To evaluate health-related quality of life (HRQoL) in Indian patients with COVID-19

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Abstract

The Corona virus pandemic caused by severe acute respiratory syndrome coronavirus 2 has infected more than 108 million people in over 150 countries. The vigilance around physical distancing, wearing masks, public health interventions, and social gatherings has eased off, and some countries have been hit by second and third waves due to their hasty easing off of spatial distancing measures. COVID-19 causes symptoms range from mild to life threatening conditions. Prolonged and sustain symptoms due to COVID-19 are observed not only in high-risk population such as elder patients and individuals with comorbid conditions but also in young adults and individual with no or less chronic disease. People with post COVID-19 are experiencing general symptoms (Tiredness or fatigue that interferes with daily life, post-exertional malaise, fever), respiratory and heart symptoms (shortness of breath, cough, chest pain, fast-beating or pounding heart), neurological symptoms (brain fog, headache, sleep problems, dizziness, pins-and-needles feelings, change in smell or taste, depression or anxiety), digestive symptoms (diarrhea, abdominal pain), joint or muscle pain, rash and changes in menstrual cycles. Chances of multiple organ failure is observed in patients with respiratory symptoms like, interstitial pneumonia and respiratory distress syndrome.

Keywords: respiratory and heart symptoms, neurological symptoms, digestive symptoms, joint or muscle pain, rash and changes in menstrual cycles

Introduction

The Corona virus pandemic caused by severe acute respiratory syndrome coronavirus 2 has infected more than 108 million people in over 150 countries [1]. The vigilance around physical distancing, wearing masks, public health interventions, and social gatherings has eased off, and some count ries have been hit by secondand third waves due to their hasty easing off of spatial distancing measures [2]. COVID-19 causes symptoms range from mild to life threatening conditions [3]. Prolonged and sustain symptoms due to COVID-19 are observed not only in high-risk population such as elder patients and individuals with comorbid conditions but also in young adults and individual with no or less chronic disease [4]. People with post COVID-19 are experiencing general symptoms (Tiredness or fatigue that interferes with daily life, post-exertional malaise, fever), respiratory and heart symptoms (shortness of breath, cough, chest pain, fast-beating or pounding heart), neurological symptoms (brain fog, headache, sleep problems, dizziness, pins-and-needles feelings, change in smell or taste, depression or anxiety), digestive symptoms (diarrhea, abdominal pain), joint or muscle pain, rash and changes in menstrual cycles [5]. Chances of multiple organ failure is observed in patients with respiratory symptoms like, interstitial pneumonia and respiratory distress syndrome [6].

Research of various studies indicated that medical complications were observed as a consequence of COVID-19 and long-term post COVID symptoms were observed in 11%-24% of Covid-19 patients even after three months [6-8]. Post Covid-19 symptoms may lead to very poor health-related quality of life of the patients. Impacts of post COVID illness are not only limit in terms of mortality and morbidity, but also expressed by the subjective measures of health-related quality of life [9]. Health-related quality of life

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is a multi-dimensional concept that includes domains related to physical, mental, social and emotional functioning [10]. Health-related quality of life (HRQoL) measurement tools like SF-36 (36-item Short-Form Health Survey), SF-6D (Short-Form 6 Dimension) and EQ-5D (Euro-Qol- 5 Dimension) are widely used to assess multi-dimensional domains of the health and well-being of different populations [11].

Research showed that patient isolation, social distancing, use of masks, local lockdown and closing borders had considerably reduced the spread of Covid-19 [12-13]. As a consequence of restriction in COVID-19, impact on economy and education occur with the concomitant loss of the physical and mental health, and quality of life of restricted patients [14-17]. Results of some research on impact of social distancing measures are associated with greater health economic, psychosocial, and physical risk [18-19]. However, data regarding the impact of Covid-19 on health-related quality of life (HRQoL) were scarcely available in the Indian population. Therefore, the aim of the present study was to evaluate HRQoL in Indian COVID-19 patients.

Methodology

This cross-sectional study was conducted in mild to moderate COVID-19 patients. Patients who had been diagnosed with COVID-19 approximately 6 months before the present study were included. According to the patient consent for the response, a total of 100 participants are included in systematic sampling in January 2022.

The EQ-5D-5L questionnaire, along with socio-demographic characteristics, were completed for patients by the telephonic and/ face to face interview after oral consent for participating in the study. Data for the collected health related quality of life is collected using the EQ-5D-5L tool. The first part of EQ-5D-5L divides health into five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension is divided into five levels; no problem (level 1), slight problem (level 2), moderate problem (level 3), severe problem (level 4), and extreme problem (level 5) [20]. The second part of the EQ-5D is the EQ visual Analogue scale (EQ-VAS) [21]. It records the respondent's self-reported health on a vertical visual analogue scale (VAS), where 0–100 represent the worst and best imaginable health states, respectively [22]. In the telephonic interview, participants were requested to imagine a scale of value zero to one-hundred and to describe their health state with a number between 0 and 100 to get the VAS value. A utility index of one denotes perfect health, and zero represents death.

With the use of Indian data set [23], EQ-5D index (Utility index) was calculated. Data was present in the form of frequency and percentage. Mean and Median of EQ-5D-5L index score (Utility index) and VAS score was calculated using Microsoft Excel.

Results

After giving oral consent, total 100 study participants have attempted telephonic and/ face to face interview and responded to the survey.

Demographic characteristics of respondents

The demographic characteristics of the respondents indicated that 38 respondents were female and 62 were male (Figure 1). Participants were categorised in two age groups one is old age group (>50 years) and the other is adults (<=50 years). As shown in graphical presentation Figure 2, 68 patients had age less than 50 years while 32 patients were belonged to the old age category. Participants were categorised into 2 groups based on their education i) gradute ii) undergraduate. 72 participants were found graduated and 28 had undergraduate study qualifications (Figure 3). The employment ratio had tremendously regressionated in COVID-19 and impact was found in the study data. In the present study, 24% participants were unemployed while 76% had jobs (Figure 4). The working place can have great impact on spread of COVID-19. As shown in Fig. 4.5, 50 out of 76 employed candidates were working in crowded area and this indicated that crowding is a potential threat in spread of COVID-19.
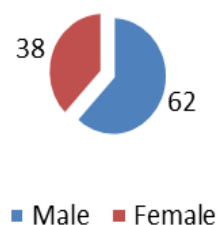

Fig 1: Gender

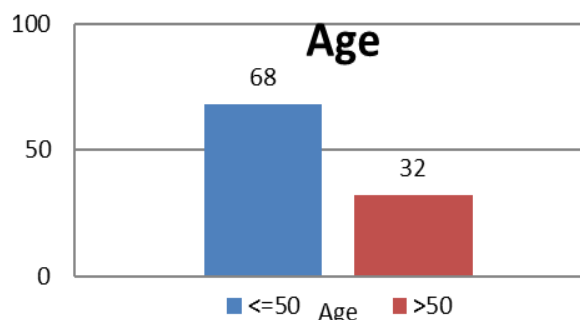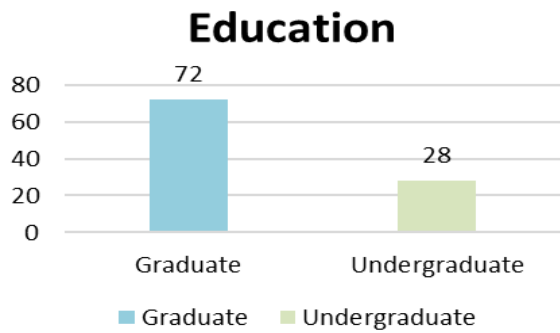*Fig 2:* Age

Education
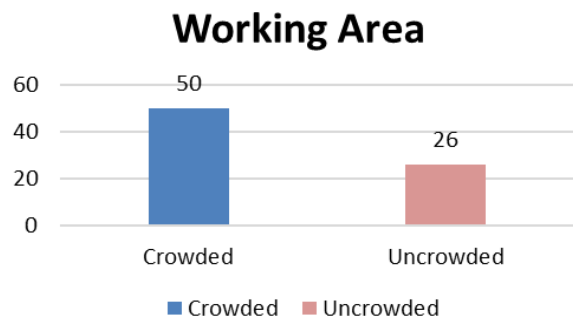
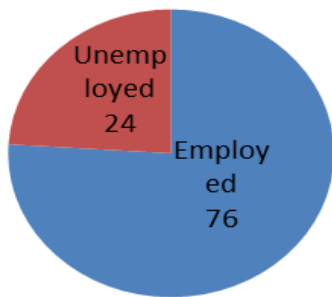## Working Area

Employment

The EuroQol 5-dimensional-5 levels (EQ-5D-5L) questionnaire results

The EQ-5D-5L includes 5 dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression). Each of the dimensions has 5 levels of response options (no problems, slight problems, moderate problems, severe problems, and unable to/extreme problems) to define all possible health states.

Mobility

As shown in the Figure 6, 78 participants had no problem in walking, 12 had slight problem, 5 participants with moderate and 3 with severe problem in mobility. However, only 2 participants were unable to walk.
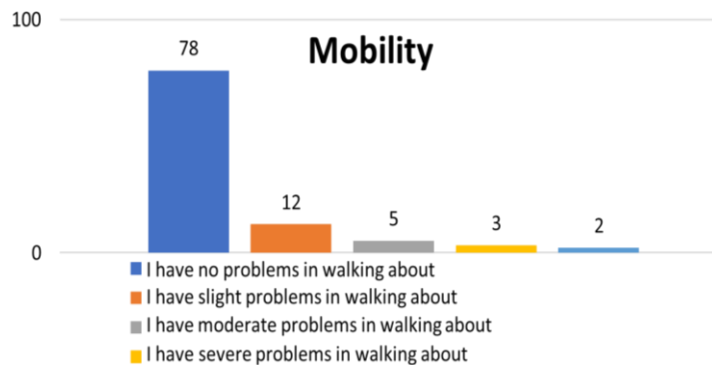
Self-care

As shown in Figure 7, 11 participants had no problems in their self-care in which mainly washing and dressings. Majority of the participant (58) had a slight problem, while 25 participants had moderate problem. Few participants had problems (5 with severe and 1 with extreme) in their selfcare.

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Usual Activities

As shown in the Figure 8, only 2 participants had reported no problems while doing their usual activity. Majority of study participants (70) experienced slight problem in doing their usual activity. 17 participants had moderate problems while few (9) participants had severe problem. Moreover, 2 participants were unable to do their usual activities.
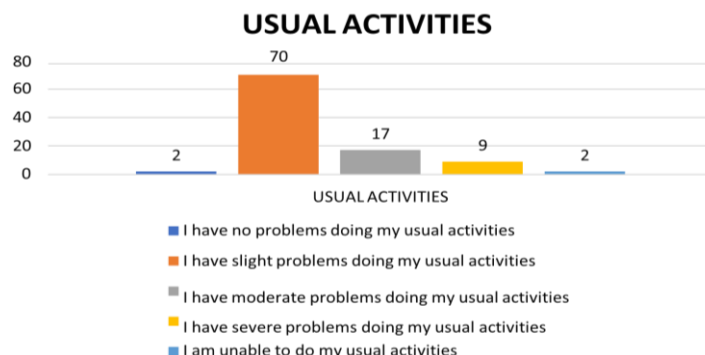
USUAL ACTIVITIES

- ■ I have no problems doing my usual activities
- ■ I have slight problems doing my usual activities
- ■ I have moderate problems doing my usual activities
- ■ I have severe problems doing my usual activities
- ■ I am unable to do my usual activities

Fig 8: Usual activities responses

Pain/Discomfort

As shown in the Figure 9, 54 participants had reported no pain or discomfort. 30 participate had reported slight pain, 10 participants with moderate, 3 with severe and 3 with extreme pain were reported.
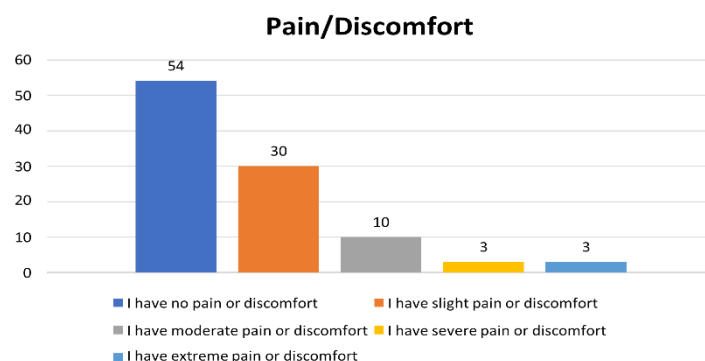
Pain/Discomfort

- ■ I have no pain or discomfort
- ■ I have slight pain or discomfort
- ■ I have moderate pain or discomfort
- ■ I have severe pain or discomfort
- ■ I have extreme pain or discomfort

Fig 9: Pain/Discomfort responses

Anxiety/Depression

As shown in the Figure 10, 60 participants showed no symptoms of anxiety or depression. Problem of anxiety and depression was slight in 18 participants. The other participants had moderate, severe, and extreme problem which are 14, 2, and 6 in numbers.

Anxiety/Depression

- ■ I am not anxious or depressed
- ■ I am slightly anxious or depressed
- ■ I am moderately anxious or depressed
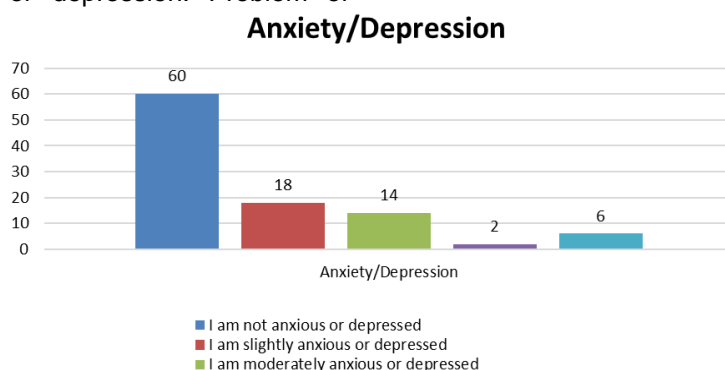
Fig 10: Pain/Discomfort responses

EQ-5D Index Score and VAS Score

A utility index of one denotes perfect health, and zero represents perfect inequality. With the use of Indian data set, EQ-5D index (Utility index) was calculated. Data were present in the form of frequency and percentage. Mean and Median of EQ-5D-5L index score (Utility index) and VAS score was calculated using Microsoft Excel. The average EQ-5D-5L Index score of 100 participants were calculated and found to be 0.734 with median 0.816. The average VAS score was found to be 72.83 with median 80.

Discussion

The COVID-19 pandemic has led to a dramatic loss of human life worldwide and presents an unprecedented challenge to public health, food systems and the world of work [24]. The imposition of

lockdown or movement restrictions to stop the virus spread has disproportionately affected the population. The impact of the COVID-19 pandemic on health, psychosocial behaviour, lifestyle changes, liv-

Table 1: Result of EQ-5D Index Score and VAS Score

	EQ-5D Index Score (Utility index)	VAS Score
Mean	0.734	72.83
Standard Deviation	0.23	19.4
Standard Error of Mean	0.023	1.9
Median	0.816	80

-elihood, sustainability of quality of life and social and human interactions have been reported worldwide [25-27]. Measures like identification of cases, isolation, quarantine, contact tracing, and community interventions imposed considerable burden on health of people. Standard measure of the quality of health status is a universally accepted and the comparable outcome tool require to describe the health of the population affected by COVID-19 and would be of immense value. Health-related quality of life refers to the impact of disease and treatment on patients' function and overall life satisfaction [28]. Clinicians and policymakers are recognizing the importance of measuring health-related quality of life (HRQL) to inform patient management and policy decisions [29].

The EQ-5D-5L questionnaire is a five level five-dimensional (mobility, selfcare, usual activities, pain/discomfort, and anxiety/depression) preference-based tool for the observation and quantification of HRQoL. The majority of the Covid-19 cases in the present study were male (62%) and less than 50 years of age (68%). In the present study, data were collected and EuroQol utility index value was calculated as per Indian data set [23] for COVID-19 recovered Indian population after 6 months of confirmation of COVID-19. Index score value 0 denote for the death and 1 for the perfect health while negative value indicates life worse than death [30,31]. In the present study, the mean EQ-5D index score among COVID-19 patients on 6 months after discharge was 0.734 (SD = 0.228). This means that patients who suffered from COVID-19 lost an average of 26.6% of their HRQoL. This finding is similar to a study in Iran that reports an EQ-5D index score of 0.612 [32] and a Belgian study with an EQ-5D index score of 0.620 [33], but our findings are substantially lower than those of studies from Norway (EQ-5D index score: 0.820) [34], China (EQ-5D index score: 0.949) and Hong Kong (EQ-5D index score:

0.897). [35,36]. Variations in the HRQOL evaluation method employed (i.e., health utility tariff, tools, scale, study participant sampling) may also, to some extent, contribute to the discrepancy. Visual Analog Scale (VAS) is a most widely used simple and practical approach to elicit patient health value functions, through evaluating their own health-related quality of life [37-39]. The overall mean VAS score was 72.83 (median = 80) in our study. This was similar with study from Egypt (72.2) [35], Peru (76) [36], Spain (66.36) [32], China (85.52) [35]. and Addis Ababa, Ethiopia (69.44) [40].

However, our study has some limitations. First, because the study collected HRQoL data based on patient preferences, the patients might over or underestimated their health status during the interview. Moreover, due to the study's cross-sectional design, we could not compare the HRQoL of patients before the Covid-19 infection.

Conclusion

The Covid-19 disease substantially impaired the HRQoL of Indian patients for a sustained period. Therefore, close clinical follow up and psychological treatment should be encouraged. This study helps policymakers and other authorities to develop policy for overcoming issues affecting quality of life of Covid-19 patients.

Conflict of Interest

The author declares that he has no competing interests.

Informed Consent

N/A

References

1. World Health Organization. WHO Coronavirus Disease (COVID-19) Dashboard.

2. Han, E., Tan, M. M. J., Turk, E., Sridhar, D., Leung, G. M., Shibuya, K., ... & Legido-Quigley, H. (2020). Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe. The Lancet, 396(10261), 1525-1534.

3. Kakodkar, P., Kaka, N., & Baig, M. N. (2020). A comprehensive literature review on the clinical presentation, and management of the pandemic coronavirus disease 2019 (COVID-19). Cureus, 12(4).

4. Tenforde, M. W., Kim, S. S., Lindsell, C. J., Billig Rose, E., Shapiro, N. I., Files, D. C., ... & Wu, M. J. (2020). Symptom duration and risk factors for delayed return to usual health among outpatients

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with COVID-19 in a multistate health care systems network—United States, March–June 2020. Morbidity and mortality weekly report, 69(30), 993-998.

5. Centres for Disease Control and Prevention. Long COVID or Post-COVID Conditions.

6. World Health Organisation. What we know about Long-term effects of COVID-19 (coronavirus update 36). 2020.

7. Ding, H., Yin, S., Cheng, Y., Cai, Y., Huang, W., & Deng, W. (2020). Neurologic manifestations of nonhospitalized patients with COVID-19 in Wuhan, China. MedComm, 1(2), 253.

8. Cirulli E, Barrett KMS, Riffle S, Bolze A, Neveux I, Dabe S, Grzymski JJ. Long-term COVID-19 symptoms in a large unselected population. Medrxiv, 2020.

9. Guo, L., Lin, J., Ying, W., Zheng, C., Tao, L., Ying, B., ... & Hu, B. (2020). Correlation study of short-term mental health in patients discharged after coronavirus disease 2019 (COVID-19) infection without comorbidities: a prospective study. Neuropsychiatric Disease and Treatment, 2661-2667.

10. Office of Disease Prevention and Health Promotion (ODPHP). Health-related quality of life and well- being. 2020.

11. Pequeno, N. P. F., Cabral, N. L. D. A., Marchioni, D. M., Lima, S. C. V. C., & Lyra, C. D. O. (2020). Quality of life assessment instruments for adults: a systematic review of population-based studies. Health and quality of life outcomes, 18(1), 1-13.

12. Courtemanche, C., Garuccio, J., Le, A., Pinkston, J., & Yelowitz, A. (2020). Strong Social Distancing Measures In The United States Reduced The COVID-19 Growth Rate: Study evaluates the impact of social distancing measures on the growth rate of confirmed COVID-19 cases across the United States. Health affairs, 39(7), 1237-1246.

13. Qian, M., & Jiang, J. (2022). COVID-19 and social distancing. Zeitschrift fur Gesundheitswissenschaften = Journal of public health, 30(1), 259–261.

14. de Matos, D. G., Aidar, F. J., Moreira, O. C., Souza, R. F., Marçal, A. C., Soares, L., Martins Júnior, F. D., Lobo, L. F., dos Santos, J. L., Guerra, I., Neves, E. B., Tinoco Cabral, B. G., & Reis, V. M. (2020). The Impact of Measures Recommended by the Government to Limit the Spread of Coronavirus (COVID-19) on Physical Activity Levels, Quality of Life, and Mental Health of Brazilians. Sustainability, 12(21), 9072.

15. Samrah, S. M., Al-Mistarehi, A. H., Aleshawi, A. J., Khasawneh, A. G., Momany, S. M., Momany, B. S., ... & Khassawneh, B. Y. (2020). Depression and coping among COVID-19-infected individuals after 10 days of mandatory in-hospital quarantine, Irbid, Jordan. Psychology research and behavior management, 823-830.

16. Nguyen, H. C., Nguyen, M. H., Do, B. N., Tran, C. Q., Nguyen, T. T. P., Pham, K. M., Pham, L. V., Tran, K. V., Duong, T. T., Tran, T. V., Duong, T. H., Nguyen, T. T., Nguyen, Q. H., Hoang, T. M., Nguyen, K. T., Pham, T. T. M., Yang, S. H., Chao, J. C., & Duong, T. V. (2020). People with Suspected COVID-19 Symptoms Were More Likely Depressed and Had Lower Health-Related Quality of Life: The Potential Benefit of Health Literacy. Journal of clinical medicine, 9(4), 965.

17. Tran, B. X., Nguyen, H. T., Le, H. T., Latkin, C. A., Pham, H. Q., Vu, L. G., ... & Ho, R. C. (2020). Impact of COVID-19 on economic well-being and quality of life of the Vietnamese during the national social distancing. Frontiers in psychology, 11, 565153.

18. Tull, M. T., Edmonds, K. A., Scamaldo, K. M., Richmond, J. R., Rose, J. P., & Gratz, K. L. (2020). Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. Psychiatry research, 289, 113098.

19. Hamadani JD, Hasan MI, Baldi AJ, Hossain SJ, Shiraji S, Bhuiyan MSA, Mehrin SF, Fisher J, Tofail F, Tipu SMMU, Grantham-McGregor S, Biggs BA, Braat S, Pasricha SR. Immediate impact of stay-at-home orders to control COVID-19 transmission on socioeconomic conditions, food insecurity, mental health, and intimate partner violence in Bangladeshi women and their families: an interrupted time series. Lancet Glob Health, 2020;8(11):e1380-e1389.

20. Whitehead, S. J., & Ali, S. (2010). Health outcomes in economic evaluation: the QALY and utilities. British medical bulletin, 96(1), 5-21.

21. Emrani, Z., Akbari Sari, A., Zeraati, H., Olyaeemanesh, A., & Daroudi, R. (2020). Health-related quality of life measured using the EQ-5D–5 L: population norms for the capital of Iran. Health and quality of life outcomes, 18(1), 1-8.

22. Yin, S., Njai, R., Barker, L., Siegel, P. Z., & Liao, Y. (2016). Summarizing health-related quality of

How to cite this article: Varsha J. Galani, Niten Patel, (2022). To evaluate health-related quality of life (HRQoL) in Indian patients with COVID-19. Hospital and Clinical Management. 2(1).

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life (HRQOL): development and testing of a one-factor model. Population health metrics, 14, 1-9.

23. Computing EQ-5D-5L index values with SPSS using the Indian (Jyani et al) value set Version 1.1 (Updated 05/01/2022) Available on http://euroqol.org /wp-content/uploads/2022/03/India_valaue_SPSS.txt . (accessed 21 April 2022)

24. Joint statement by ILO, FAO, IFAD and WHO. Impact of COVID-19 on people's livelihoods, their health and our food systems. 13 October 2020.

25. Azizi, A., Achak, D., Aboudi, K., Saad, E., Nejjari, C., Nouira, Y., ... & Marfak, A. (2020). Health-related quality of life and behavior-related lifestyle changes due to the COVID-19 home confinement: Dataset from a Moroccan sample. Data in brief, 32, 106239.

26. Qu, G., Zhen, Q., Wang, W., Fan, S., Wu, Q., Zhang, C., Li, B., Liu, G., Yu, Y., Li, Y., Yong, L., Lu, B., Ding, Z., Ge, H., Mao, Y., Chen, W., Xu, Q., Zhang, R., Cao, L., Chen, S., … Sun, Y. (2021). Health-related quality of life of COVID-19 patients after discharge: A multicenter follow-up study. Journal of clinical nursing, 30(11-12), 1742–1750.

27. El Keshky, M. E. S., Basyouni, S. S., & Al Sabban, A. M. (2021). Corrigendum: Getting Through COVID-19: The Pandemic's Impact on the Psychology of Sustainability, Quality of Life, and the Global Economy–A Systematic Review. Frontiers in Psychology, 12, 700815.

28. Kharshiing, K. D., Kashyap, D., Gupta, K., Khursheed, M., Shahnawaz, M. G., Khan, N. H., ... & Rehman, U. (2021). Quality of life in the COVID-19 pandemic in India: Exploring the role of individual and group variables. Community mental health journal, 57, 70-78.

29. Guyatt, G. H., Feeny, D. H., & Patrick, D. L. (1993). Measuring health-related quality of life. Annals of internal medicine, 118(8), 622-629.

30. Herdman, M., Gudex, C., Lloyd, A., Janssen, M. F., Kind, P., Parkin, D., ... & Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). Quality of life research, 20, 1727-1736.

31. McCaffrey, N., Kaambwa, B., Currow, D. C., & Ratcliffe, J. (2016). Health-related quality of life measured using the EQ-5D–5L: South Australian population norms. Health and quality of life outcomes, 14(1), 1-12.

32. Arab-Zozani, M., Hashemi, F., Safari, H., Yousefi, M., & Ameri, H. (2020). Health-related quality of life and its associated factors in COVID-19 patients. Osong public health and research perspectives, 11(5), 296.

33. Meys R, Delbressine JM, Goërtz YMJ, Vaes AW, Machado FVC, Van Herck M, Burtin C, Posthuma R, Spaetgens B, Franssen FME, Spies Y, Vijlbrief H, Van't Hul AJ, Janssen DJA, Spruit MA, Houben-Wilke S. Generic and respiratory-specific quality of life in non-hospitalized patients with COVID-19. J Clin Med, 2020;9(12):3993.

34. Garratt, A. M., Ghanima, W., Einvik, G., & Stavem, K. (2021). Quality of life after COVID-19 without hospitalisation: good overall, but reduced in some dimensions. Journal of Infection, 82(5), 186-230.

35. Ping, W., Zheng, J., Niu, X., Guo, C., Zhang, J., Yang, H., & Shi, Y. (2020). Evaluation of health-related quality of life using EQ-5D in China during the COVID-19 pandemic. PloS one, 15(6), e0234850.

36. Wong, E. L. Y., Ho, K. F., Wong, S. Y. S., Cheung, A. W. L., Yau, P. S. Y., Dong, D., & Yeoh, E. K. (2022). Views on workplace policies and its impact on health-related quality of life during coronavirus disease (COVID-19) pandemic: cross-sectional survey of employees. International journal of health policy and management, 11(3), 344-353.

37. Lundberg, L., Johannesson, M., Isacson, D. G., & Borgquist, L. (1999). Health-state utilities in a general population in relation to age, gender and socioeconomic factors. The European Journal of Public Health, 9(3), 211-217.

38. Shmueli, A. (1999). Subjective health status and health values in the general population. Medical Decision Making, 19(2), 122-127.

39. EuroQol–A new facility for the measurement of health-related quality of life. The EuroQol Group. Health Policy 1990, 16:199-208.

40. Kastien-Hilka, T., Rosenkranz, B., Sinanovic, E., Bennett, B., & Schwenkglenks, M. (2017). Health-related quality of life in South African patients with pulmonary tuberculosis. PloS one, 12(4), e0174605.

How to cite this article: Varsha J. Galani, Niten Patel, (2022). To evaluate health-related quality of life (HRQoL) in Indian patients with COVID-19. Hospital and Clinical Management. 2(1).

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