

Quality Of Life Among People with Positive COVID-19 Experience in Semarang, Indonesia

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Abstract. The COVID-19 pandemic has affected many ways of life, especially among people who experience the infection. The pandemic negatively affected the physical, social, and psychological functioning of individuals and societies, worldwide. This study aimed to evaluate the extent to which key factors may influence the QoL of people with COVID-19 in Semarang, Indonesia. The online cross-sectional study recruited 107 participants. Adults (≥ 17 years of age) with positive COVID-19 infection history were targeted. Quality of life was measured with the WHOQOL-BREF questionnaire. The questions explain how respondents attribute to each aspect of their life and how problematic or satisfactory they perceive them for their overall quality of life. Results showed that the highest mean score was found for the social domain (14.112.89), and the lowest mean score was observed for the environment domain (13.272.01). The presence of comorbidities had a statistically significant difference in the environment domain (p-value:0.006). During the COVID-19 pandemic, people had less satisfaction with their environment. The presence of anxiety often promotes changes in the perception of QoL for all domains among respondents (p-value:<0.0001). Investing such resources in these groups may be an efficient option to maximize positive public health impacts in this resource-poor environment.

1 Background

The World Health Organization (WHO) announced the Coronavirus Diseases 2019 (COVID-19) as a global pandemic on 11 March 2020, and since then the disease has affected more than 200 countries in the world [1]. In Indonesia, the government announced the first case found on 2 March 2020 [2]. The Ministry of Health released several policies to reduce transmission, including an educational campaign on wearing masks, hand hygiene practices, and social distancing measures [3]. Simultaneously, the behavior of panic buying occurred,

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due to a significant reduction in the number of available resources, which induced fear and anxiety among the population [4].

Studies have shown that the pandemic negatively affected the physical, social, and psychological functioning of individuals and societies, worldwide [5]. A previous study in Saudi Arabia found that those who lost employment, have chronic diseases, and have higher levels of depression, anxiety, and stress, were at a higher risk of having a lower level of Quality of Life (QoL) during the pandemic [6]. The WHO defines QoL as an individual's perception of their position in life, in the context of the culture in which they live, and in relation to their goals, expectations, standards, and concerns [7]. As noted above, studies have shown that during the COVID-19 pandemic, the level of depressive symptoms and anxiety increased, lowering QoL among populations [8], highlighting the way in which the pandemic has significantly affected mental health [9].

While this is true in relation to the population in general, it is also important to understand the state of physical health status, social restrictions, and psychological states of people who have personally been infected with COVID-19. Previous research identified that persistent symptoms post-COVID-19 were significantly associated with QoL among patients [10]. The impact of post-COVID-19 on QoL was also identified in acute and long COVID-19 patients [11]. In particular, it is useful for policymakers to expand understanding of the way that environmental, social, and spiritual/religious factors may be used to predict individuals' experiences with COVID-19, and potentially be leveraged to inform government public health policies and programs. With this objective, our study aimed to evaluate the extent to which key factors may influence the QoL of people with COVID-19 in Semarang, Indonesia.

2 Methods

A cross-sectional, quantitative, survey-based study was undertaken to elicit information from a broad sample of the population of Semarang, Indonesia. A link of the Kobo toolbox online survey (<https://bit.ly/QOL-COVID>) was placed on Facebook and circulated via WhatsApp from the 4th of February until the 30th of March 2022. Adults (≥ 17 years of age) with positive COVID-19 infection history were targeted and their personal experiences were shared anonymously. Due to the anonymity of the online survey, the study was exempt from ethical review with the number 027/KEPK/EC/2022 by Ethical Board Universitas Negeri Semarang. Participants in this study were voluntary. All aspects regarding identity and personal information were kept confidential. One hundred and fifty-five people participated in the study. Those who did not have positive COVID-19 infection history were excluded, and the data of 107 participants were analyzed.

Quality of life was measured with the WHOQOL-BREF questionnaire. The questions explain how respondents attribute to each aspect of their life (physical, psychological, social, and environmental) and how problematic or satisfactory they perceive them for their overall quality of life. The WHOQOL tools (WHOQOL-100 and WHOQOL-BREF) were developed using cross-cultural, multinational studies on the concept of QoL across 15 countries and 30 centers globally [12]. The WHOQOL-BREF contains 26 items: 24 items of the WHOQOL-BREF were categorized into four domains (physical (7 items), psychological (6 items), social (3 items), and environmental (8 items), with two things not considered where one item measures overall QoL (item 1) and another item gauges the level of satisfaction with health (item 2). The score of each question for each domain was used to obtain a summarized domain score, and finally, all the scores were linearly transformed according to the "WHOQOL-BREF guidelines". A higher score of a domain indicated higher levels of QoL compared to the rest of the sections and vice versa. The questionnaire was translated into Bahasa Indonesia, and the Cronbach's alpha was observed to be 0.821. Demographic

characteristics measured were gender, marital status, educational level, comorbidities, and anxiety. Anxiety was measured in general by asking if the respondent felt any anxiety symptoms through Generalised Anxiety Disorder Questionnaire (GAD-7). Respondent with any anxiety symptom was categorized as respondent with anxiety.

Data were analyzed using IBM statistics. Descriptive statistics were used to evaluate the demographics and level of anxiety of participants. Frequencies and percentages were used for the categorical variables, while means and standard deviations were calculated for the continuous variables. The Shapiro-Wilk test examined normality distribution. The Independent Sample T-Test was used to evaluate statistical differences for average distribution data (total QOL, Physical, Psychosocial, and Environment domains). In contrast, the Mann Whitney test was used for non-normal distribution data (Social field).

3 Results

The demographic characteristics of the study participants (n=107) are presented in Table 1. Female participants were comparatively more than males (n=70, 53.3%, and n=37, 46.7% respectively). Fifty-four (50.5%) individuals were married, fifty-three (49.5%) had a high school level of education, nineteen (17.8%) had comorbidities, and fifty (46.7%) had anxiety.

Table 1. Demographic characteristics of the study participants (n=107)

Description	Frequency	%
Gender		
Male	37	46.7
Female	70	53.3
Marital status		
Single/Separated	53	49.5
Married	54	50.5
Educational Level		
High School	53	49.5
University/College	54	50.5
Comorbidities		
Yes	19	17.8
No	88	82.2
Anxiety		
Yes	50	46.7
No	57	53.3

Table 2 presents the mean and standard deviation scores for the physical, psychological, environmental, and social domains of the WHOQOL-BREF. The mean score for the social domain was the highest (14.112.89), whereas the environment domain had the lowest (13.272.01) mean score among the four all domains of WHOQOL-BREF. It can be identified that the loss of jobs during the COVID-19 pandemic potentially impacted financial stability

and quality of health care as the reason for low scores in the environmental domain.

Table 2. Mean WHOQOL-BREF for four domains

Domains	WHOQOL -BREF Scores (Mean ± SD)
Physical	13.951.98
Psychosocial	13.912.49
Social	14.112.89
Environment	13.272.01

Table 3. Comparison of WHOQOL-BREF mean scores, standard deviations, and significance level based on socio-demographics.

Variable	Domains				
	QoL (MeanSD)	Physical (MeanSD)	Psychological (MeanSD)	Social (Mean Rank)	Environment (MeanSD)
Gender					
Male	53.478.74	13.562.23	13.982.50	13.083.22	12.852.28
Female	56.177.11	14.151.82	13.872.50	14.662.57	13..491.83
P Value	0.087	0.141	0.828	0.012*	0.114
Marital status					
Single/Separated	54.717.38	13.901.95	13.502.51	14.112.46	13.191.97
Married	55.758.18	13.992.03	14.312.44	14.113.28	13.342.06
P Value	0.493	0.832	0.095	0.886	0.697
Education Level					
High school	53.557.69	13.581.92	13.382.58	13.622.78	12.982.09
University/College	56.897.58	14.311.99	14.432.31	14.592.95	13.551.89
P Value	0.013*	0.056	0.028*	0.023*	0.138
Comorbidities					
Yes	52.207.09	13.161.89	13.232.09	13.682.34	12.131.98
No	55.897.80	14.121.97	14.062.55	14.213.00	13.511.94
P Value	0.06	0.055	0.190	0.316	0.006*
Anxiety					
Yes	52.747.19	13.291.79	13.722.04	13.443.04	12.871.91
No	58.087.50	14.691.94	14.782.37	14.882.53	13.722.04
P Value	<0.001*	<0.001*	<0.001*	0.025*	0.029*

Table 3 shows the correlation coefficient and the bivariate relationship between demographic variables and the domain scores. Respondents with no anxiety had the highest score (58.087.50) in total QoL followed by university/college level of education (56.897.58). Respondents with no anxiety had the highest score of all four domains; physical, psychological, social, and environment of WHOQOL-BREF (14.691.94, 14.782.37, 60.86, 13.722.04, respectively). Statistically, a significant difference was observed between gender and the social domain ($p=0.012$). Female respondents had significantly higher scores in the social domain. As females were more socially active compared to males [13].

A significant difference was also observed in education level vs overall QoL, psychological, and social domains ($p=0.013$, $p=0.028$, and $p=0.023$ respectively). During the COVID-19 pandemic, people with a high education level seemed able to maintain their job (less loss of job chances), and be socially active by using technology for daily life.

A significant difference was also demonstrated in the comorbidities and environment domain of WHOQOL-BREF ($p=0.006$). Anxiety showed a significant difference in overall QoL and all domains ($p<0.001$, $p<0.001$, $p<0.001$, $p=0.025$, and $p=0.029$ respectively). The overall factors have a contribution to defining the QoL score among respondents except for marital status. But married couple shows tent to have higher QoL compared to single.

4 Discussion

The present study evaluates the extent to which key factors may influence the QoL of people with COVID-19 in Semarang, Indonesia. According to the result, the highest mean score was found for the social domain (14.112.89), which may show the key role of respondents' satisfaction with their personal relationships and support from friends during their positive COVID-19 experience. On the other hand, the lowest mean score was observed for the environment domain (13.272.01) indicating the low satisfaction of the environment regarding the impact of pandemic COVID-19 which the disease categorized as airborne that easily transmitted in the environment that makes people feel unsafe with the environment [14].

These results can be contrasted with comparable studies in other countries. For example, a study in India among medical students found that the domain scored highest for environmental domain, the physical domain, social and the lowest for the psychological domain [15]. The different results are also shown by a study conducted in Malaysia among university students, in which the lowest score for WHOQOL-BREF was psychological domain [16]. The different results can be influenced by government strategy during the pandemic. Especially the lockdown application was different in each country, lockdown impacted different strata of life including access to education, economic stability, and increased problems in mental well-being [17]. Research showed that government strategies have a significant impact on psychosocial distress that will affected QoL [18].

Regarding gender, females had better scores than males in overall QoL, physical, social, and environment. The result is similar to a study in Saudi Arabia, where found males had lower scores compared to females [6]. The social domain showed a statistical difference between male and female ($p=0.012$), which mean male are more likely to have less satisfaction in their social life after experiencing positive COVID-19. It can be caused by the lack of support from their friends during the positive phase. The result is consistent with research in Germany, that there was a positive correlation between gender for the social domain of quality of life [19].

In bivariate analysis, our findings exhibit that the presence of comorbidities had a statistically significant difference in the environment domain. Participants who have comorbidities had lower satisfaction with the environment. We know that chronic diseases

can lead to the severity of COVID-19 infection [20]. People who have comorbidities may feel not secure in the environment because of the COVID-19-related environment. The presence of comorbid linked to depression and anxiety resulted in a lower score of QoL [21]. Participants with a higher level of education had a higher score of QoL in the psychological and social domains. Previous research found that higher educational attainment is generally linked to better occupational prospects and higher income, hence having a positive effect on a person's quality of life [22]. Also, during the aftermath of COVID-19, higher-educated people might have maintained personal and social links better than others within the economic and social constraints of the new reality [19].

The presence of anxiety often promotes changes perception of QoL for all domains among respondents. Our study showed a much better score ($p < 0.05$) in all four domains of the WHOQOL-BREF among participants without anxiety. Research in Poland, China, and Philippine found the same result showed that people with anxiety had a lower score of quality of life [9,23,24].

5 Conclusion

Key findings from this study, which applied a similar approach to comparable studies in other countries, included:

1. The factors that influence QoL level were education level and the presence of anxiety. People with low education levels tend to have a low score of QoL. And also people with anxiety will likely have a low score of QoL in each domain.
2. During the COVID-19 pandemic, people had less satisfaction with their environment shown by the lowest score of QoL was the environment domain.
3. The presence of comorbidities influences people's satisfaction with their environment. People with comorbidities have the lowest score in the environmental domain.

Because individuals with the abovementioned characteristics have worse QoL during COVID-19 infection, government policymakers in Semarang (and perhaps, more broadly in Indonesia) may consider targeting this population with bespoke programs. Investing such resources in these specific groups may present an efficient option to maximize positive public health impacts in this resource-poor environment.

References

1. World Health Organization. *Coronavirus Disease (COVID-19) Situation Reports* [Internet]. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>. Accessed 3 July 2022. (2022)
2. A. G. Hanggara, *Covid-19*. <https://corona.jakarta.go.id/en/artikel/linimasa-kebijakan-penanganan-pandemi-covid-19-di-jakarta>. Accessed 3 July 2022. (2020)
3. Kementrian Republik Indonesia, *Circular Letter of the Ministry of Health of the Republic of Indonesia Number HK.02.02/I/385/2020 (Surat Edaran Kementerian Kesehatan Republik Indonesia Nomor HK.02.02/I/385/2020) | COVID19.Go.Id* (2020)
4. S. P. S. Patiroa, H. Budiyanthib, K. A. Hendartoc, and H. Hendrian, *Gadjah Mada International Journal of Business* **24**, (2022)
5. J. Qiu, B. Shen, M. Zhao, Z. Wang, B. Xie, and Y. Xu, *Gen Psychiatr* **33**, (2020)
6. F. D. Algahtani, S. U. N. Hassan, B. Alsaif, and R. Zrieq, *Int J Environ Res Public Health* **18**, 1 (2021)
7. The World Health Organization. *Soc Sci Med* **41**, 1403 (1995)

8. L. M. Vitorino, L. M. M. Sousa, C. Trzesniak, O. M. de Sousa Valentim, G. H. Yoshinari Júnior, H. M. G. José, and G. Lucchetti, *Quality of Life Research* (2021)
9. B. Sozański, A. Ćwirlej-Sozańska, A. Wiśniowska-Szurlej, K. Jurek, P. Górniak, K. Górski, A. Englert-Bator, and L. Perenc, *BMC Public Health* **21**, (2021)
10. L. G. Jacobs, E. G. Paleoudis, D. L. di Bari, T. Nyirenda, T. Friedman, A. Gupta, L. Rasouli, M. Zetkusic, B. Balani, C. Ogedegbe, H. Bawa, L. Berrol, N. Qureshi, and J. L. Aschner, *PLoS One* **15**, (2020)
11. A. N. Poudel, S. Zhu, N. Cooper, P. Roderick, N. Alwan, C. Tarrant, N. Ziauddeen, and G. L. Yao, *PLoS One* **16**, (2021)
12. M. Power and W. Kuyken, *Soc Sci Med* **46**, 1569 (1998)
13. S. C. Caetano, C. M. Silva, and M. v. Vettore, *BMC Geriatr* **13**, 1 (2013)
14. F. Carraturo, C. del Giudice, M. Morelli, V. Cerullo, G. Libralato, E. Galdiero, and M. Guida, *Environmental Pollution* **265**, (2020)
15. B. Chawla, S. Chawla, H. Singh, R. Jain, and I. Arora, *J Family Med Prim Care* **9**, 5261 (2020)
16. M. F. I. Leong Bin Abdullah, N. S. Mansor, M. A. Mohamad, and S. H. Teoh, *BMJ Open* **11**, (2021)
17. H. Onyeaka, C. K. Anumudu, Z. T. Al-Sharif, E. Egele-Godswill, and P. Mbaegbu, *Sci Prog* **104**, (2021)
18. A. G. Khan, M. Kamruzzaman, M. N. Rahman, M. Mahmood, and M. A. Uddin, *Heliyon* **7**, (2021)
19. S. Eicher, R. Pryss, H. Baumeister, C. Hovener, N. Knoll, and C. Cohrdes, *Journal of Health Monitoring* **6**, (2021)
20. M. D. H. Hawlader, M. U. Rashid, M. A. S. Khan, T. Ara, M. H. Nabi, M. M. A. Haque, K. F. Matin, M. A. Hossain, M. A. Rahman, M. Hossian, S. Saha, R. M. Manna, M. Y. Arafat, S. Y. Barsha, R. Maliha, J. Z. Khan, S. Kha, S. M. Rezwanul Hasan, M. Hasan, S. R. Siddiquea, J. Khan, A. M. Khairul Islam, R. Rashid, N. Nur, O. Khalid, F. Bari, and M. L. Rahman, *PLoS One* **16**, (2021)
21. Y. Jin, S. Sha, T. Tian, Q. Wang, S. Liang, Z. Wang, Y. Liu, T. Cheung, Z. Su, C. H. Ng, and Y.-T. Xiang, *J Affect Disord* **314**, 193 (2022)
22. S. M. Skevington, *Soc Psychiatry Psychiatr Epidemiol* **45**, 999 (2010)
23. M. L. Tee, C. A. Tee, J. P. Anlacan, K. J. G. Aligam, P. W. C. Reyes, V. Kuruchittham, and R. C. Ho, *J Affect Disord* **277**, 379 (2020)
24. C. Wang, R. Pan, X. Wan, Y. Tan, L. Xu, C. S. Ho, and R. C. Ho, *International Journal of Environmental Research and Public Health* 2020, Vol. 17, Page 1729 **17**, 1729 (2020)