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Quality of life after COVID-19 in Polish patients

Abstract

The pandemic is a new, surprising situation that shows the quality of life in a completely different dimension. Studies show that the quality of life of people infected with SARS-CoV-2 has significantly decreased both psychologically and physically. COVID-19 disease caused by coronavirus SARS-CoV-2 has been shown to be a complex pathogenic disease with high mortality rates, especially in the elderly, but many serious cases and deaths occurred in young people. The aim of the study was to investigate whether COVID-19 disease significantly affects the quality of life of those affected. The method used for online diagnostics was the EQ-5D-3L Quality of Life Questionnaire and a modified BAT questionnaire. Studies have shown that the quality of life of the respondents was at an average level. Pain/discomfort and anxiety/depression were the most frequently indicated domains. A statistically significant strong relationship between the demographic variables age, gender and morbidity and quality of life after the disease was shown. Similarly, the effects of hospital stays and concomitant illnesses affecting quality of life were investigated. The results can feed into medical practice, therapy, education and therapy of mental health, and the applied research model can be considered useful and useful to continue research.

Keywords: COVID-19, quality of life, patients.

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INTRODUCTION

COVID-19 outbreak began in Wuhan, China, and has spread to other continents, including Europe, placing pressure on healthcare systems [1].

Globally, as of 5:56pm CEST, 28 June 2023, there have been 767 518 723 confirmed cases of COVID-19, including 6 947 192 deaths, reported to the WHO. As of 27 June 2023, a total of 13 461 751 619 vaccine doses have been administered.

Poland was one of the European countries with the highest number of SARS-CoV-2 infections and COVID-19-related deaths [2]. The disease has affected people's mental, physical and social health, and thus their quality of life [1].

A significant part of the convalescents, even those who had a mild form of the disease, struggle with complications such as: fatigue, concentration disorders, the so-called "post-covid brain fog", sleep problems, taste and smell disorders, pains of various origins, cough or shortness of breath.

Complications concern not only people with comorbidities, but also young, healthy ones, whose productivity in many areas of life has been reduced, thus worsening their quality of life. Appropriate pharmacological treatment supplemented with rehabilitation plays a very important role after the illness. By addressing multiple aspects of health (physical, social, psychological: emotional and mental), patients can recover their energy more quickly and return to their daily routines with full strength [3].

AIM

The aim of the study is to assess the quality of life of patients after COVID-19 on the basis of online surveys. The impact of demographic variables, comorbidities and hospitalization on the quality of life of COVID-19 patients was analyzed.

MATERIALS AND METHODS

The study was conducted from January to April 2022 using an online survey among patients hospitalized in hospitals in the province of Lublin. After verification of the completed questionnaires, 123 people who had had COVID-19 in the previous 6 months were eligible for analysis, including 61.8% of women and 38.2% of men. The age of the respondents ranged from 23 to 66 years, with a mean age of 41.2 years. Most of the subjects were residents of the city – 80.5%. The largest group were those with higher education (38.2%), and those who were married (64.2%). More than half (51.22%) required hospitalization. In contrast, 20.3% of the subjects did not report any symptoms.

A standardized EQ-5D questionnaire of 5 questions was used as a research tool, which allows the analysis of the health status of the subjects in 5 categories: i.e.: mobility, self-care, usual activities (work, household chores, study, leisure, family), pain/discomfort, and anxiety/depression. Each of these as-

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pects is scored from 1 to 5, with higher scores indicating higher impairment for each domain. The aforementioned domains were used to calculate the EQ-5D-5L index value, which is a valid index that estimates overall quality of life.

Quality of life in the somatic and psychological domains was assessed using a modified WHOQOL-BREF questionnaire of the World Health Organization.

Polish adaptation is a research tool designed to assess the quality of life of both healthy and sick people. The questions concerned personal relationships with other people, support, financial resources and access to health care.

Statistical analysis

The analysis was carried out using the statistical software Statistica 9.1 (StatSoft, Poland). The values of the analyzed quantitative variables were represented by the arithmetic mean and the standard deviation, and those of the qualitative variables by the quantity and the percentage.

The normality of the distribution of variables in the study groups was checked using the Shapiro-Wilk test. The Mann-Whitney test was used to evaluate differences between two groups, and the Kruskal-Wallis test was used to assess differences between three or more groups. A significance level of $p < 0.05$ was assumed.

RESULTS

TABLE 1. Quality of life of respondents 6 months after COVID-19 infection by gender.

Quality of life	M +/- SD			p
	Women	Men	Total	
EQ5D quality of life	1.41 +/- 0.44	1.69 +/- 0.53	1.52 +/- 0.5	0.002*
BREF quality of life	3.31 +/- 0.56	3.22 +/- 0.68	3.27 +/- 0.6	0.198
Subjective assessment of quality of life	3.36 +/- 0.86	2.79 +/- 0.98	3.14 +/- 0.9	0.001*
Satisfaction with own health condition	3.16 +/- 0.85	2.68 +/- 1.00	2.98 +/- 0.9	0.004*

Mann-Whitney U Test
*statistically significant

Women were characterized by a statistically significantly better quality of life than men ($M=1.4$ vs. $M=1.7$) assessed both with the EQ5D questionnaire and subjective assessment and satisfaction with own health condition. The analysis according to the BREF questionnaire showed no statistical significance.

TABLE 2. Quality of life of respondents 6 months after COVID-19 infection by age.

Quality of life	M +/- SD			p
	<45	45-59	60+	
EQ5D quality of life	1.25 +/- 0.23	1.44 +/- 0.38	1.86 +/- 0.59	0.001*
BREF quality of life	3.48 +/- 0.67	3.26 +/- 0.49	3.11 +/- 0.65	0.032*
Subjective assessment of quality of life	3.60 +/- 0.85	3.27 +/- 0.86	2.56 +/- 0.85	0.001*

Kruskal-Wallis Test
*statistically significant

According to both the EQ5D and BREF questionnaires, the quality of life of people under 44 years of age is the best. Similar results apply to the subjective assessment of the quality of life. The analyses show that the quality of life of the rural population is at a higher level, although the subjective assessment in the studied group is at a similar level.

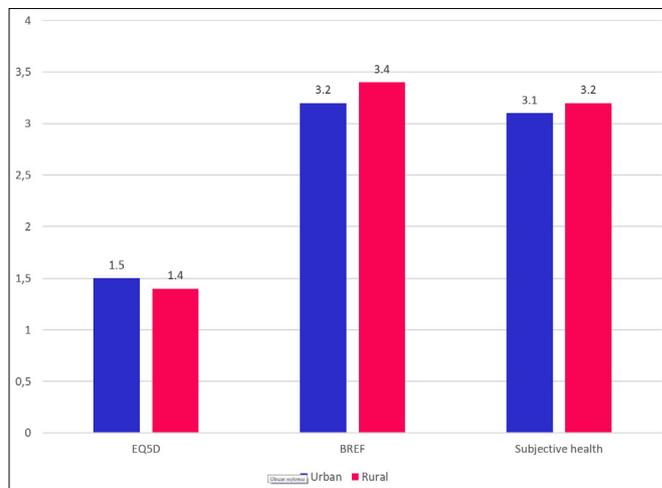


FIGURE 1. Quality of life of respondents 6 months after COVID-19 infection by place of residence.

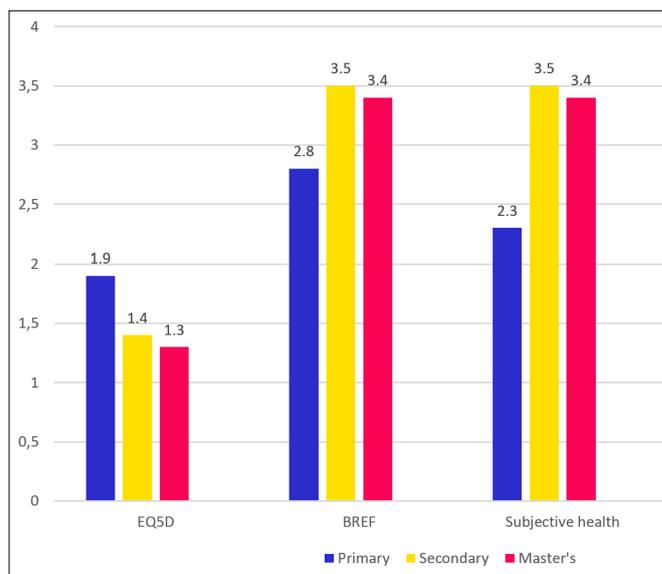


FIGURE 2. Quality of life of respondents 6 months after COVID-19 infection by level of education.

Health self-assessment as well as quality of life measured by BREF were significantly higher in people with higher education.

TABLE 3. Quality of life depending on the necessary hospitalization, comorbidities and severity of symptoms during COVID-19 disease.

	Hospitalization		Comorbidities		Symptoms	
	Yes	No	Yes	No	Lack/Mild	Severe
EQ5D	1.8	1.2	1.6	1.2	1.2	1.7
P value	0.001*		0.001*		0.001*	
BREF	3.1	3.5	3.1	3.6	3.8	3.1
P value	0.001*		0.001*		0.001*	
Self-assessment	2.5	3.6	2.8	3.9	4.4	2.9
P value	0.001*		0.001*		0.001*	

*statistically significant

DISCUSSION

The emergence of a severe form of atypical pneumonia in December 2019 resulted in intensive research on the new virus, the search for an effective antiviral drug and specific prevention. Restrictions on the spread of the pandemic disrupted the work and daily functioning of people, which, in turn, negatively affected their health and well-being. Research on health-related quality of life in the so-called post-COVID has become an important part of clinical trials aimed at evaluating the effectiveness of ongoing therapies. Of particular importance is the subjective assessment of the physical, mental and social functioning of the individual. Millions of people around the world have been diagnosed with COVID-19. Therefore, it is essential to understand their clinical evolution after the disease, not only from an individual point of view, but also from a population level.

The Covid-19 pandemic, the related quarantine, isolation and hospitalization not only had a significant impact on the physical and mental health of the population, but also affected the areas of life such as work, education, cultural life and habits. They had a profound impact on interpersonal relationships, which often deteriorated. The pandemic has a significant impact on the emotional and clinical state of both hospitalized and non-hospitalized patients. Lack of physical activity resulting from isolation contributed to the general deterioration of health. Symptoms after recovering from Covid 19 may persist for a long time after recovery, and thus significantly reduce the quality of life [4,5].

The conducted studies have shown that women are more susceptible to the disease, but the quality of life among men was at a lower level. There was a statistically significant difference between women and men in the quality of life assessed by the EQ5D questionnaire ($p=0.002$). Women were characterized by a statistically significantly better quality of life in this group than men.

The epidemic and the general principles of lockdowns and restrictions have played a decisive role in the field of mental well-being. This was related to the limitations of social contacts and the situation on the labor market, as well as the deterioration of health, which adversely affected the efficiency in everyday life. Own research showed that 33.33% of the respondents, as a result of the disease, have minor difficulties in everyday activities or require comprehensive assistance in meeting their physiological needs.

Several studies in the USA, China and Europe have shown deterioration in mental health and health-related quality of life in people 3 months after the disease. They mainly complained of respiratory problems [6]. Many studies on the quality of life among hospitalized patients, especially those over 60 years of age, show that every third patient experienced persistently impaired mobility and ability to perform daily activities as a result of the disease [7]. Own analysis allows to conclude that hospitalization during the course of the disease significantly reduced the quality of life. This situation could adversely affect mental health and the recovery process. The hospital stay could also be related to the acute course of the disease. The main symptoms in the acute form of the disease reported by the respondents were: shortness of breath and difficulty breathing (42.28%), chest pain (41.46%) and high fever (39.80%).

Hospitalization is often associated with the need for passive oxygen therapy in the course of the disease. In the study group, 43.90% of people required oxygen supply.

As COVID-19 is a new disease, many countries are still investigating its impact on the quality of life, which has taken on a completely new dimension. They vary widely across countries due to social and economic factors, treatment options, and differences in disease severity and epidemiology. The quality of life is influenced by many factors, such as: gender, education, social status, work, location, place of residence, smoking, working as a healthcare professional [8]. Comparing my own research to those conducted by Bhaskaran et al., published in PLOS Medicine, I conclude that smoking did not have a significant impact on the course of the disease or the quality of life of the respondents after the disease.

A study conducted, among others using the EQ-5D questionnaire, among people who have recovered from Covid 19 assessed the impact of socio-demographic and clinical factors on the quality of life. The study showed that the average EQ-5D score decreased with age. Older people were more likely to report a problem in all five domains than younger people, showing that age has a significant impact on the EQ-5D score. The study also showed that in the presence of comorbidities, the EQ-5D index also decreased. Aging people with two or more chronic diseases show lower QOL.

Based on previous experience with SARS, MERS and recent limited evidence on COVID-19, pain/discomfort was associated with older age, low education level, clinical severity, depression, anxiety, and poor quality of life [9].

Pain and discomfort were the domains identified by more than half of the respondents. Only 8 out of 123 people had no symptoms. Since the majority of the subjects were over 40 years of age, it can be confirmed that pain appears with age.

The biggest problem for the respondents were anxiety and depression. A total number of 72 subjects reported this condition, 13 of the respondents reported extreme despondence, which may indicate depressive states, while 30.89% did not have problems in this area. Some authors showed that during the pandemic there was an increased risk of high levels of depressive symptoms, on medical personnel showed subliminal mental health disorders [10].

Taking up the issue of the quality of life of patients affected by Covid-19 has both theoretical and cognitive as well as practical justification, especially in the current situation. There is a well-established literature on the symptoms and complications of COVID-19, but the consequences of this disease are not well known yet, hence there is relatively little research in this area.

The presented own research provides an insight between the onset of the disease and the quality of life after recovery, showing some interesting relationships. The quality of life of respondents based on the EQ5D questionnaire is at an average level. Younger people, before the age of 44, show a much better quality of life and health than people over 60. A similar situation applies to demographic variables that significantly affect the relationship between the incidence and the quality of life after the disease. Younger people without comorbidities show better health and thus the quality of life. The most frequently reported comorbidities include heart failure, hypertension and diabetes. The quality of life of people with higher education is significantly better than that of people with no education and is close to that of people with an secondary level

of education. This is related to greater knowledge and awareness. Health is a primary value and everyone should take care of it. Its condition determines the quality of life in both medical and social terms [11].

To date more than 6 million cases of SARS-CoV-2 infection have been reported in Poland, while in the world over 520 million [12].

Concluding this discussion, it should be noted that ongoing research indicates that many patients will continue to experience fatigue, shortness of breath, pain, sleep disturbances, anxiety and depression. Quality of life may not return to pre-disease state. More serious organ dysfunction such as pulmonary fibrosis, cognitive impairment, myocarditis and renal failure may also occur [13,14]. Emerging evidence suggests that approximately 10% of people who survive the coronavirus disease (COVID-19) will have persistent symptoms that negatively impact their quality of life, ability to work and functioning [15].

This important group of people with post-COVID-19 conditions may seem small compared to the overall number of people infected with COVID-19. However, many COVID-19 survivors may have a significant symptom burden with high resource utilization and healthcare needs, reduced economic productivity, and possibly shortened life expectancy. The collective prospect of immense suffering among these people will no doubt have a profound and lasting impact on health care systems around the world [16-20]. As the world continues the largest vaccination effort in history, as well as tries to eliminate the effects of acute COVID-19, we must not forget that the significant minority that survived went from acute to chronic disease. In turn, management strategies and planning of health resources also need to be changed accordingly. As a multi-system disease, post-COVID-19 condition will require the involvement of multidisciplinary care teams [21].

CONCLUSIONS

Studies have shown that the quality of life of the respondents was at an average level. Pain/discomfort and anxiety/depression were the most frequently indicated domains. A statistically significant strong relationship between the demographic variables age, gender and morbidity and quality of life after the disease was shown. Similarly, the effects of hospital stays and concomitant illnesses affecting quality of life were investigated. The results may be used in medical practice, therapy, education and mental health therapy, and the research model used may be considered useful in further research.

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