



## Quality of life among COVID-19 recovered nurses; A cross sectional study

**Running title: Quality of Life of nurses during COVID 19**

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**Conflict of interests:** The authors have not declared any conflict of interests.

**Fund:** none

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### Abstract

**Background:** Novel coronavirus pneumonia broke out & gradually developed into a global public health problem. Health care workers, particularly nurses, suffered from great occupational pressure & psychological distress throughout the outbreak of infectious diseases

**Objective:** the objective of the study was to assess the quality of life (QoL) of nurses in Zagazig university hospitals who recovered from COVID-19. **Methods:** 196 nurses who tested positive for COVID-19 & had already recovered from infection had been included in this cross-sectional investigation. Data was gathered between June and November 2021. Using a validated Arabic version of the World Health Organization Quality of Life questionnaire brief (WHOQOL-BREF), we looked at how COVID affected people's QOL. STATA (Version 26.00) was used for all analyses. **Results:** the total score of QOL was  $75.22 \pm 10.93$  and ranged from 59 (41 - 100), and regression analysis concluded that age (>30 years group) ( $p= 0.001$ ) and increased frequency of watching COVID-19 news on TV or on the Internet ( $p= <0.001$ ) affected each of physical, psychological and social domains of QOL score, **Conclusion:** quality of life of nurses after COVID was affected by variable interaction of demographic & socioeconomic factors, particularly older age & frequency with which they saw COVID-19 news on TV or the Internet. Health care professionals need to be aware of factors affecting quality of life and intervene on time in post-COVID-19 studied cases with persistent complaints.

**Keywords:** COVID-19, Quality of life, Nurses, WHOQOL-BREF

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### Introduction

The SARS-CoV-2 virus that caused Coronavirus Disease in 2019(COVID-19) had been initially discovered in China in late 2019 as a cluster of inexplicable pneumonia patients. Since then, it has expanded globally, posing a threat to public health on a large scale by infecting millions of individuals & resulting in tens of thousands of fatalities (1). Influence of this virus extends beyond physical health to include mental health, social functioning, & environmental safety because of its great capacity for transmission, mutation rates, & other connected aspects (2). The pandemic has put enormous pressure on healthcare systems across the world since it first emerged. Healthcare workers (HCWs) have

been fighting this invisible foe on the front lines. However, they now face a great risk of exposure due to the management of an increasingly growing number of COVID-19 studied cases (3).

Long-duration COVID symptoms can persist for one to three months after recovery even from a single infection leading to long absenteeism hampering productivity & quality of life (QoL) significantly. However, FLHCWs have repeatedly caught the COVID infection and have been working in traumatic and helpless situations since the pandemic started. Individual's mental health may suffer as a result of the post-COVID syndrome. There may be serious post-COVID consequences that necessitate hospitalization & impairment (4).

Post-COVID infection, QoL, and sleep are greatly affected; regardless of the time elapsed since discharge or recovery. The ongoing assessment of COVID-infected persons for post-COVID sequelae was an important & valuable step to decreasing problems. There have been enormous consequences on the health of FLHCWs as they have worked relentlessly, sometimes without scheduled breaks, extended isolation, and quarantine post-exposure to suspect cases, with very less family time after exposure to the novel virus even in the era of post-vaccination for COVID (5). Factors, like overwhelming work, fear of exposure to COVID-19, the perception of a life-threatening situation for health professionals & their families, the constant increase in diagnosed cases, insufficient & inadequate personal protective equipment, death of studied cases & co-workers because of COVID-19, the lack of knowledge about effective therapeutics to control & stop the virus, including a vaccine, & the media coverage, have largely contributed to the decline of nurses' mental health (6).

The visible influence of this pandemic on nurses' mental health has urged these professionals to adopt strategies to promote their mental health, thus minimizing potential consequences. In this domain, the WHO released a set of mental health promotion strategies to be adopted by health professionals to maintain their mental health and quality of life (7). The continuous assessment of COVID-infected persons for post-COVID sequelae was an imperative & efficient step to decrease problems, so in this research; our aim was to assess QoL among nurses in zagazig university hospitals who recovered from COVID-19.

## Subjects and methods

This was a cross-sectional study, had been carried out on a total of 196 COVID-19 survived nurses who registered for follow-up at post-COVID-19 follow-up clinics at family medicine department in Zagazig university hospital through a systematic random sampling technique.

### *Sample size and sampling method*

Using the Open Epi program, the sample size had been estimated based on the following information: confidence interval of ninety-five percent, power of test eighty percent, provided that total number of COVID-19 survivor's nurses was 400, the percent of nurses with depression after COVID-19 was 44.37% (9), thus calculated sample size equal 196 nurses. The studied nurses were collected by systemically random sampling technique.

**Inclusion criteria:** COVID-19 survivor's nurses who were diagnosed by CT or swab whether they needed home treatment or hospital admission.

**Exclusion criteria:** Nurses had a history of psychiatric diseases or using psychiatric medication.

**Tools of data collection:** A structured questionnaire was prepared to assess predictors of post-COVID-19 effects on mental health & quality of life & intended to collect the following data: Socio-demographic features e.g., age, residence, education ...etc.) were guided by **Fahmy et al., (10)**. Personal habits (smoking – alcohol drinking – exercise), chronic medical conditions (diabetes –hypertension – chronic kidney or liver disease.....etc.), History of drug intake, Occurrence of family members, friends, or colleagues with COVID-19, frequency of

watching news about COVID-19 on TV or through the internet, and COVID-19 history of affected cases; features of acute disease (mild, moderate, or severe) and acute treatment (home treatment or hospital admission or critical care need). WHO-QOL-BREF: It has been a twenty-six-item instrument with items covering general health, QOL, & 4 domains: physical health (7 items), psychological health (6 items), social relationships (3 items), & environmental health (8 items). Each question on WHOQOL-BREF is graded on a response scale, that was defined as a 5-point ordinal scale, with scores ranging from one to five. The overall score ranges from 26 to 156, with higher numbers denoting higher levels of life quality. Physical Health - (Q 3, 4, 10, 15, 16, 17, 18) domain score analysis yields a quality-of-life profile. Psychological Health, raw scores among Seven & thirty-five - (Q 5, 6, 7, 11, 19, 26). the raw score of Six to Thirty. Relationships with others - (Q 20, 21, 22). A raw score ranging from three to fifteen. - (Q 8, 9, 12, 13, 14, 23, 24, 25) Environment. A raw score ranging from eight to forty. Higher scores indicate higher levels of life quality. The total score ranges from 26 to 156 (11). The Arabic version of WHOQOL-BREF is validated and available. The average of all domain scores yielded 54.75 indicating moderate QOL perception (12).

**Pilot study:** To test answers to various questionnaire items & applicability of the study, a pilot study was conducted on ten percent of the sample at the start of June 2021. The questionnaire had been then changed considering the findings of a pilot study. Study's findings had not been included in the pilot study's findings.

**Statistical management:** statistical package for the social sciences (SPSS) version 26.0 had been used to analyze data that had been gathered. Regression analysis, independent T-test, & chi-square test had been applied. The 2019 version of Microsoft Excel had been used to create the graphs.

**Administrative design & ethical consideration:** study received IRB approval from the School of Medicine at Zagazig University (reference number: #6888). Participants had been advised that their participation had been voluntary & that their completion of the survey implied consent.

## Results

socio-demographic features of our study group (196 nurses) revealed that the mean  $\pm$  SD of age was  $30.71 \pm 9.09$ , as regards personal habits; 46 (23.74%) practice exercise, there were 164 (83.60%) cases had family members, friends, or colleagues having COVID-19 infection, on the other hand; as regard Socio-economic status; the majority of cases 108 (55.10%) were of intermediate class (Table 1)

**Table (1): Demographic & clinical characteristics of studied**

	Studied group (n = 196)
Age	
Mean $\pm$ SD.	30.71 $\pm$ 9.09
Range (Min-Max)	50 (17 - 67)
Personal habits	
Exercise	46 (23.74%)
Smoking	0 (0.00%)
Alcohol	0 (0.00%)
Nothing	150 (76.26%)
Chronic medical conditions	
Hypertension	8 (3.96%)
Diabetes	9 (4.59%)
Chronic kidney	1 (0.5%)

liver disease	15 (7.65%)
Obesity	117(60%)
Cancers	0(00.0%)
Thyroid	18(9.18%)
CNS diseases	12(6.12%)
Nothing	16 (8.16%)
Family members, friends, or colleagues having COVID-19 infection	
Yes	32 (16.33%)
No	164 (83.60%)
Frequency of watching COVID-19 news on TV or the Internet	
in abundance	9 (4.59%)
mild	104 (53.06%)
Scarcely	57 (29.00%)
I do not watch	26 (13.26%)
Socio-economic status	
High	80 (40.8%)
Intermediate	108 (55.10%)
Low	8 (4.08%)

Regarding Features of acute disease; the number of patients with intense features of acute disease was 44 (22.45%). The number of patients who had CT scans and chest X-rays as diagnostic tests in the post-COVID group was 142 (77.45%). (Figure 1)

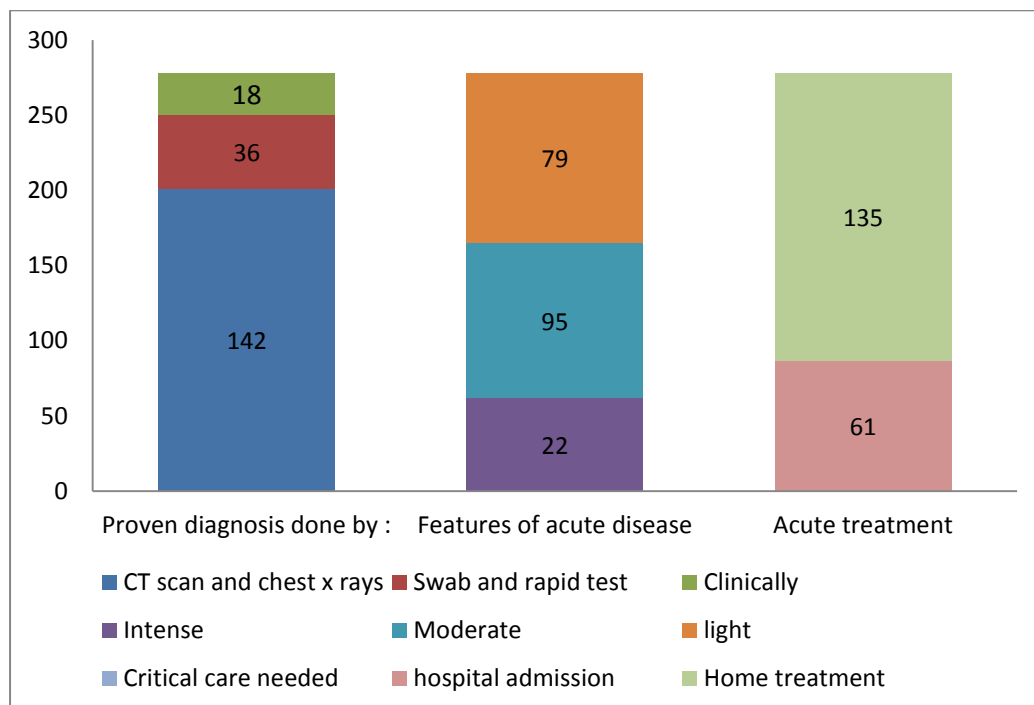


Figure (1): Bar chart showing COVID-19 history of affected cases

Table 2 shows the quality-of-life score of the studied nurses; the total score of QOL was  $75.22 \pm 10.93$  indicating a high level of satisfaction.

**Table (2): Quality of life score among the studied groups**

	Studied group (n = 196)
Physical domain	
Mean $\pm$ SD.	20.54 $\pm$ 3.72
Range (Min-Max)	19 (10 – 29)
Psychological domain	
Mean $\pm$ SD.	19.45 $\pm$ 2.92
Range (Min-Max)	15 (12 – 27)
Social Domain	
Mean $\pm$ SD.	10.67 $\pm$ 2.28
Range (Min-Max)	11 (4 – 15)
Environmental domain	
Mean $\pm$ SD.	24.57 $\pm$ 4.47
Range (Min-Max)	26 (10 – 36)
Total score	
Mean $\pm$ SD.	75.22 $\pm$ 10.93
Range (Min-Max)	59 (41 - 100)

**Table 3** defines the results of regression that predict factors affecting different domains of QOL where age (>30 years group) and increased frequency of watching COVID-19 news on TV or the Internet affected each of the physical, psychological & social domains of QOL score.

**Table (3): Logistic regression & 95% confidence intervals (CI) predicting Physical, Psychological, Social & Environmental domains of WHO QOL BREF among studied group**

	Logistic regression	95% CI		P
		Lower	Upper	
<b>Physical domain (score &gt;17)</b>				
Age (>30 years group)	3.469	1.710	7.038	<b>0.001</b>
Family members, friends, or colleagues having COVID-19 infection (Positive group)	0.662	0.279	1.572	<b>0.350</b>
Frequency of watching COVID-19 news on TV or the Internet (Watching group)	3.508	1.692	7.274	<b>0.001</b>
Socio-economic status (Low SES group)	0.357	0.109	1.167	<b>0.088</b>
<b>Psychological domain (score &gt;15)</b>				
Age (>30 years group)	3.496	1.400	8.732	<b>0.007</b>
Family members, friends, or colleagues having COVID-19 infection (Positive group)	<0.001	<0.001	<0.001	<b>0.997</b>
Frequency of watching COVID-19 news on TV or the Internet (Watching group)	3.825	1.682	8.698	<b>0.001</b>
Socio-economic status	244768915.584	<0.001	<0.001	<b>0.999</b>

(Low SES group)				
<b>Social domain (score &gt;7)</b>				
Age (>30 years group)	1.994	0.703	5.653	<b>0.195</b>
Family members, friends, or colleagues having COVID-19 infection (Positive group)	1.872	0.643	5.446	<b>0.250</b>
Frequency of watching COVID-19 news on TV or the Internet (Watching group)	10.906	4.135	28.761	<b>&lt;0.001</b>
Socio-economic status (Low SES group)	131339418.118	<0.001	<0.001	<b>0.999</b>
<b>Environmental domain (score &gt;20)</b>				
Age (>30 years group)	1.224	0.667	2.246	<b>0.514</b>
Family members, friends, or colleagues having COVID-19 infection (Positive group)	0.449	0.168	1.196	<b>0.109</b>
Frequency of watching COVID-19 news on TV or the Internet (Watching group)	0.721	0.285	1.822	<b>0.489</b>
Socio-economic status (Low SES group)	0.340	0.104	1.115	<b>0.075</b>

## Discussion

Millions of lives are now in jeopardy due to unprecedented destruction brought on by the COVID-19 epidemic, which has also seriously disrupted the financial system. Most agonizing experiences were endured by those who contracted COVID-19. HCWs are among the most at-risk groups since they do their duties in the face of the greatest danger. Therefore, evaluating COVID-19 recovered HCWs' quality of life had been a time-consuming necessity in the present situation (13).

This study was conducted to evaluate QoL among nurses in Zagazig University hospitals, who recovered from COVID-19, we found that the total score of QoL was  $75.22 \pm 10.93$  and ranged from 59 (41 - 100) indicating a higher level of satisfaction; the highest mean score across 4 WHOQOL-BREF domains assessed in this study had been discovered in environmental domain,  $24.57 \pm 4.47$ , followed by physical domain,  $20.54 \pm 3.72$ , which indicates adequate energy, capacity to manage fatigue, pain, & discomfort, & adequate sleep & rest.

In comparison with the cross-sectional research of **Abdelghani et al, (13)** in Egypt; Domains of quality of life between physicians (n=seventy four), mean & SD for physical health had been ( $55.2 \pm 14.5$ ), psychological ( $58.7 \pm 17.3$ ), social relationship ( $60.8 \pm 20.2$ ), & environmental ( $49.6 \pm 16.8$ ), while for other HCWs (n = 144), mean & SD for physical health had been ( $49.2 \pm 15.7$ ), psychological ( $56.1 \pm 14.3$ ), social relationship ( $64.0 \pm 19.2$ ), & environmental ( $49.2 \pm 14.1$ ).

Our findings also were lower than that of the cross-sectional study report of **Hadning and Ainii, (14)** from Indonesia on average scores for the Physical Health Domain ( $63.18 \pm 10.62$ ) & Psychological Health Domain ( $60.33 \pm 15.44$ ) had been interpreted as indicating Good Quality of Life between health workers (HW's), while average scores for Social Relation Health Domain ( $51.57 \pm 17.61$ ) & Environmental Health Domain ( $57.28 \pm 12.48$ ) had been interpreted as indicating Moderate Quality of Life between HWs.

Furthermore, in cross-sectional research by **Turcu-Stiolica et al., (15)** 395 respondents participated in a study conducted in Romania & Bulgaria between community chemists on the effects of COVID-19 on health-related quality of life & perceptions of COVID-19 vaccination. 15D tool had been used in research to assess people's quality of life. Findings showed differences in the standard of living between chemists in Bulgaria & Romania. Statistical significance was demonstrated by observed variations in sleeping, regular activities, mental function, pain & symptoms, sadness, distress, & overall 15D score, with low values for distress. results of health-related quality of life(HRQoL) with overall 15D score had been  $0.936 \pm 0.063$  in Bulgaria (n = 154), &  $0.956 \pm 0.051$  in Romania (n = 241). Additionally, research by **Xie et al., (16)** was conducted in China with 10,516 mental health experts. WHOQOL-BREF, or World Health Organization Quality of Life Questionnaire, Brief Version 1st 2 items were used to assess QOL overall. The Quality of Life of mental health professionals was 6.6 (1.6 percent) in general, compared to 6.8 (1.5 percent for the non-WPV group (N = 8568) & 5.9 (1.5 percent for the WPV group (N = 1948) in the research.

In a current study by **Tomaszewska et al., (17)**, the average level of respondents' overall quality of life had been 65.74 +/- 13.12 average respondents' quality of life in physical, psychological, social, & environmental domains had been 62.13 +/- 17.86, 67.24 +/- 20.83, 69.77 +/- 17.09, & 63.84 +/- 18.75, which supported previous research by other authors. In contrast, a Canadian survey found that twenty-two percent of respondents planned to leave their present job & that the vast majority of respondents experienced signs of stress.

As well in the study of **Hwang et al., (18)**, the quality of work life was influenced by elements such as turnover intention, job stress, & job satisfaction. High healthcare expenditures, higher employee absenteeism, & decreased productivity are all linked to work stress & psychosocial dangers. As a result, as supported by the research of other writers, positive factors, like job satisfaction, had greater impacts than negative factors.

In the current study, the predictor factors affecting different domains of QOL where age (>30 years group) (p= 0.001) and increased frequency of watching COVID-19 news on TV or on the Internet (p= <0.001) affected each of physical, psychological, and social domains of QOL score.

Consistently, **Rashid et al., (19)** discovered that, after adjusting for other variables, age enhanced the likelihood of getting strong psychological & environmental ratings. These results may be explained by the fact that HCWs begin their careers later than those of other professions. Most HCWs start making a good living only once they are forty-five or older because of the lengthy educational system, which is much later than most of their contemporaries in other professions (18). In addition, as they aged, they discovered a balance between their professional & personal lives, which they had first struggled to do (20).

medical economics report claims that **Aymes, (20)**, In later life, HCWs' later establishment allowed them to achieve financial security, freedom, physical safety & security, improved access to health & social care, healthy home environment in addition to a healthy physical environment, & secure transportation. Because their financial stability eliminates their low self-esteem, these older folks experience happy emotions while having several chronic conditions.

Like other nations (21), the availability of contemporary utilities & treatments, strong carrier growth, quick social support from the environment, & pleasant environment may have been factors in COVID-19 recovered urban HCWs' better social quality of life. (22).

The ongoing COVID-19 outbreak has put nurses under lots of stress & generated job overload. Enhancing one's quality of life, particularly one's career may help reconcile these pressures. (23). The hard & stressful demands of this line of work can endanger nurses & lower their quality of life. standard of care that nurses are obligated to give to their studied

cases might be impacted by the poor quality of life (24). In clinical settings, nurses are frequently faced with trying circumstances that may be detrimental to their quality of life. Consequently, having a good outlook on life, enhancing general health, achieving a high lifespan & low level of stress, & learning efficient coping mechanisms may all be achieved by nurses by being proactive & optimistic (25).

Future research must collect data from bigger samples of HCWs to produce more broadly applicable findings. It is necessary to do longitudinal studies that look at the pandemic's long-term effects because the present study is a cross-sectional study case. It was discovered that participants' age had a significant impact on HCWs' physical, social, & psychological quality of life. Therefore, more gender-based comparative studies looking at elements affecting HCWs' working conditions throughout the COVID-19 outbreak can help us comprehend the problem.

### Conclusion

Nurses' post-COVID QoL was influenced by various demographic & socioeconomic determinants, involving their age & Frequency of watching COVID-19 news on TV or the internet (watching group). Researchers in national & worldwide communities would surely be interested in our outcomes, which would lead policymakers in developing recuperation and rehabilitation plans, initiatives, and strategies for COVID-19-affected healthcare workers.

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