19 patients in this study was voluntary for this study. The objective and nature of this study were explained to each participant, and their informed consent was taken before the interview. The unanimity of the participants was ensured, and the guidelines of Helsinki Declarations for conducting any study using human subjects were followed in this study.

## RESULTS

### Sociodemographic and clinical characteristic of participants

A total of 557 participants (417 males and 140 females) responded to the survey. Most of the participants (51.17%) were less than 41 years old. About 19.93% of participants were in the age group of 41–49 years and the rest (more than 50 years) were 28.90%. Concerning the education level, the majority (58.89%) have higher education (more than 10 years), 35.01% have an education level of 6–10 years, and 6.10% have less than 5 years. About 52.78% service holders participated in this study, 13.29% were unemployed, and the rest (33.93%) had other jobs. About 32.68% commit to regular exercise and 67.32% don't do it regularly. We found 83.30% of the participants took treatments at home when they became COVID-19 positive and 16.70% were treated in hospital. The majority (52.06%) had normal weight, 43.45% had overweight, and the least (4.49%) had underweight. About 8.98% of the participants reported that they suffered from a heart problem. Most patients (82.23%) informed that they did not have hypertension, and 15.26%

had diabetes. It was a matter of joy that 98.38% of the patients had no stroke.

### Health-related quality of life

Among the five dimensions of EQ-5D-5L, only 15.26% reported moderate or severe mobility problem. The percentage of moderate or severe usual activities problem was 11.85. The most frequently reported problems were anxiety and depression, approximate two-fifth of the participants described moderate or severe problem. Whereas, a tiny fraction (2.51%) of the respondents felt moderate or severe problem for self-care. Using the Thai value set,<sup>[9]</sup> the overall health states was determined. More than half (57.27%) of the study population faced moderate or severe problem.

### Association of HRQoL with sociodemographic and clinical factors

There are 11 variables including gender, age, education, occupations, regular exercise, place of care, BMI, heart problem, hypertension, diabetes, and stroke. Dependent variables – quality, mobility, self-care, usual activities, pain discomfort, and anxiety-depression all are categorical variables. Among the participants, women (25%) were more interested to report the problem in mobility than men (12%). Similarly, women reported the most problem in self-care and usual activities than men (7.1% compare to 1% and 22.9% compare to 8.2%, respectively). Compare to others age group, 50+ age group people were more likely to indicate a problem in mobility (25.5%), usual activities (16.6%), pain discomfort (58.4%), and anxiety-depression (53.4%). Opposite result was found for quality of life of the people cured from COVID-19. Among the groups, less than 41 years age people were more likely to report severe problem in context of their life quality (63.9%). Less than 5 years educated respondents claimed that they felt the problem in quality (67.6%) and usual activities (20.6%) compare to other groups. On the other hand, people who had 6–10 years of education were more likely to face anxiety-depression (52.8%). Unemployed participants reported the problem in mobility (32.4%), self-care (10.8%), usual activities (23%), and anxiety-depression (47.3%) than other groups. Compare to the people had a tendency to exercise regularly, no regular exercise respondents were more likely to face anxiety-depression problem (46.1%). Respondents receiving care in the hospital during COVID-19 reported the most problem in mobility (25.8%), self-care (6.5%), and usual activities (20.4%). Those who had heart problem were more likely to report problem in mobility (46%), usual activities (30%), pain discomfort (54%), and anxiety-depression (56%). About 22.2% and 52.5% of respondents who had hypertension problem reported the problem in mobility and anxiety-depression, respectively. On

the contrary, people who had no hypertension problem were more likely to report problem in quality of life and similar result was found for diabetic people (60.2%). Majority of the respondents (88.9%) who had any stroke history were more prone to anxiety-depression.

### Logistics regression

Table 1 presents the odds ratio of the risk factors for different domains for COVID-19 patients. The logistic regression demonstrated that gender, age, occupation, place of care, and heart problem had a significant association with mobility dimension. Male had 0.304 times (OR = 0.304 CI: 0.166–0.552) fewer mobility difficulties than female whereas aged people had faced great difficulties (for people aged more than 50, OR = 3.92, CI: 2.03–7.75,  $P < 0.001$ ) in mobility compared to the people aged less than 41. People who were service holders had 64% less (OR = 0.354, CI: 0.173–0.726) mobility problem than unemployed people (maximum unemployed people are in <18 or 50+ age group). Place of care is a significant factor to determine COVID-19 patient's post-COVID-19 health conditions. People who had to take treatment in a hospital were more likely (OR = 1.971 CI: 1.056–3.615) to face mobility difficulties. Heart patients were more likely to face mobility difficulties compared to the people who had no heart problem.

Gender, occupation, place of care, and heart problems were significantly associated with the self-care module. Male had 0.123 times (OR = 0.123, CI: 0.028–0.435) fewer self-caring problems than female. Service holders were felt 92% (OR = 0.079, CI: 0.010–0.370) fewer problems in self-caring than unemployed people while the people who were involved in other occupations felt 76% (OR = 0.240, CI: 0.059–0.854) fewer problems in self-caring compared to unemployed people. People who took treatment in hospital (OR = 3.665, CI: 1.037–12.456) and the people who had heart problem (OR = 8.969, CI: 2.407–34.280) were more likely to face difficulties in self-caring.

Results showed that male (OR = 0.269, CI: 0.146–0.492), age (age group 41–49: OR = 2.626, CI: 1.226–5.593; and age group more than 50: OR = 2.312, CI: 1.144–4.720), service holder (OR = 0.422, CI: 0.192–0.937), care at hospital (OR = 2.137, CI: 1.106–4.024), and heart problem (OR = 2.771, CI: 1.294–5.768) were significantly associated with usual activities dimension.

People aged more than 50 were more prone (OR = 3.089, CI: 2.024–4.741) to feel pain or discomfort in their body compared to the people aged less than 41. Diabetic people were more likely (OR = 1.689 CI: 1.032–2.774) to have pain or discomfort.

Educated people such as people who had education more than 10 years were less prone (OR = 0.51, CI: 0.33–0.78) to feel

**Table 1:** Multivariate logistic regression analysis results.

Dimensions	Variables	Odds ratio (95% CI)	p-value
Mobility	Gender		
	Female (ref)	1.00	
	Male	0.304 (0.166, 0.552)	0.000
	Age		
	Less than 41 (ref)	1.00	
	41–49	3.247 (1.55, 6.845)	0.002
	More than 50	3.92 (2.031, 7.748)	0.000
	Occupations		
	Unemployed (ref)	1.00	
	Service holder	0.354 (0.173, 0.726)	0.004
	Others	0.307 (0.147, 0.641)	0.002
	Regular exercise		
	No (ref)	1.00	
	Yes	0.716 (0.395, 1.262)	0.258
	Place of care		
	Home (ref)	1.00	
	Hospital	1.971 (1.056, 3.615)	0.03
Body mass index			
Normal weight (ref)	1.00		
Overweight	1.206 (0.659, 2.184)	0.539	
Obesity	1.831 (0.849, 3.859)	0.116	
Heart problem			
No (ref)	1.00		
Yes	4.157 (2.070, 8.350)	0.000	
Hypertension			
No (ref)	1.00		
Yes	1.776 (0.945, 3.282)	0.069	
Self-care	Gender		
	Female (ref)	1.00	
	Male	0.123 (0.028, 0.435)	0.002
	Occupations		
	Unemployed (ref)	1.00	
	Service holder	0.079 (0.010, 0.370)	0.004
	Others	0.240 (0.059, 0.854)	0.032
	Place of care		
	Home (ref)	1.00	
	Hospital	3.665 (1.037, 12.456)	0.037
Heart problem			
No (ref)	1.00		
Yes	8.969 (2.407, 34.280)	0.001	

(Contd...)

**Table 1: (Continued).**

Dimensions	Variables	Odds ratio (95% CI)	p-value
Usual Activities	Gender		
	Female (ref)	1.00	
	Male	0.269 (0.146, 0.492)	0.000
	Age		
	Less than 41 (ref)	1.00	
	41–49	2.626 (1.226, 5.593)	0.012
	More than 50	2.312 (1.144, 4.720)	0.019
	Education		
	6–10 years (ref)	1.00	
	Less than 5 years	1.495 (0.520, 3.945)	0.431
	More than 10 years	0.955 (0.498, 1.846)	0.891
	Occupations		
	Unemployed (ref)	1.00	
	Service holder	0.422 (0.192, 0.937)	0.032
	Others	0.487 (0.223, 1.066)	0.069
Place of care			
Home (ref)	1.00		
Hospital	2.137 (1.106, 4.024)	0.021	
Heart problem			
No (ref)	1.00		
Yes	2.771 (1.294, 5.768)	0.007	
Pain discomfort	Age		
	Less than 41 (ref)	1.00	
	41–49	1.501 (0.939, 2.387)	0.087
	More than 50	3.089 (2.024, 4.741)	0.000
	Heart problem		
	No (ref)	1.00	
Yes	1.271 (0.683, 2.371)	0.447	
Diabetes			
No (ref)	1.00		
Yes	1.689 (1.032, 2.774)	0.037	
Anxiety- depression	Age		
	Less than 41 (ref)	1.00	
	41–49	0.945 (0.579, 1.529)	0.819
	More than 50	1.407 (0.892, 2.217)	0.141
	Education		
	6–10 years (ref)	1.00	
Less than 5 years	0.774 (0.353, 1.694)	0.520	
More than 10 years	0.510 (0.332, 0.782)	0.002	

(Contd...)

**Table 1: (Continued).**

Dimensions	Variables	Odds ratio (95% CI)	p-value
Full health	Occupations		
	Unemployed (ref)	1.00	
	Service holder	0.996 (0.561, 1.789)	0.989
	Others	0.964 (0.524, 1.777)	0.906
	Regular exercise		
	No (ref)	1.00	
	Yes	0.436 (0.286, 0.655)	0.000
	Heart problem		
	No (ref)	1.00	
	Yes	1.250 (0.648, 2.410)	0.502
	Hypertension		
	No (ref)	1.00	
	Yes	1.580 (0.984, 2.541)	0.058
	Diabetes		
	No (ref)	1.00	
Yes	1.919 (1.141, 3.247)	0.014	
Stroke			
No (ref)	1.00		
Yes	8.563 (1.412, 165.469)	0.051	
Age			
Less than 41 (ref)	1.00		
41–49	0.826 (0.524, 1.309)	0.413	
More than 50	0.595 (0.388, 0.912)	0.017	
Education			
6–10 years (ref)	1.00		
Less than 5 years	2.051 (0.958, 4.628)	0.072	
More than 10 years	1.283 (0.879, 1.871)	0.195	
Hypertension			
No (ref)	1.00		
Yes	0.663 (0.419, 1.046)	0.077	
Diabetes			
No (ref)	1.00		
Yes	0.574 (0.349, 0.937)	0.027	

anxiety or depression. Result shows that regular exercise plays a significant role in reducing anxiety or depression. People who exercise regularly were 56% less likely (OR = 0.44, CI: 0.29–0.66) to feel anxiety or depression in post-COVID-19 period compared to the people who did not exercise regularly. Diabetic people were more likely (OR = 1.92, CI: 1.14–3.25) to feel anxiety or depression than non-diabetic people.

People who were aged more than 50 experiencing 40% less bad quality of life than people aged less than 41. Diabetic

people were less likely (OR = 0.574, CI: 0.349, 0.937) to have bad quality of life.

## DISCUSSION

To the best of our knowledge, the present study is one of the few studies to examine the factors associated with HRQoL (mobility, self-care, usual activities, pain discomfort, anxiety-depression symptoms, and full health) among COVID-19 at Jhenaidah district in Bangladesh. This study highlights that 40.57% of COVID-19 patients reported anxiety or depression. In a survey on the mental health of COVID-19 patients in Bangladesh, Hassan *et al.* (2021)<sup>[10]</sup> found that 47.7% of COVID-19 patients of Bangladesh suffered from anxiety or depression. Whereas, in another study on COVID-19 patients in Bangladesh, Abir *et al.* (2021)<sup>[11]</sup> observed that 49% of COVID-19 patients of Bangladesh had experienced moderate or severe depression while the percentage for anxiety was 73%. The current study also demonstrates that 39.14% of the respondent suffered from pain or discomfort. A similar result was also observed in a study in Brazil by Todt *et al.* (2021);<sup>[12]</sup> they found that 39.5% of the COVID-19 patients, after 3 months of discharge from the hospital, report pain and discomfort. However, in an international cross-sectional study, Shah *et al.*<sup>[13]</sup> reported that 81.1% of COVID-19 patients suffered from pain or discomfort. The result of the study also illustrated that, in general, 42.27% of the respondents experienced moderate to several health problems. A multicenter follow-up study of HRQoL of COVID-19 patients of China also illustrated that 57.6% of patients reported physical issues after 3 months of discharge.<sup>[14]</sup>

This study highlighted that sex, age, occupation, place of care, and heart problem were significant factors for the problem of mobility and usual activities, respectively, among COVID-19 patients released from the hospital. Sex, occupation, place of care, and heart problem were found statistically significantly associated with self-care problems among COVID-19 patients discharged from the hospital but age, and diabetes was found significant factors associated with pain discomfort and full health, respectively. Moreover, education, regular exercise, and diabetes were significant risk factors for anxiety and depression among COVID-19 patients discharged from the hospital. These findings would be beneficial for the government and policymaker for planning, creating, and executing proper mediations and addressing the limitations to developing the quality of health facilities of COVID-19 patients. In a similar study, Arab-Zozani *et al.* conducted on 400 COVID-19 patients and observed that gender, age, employed status, education, heart disease, diabetes, and hypertension were significant risk factors for EQ-5D-5L.<sup>[1]</sup> Mobility has played an important indicator in regulating COVID-19 spread in Bangladesh. A USA study has also reported that male patients were faced fewer mobility difficulties than female patients. As evident from another literature, gender had not a significant risk factor for mobility.<sup>[15]</sup> Interestingly, we also identified older patients (50 or above aged people) have face

larger mobility difficulties compared to patients age less than 41 years of age. A higher ratio of the elderly to young people was linked to a lower level of mobility among regions.<sup>[16]</sup> A study by Timenetsky *et al.* showed that patients' age was a significant risk factor associated with patients' mobility level in Brazil.<sup>[15]</sup> In this analysis, place of care was significant risk factors associated with mobility issues for COVID-19 patients. In the same context, patients had a greater risk of decline of mobility level when they stay in ICU during the COVID time.<sup>[15]</sup>

The current study revealed that male COVID-19 patients had fewer self-caring problems than female COVID-19 patients who were discharged from hospital. A recent case report indicated that gender was not a significant factor for self-caring problems.<sup>[17]</sup> As the study shows, service holders were less likely to have fewer self-caring problems than unemployed patients. Recent evidence shows that employees in Germany were lower attacked by COVID-19 because of their stable unemployment insurance procedure than people from other countries.<sup>[18]</sup> Specifically, we found that patients with heart disease were more prone to face difficulties in self-caring compared to their counterparts. One study showed that people who had heart problems were less likely to in self-protective behaviors.<sup>[17]</sup>

The findings demonstrated that older COVID-19 patients were less likely to have higher quality of life scores compares to the younger COVID-19 patients. Arab-Zozani *et al.* also found that younger patients had higher scores of HRQoL than older patients which imply that older patients who had been discharged from the hospital were more affected by COVID-19 than younger patients.<sup>[1]</sup>

The present study also showed that having diabetes had a significantly lower risk factor for the problem of quality of life among COVID-19 patients. Furthermore, a study suggested diabetes as a potential risk factor in 2019-nCoV infection.<sup>[19]</sup> Interestingly, we also identified that age is not a significant risk factor for anxiety and depression problems among COVID-19 patients after discharge from the hospital. On the other hand, older people were linked to a higher likelihood of anxiety levels compared to their counterparts in Portugal.<sup>[20]</sup> In the present study, significant differences were found between patients' anxiety problems those who attained 6–10 years in education and those who attained more than 10 years in education. These findings were opposite to that of previous research conducted in Portugal and detected those higher educated individuals were less likely to feel anxiety than lower educated people.<sup>[20]</sup>

## CONCLUSION

The findings of this study illustrate a significant number of COVID-19 patients experienced moderate or severe health problems. Moreover, approximately two-fifth of participants experienced pain or discomfort and anxiety or depression. Therefore, comprehensive steps should be taken to identify

strategies and programs to assist COVID-19 patients in recovering basic functioning and preventing mental health problems. This study also showed that demographic factors – age, gender, occupation, and clinical factors – the place of care, heart problems, and diabetes had a significant effect on the dimension of EQ-5D-5L HRQoL. Therefore, governments and policymakers must develop strategies to improve the HRQoL, especially giving importance to aging, patients with heart problems, and diabetes.

### Limitations

The authors are concerned with the limitation of telephone interviews which might not address some more precise information as unveiled by face-to-face interviews.

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### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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