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ORIGINAL ARTICLE

QUALITY OF LIFE AND PERSISTENT SYMPTOMS IN PATIENTS WITH POST-COVID SYNDROME

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Highlights:
(1). Muscle weakness and dyspnea were the most prevalent post-COVID-19 symptoms.
(2). The longest symptom duration was up to three months.
(3). Persistent symptoms affected quality of life, making it difficult to return to daily activities.

ABSTRACT

Introduction: "Post-Covid-19 syndrome" refers to the persistence of physical and mental symptoms after the acute phase of the disease. These symptoms affect the individual's well-being, modifying his relationship with and perception of social and cultural contexts. *Objective*: To investigate how Covid-19 and its sequelae affected the individual's quality of life. *Method*: The research was divided into two phases: retrospective and observational cross-sectional analysis. The retrospective cross-sectional analysis consisted of analyzing the medical records of patients admitted to a hospital in the city of São Paulo, while the observational phase consisted of conducting structured interviews via telephone within one year after hospital discharge. *Results*: Data from 103 respondents were analyzed, of which 65% had pulmonary involvement, 52% were admitted to the ward, 39% to the ICU, and 53% were intubated. The most common persistent symptoms were muscle weakness (74.8%), dyspnea (61.2%), and loss of taste (48.5%), loss of smell (45.6%), desaturation (35.9%), and oxygen dependence (11.7%). Regarding quality of life, the environmental domain had the lowest score (~15%). *Conclusion*: More than half of the individuals developed persistent symptoms, a condition that affected quality of life, especially in the environmental domain, making it difficult to return to work and leisure activities.

Keywords: Covid-19; symptom assessment; behavioral symptoms; quality of life.

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INTRODUCTION

Covid-19, the disease caused by the SARS-CoV-2 virus, ranges in severity from asymptomatic to severe, potentially leading to severe systemic complications[1].

As the pandemic progressed, patients who had previously contracted Covid-19 began reporting symptoms that persisted even weeks after hospital discharge. Thus, in addition to acute symptoms, symptoms that persisted after the acute phase of the disease also became a concern. This phenomenon is now known as long Covid or post-Covid syndrome. Some authors define long Covid or post-Covid syndrome as symptoms that persist for more than four weeks.

The estimated prevalence of sequelae ranges from 5% among non-hospitalized patients to 80% among hospitalized patients. Studies show that most patients who contracted Covid-19 persisted with at least one symptom after discharge[6,7]. The main post-acute symptoms reported were dyspnea, fatigue, joint pain, mental confusion, mood swings, anxiety, and depression[4,6,8], and may be related to the severity of the disease. A high prevalence of persistent symptoms was reported by patients who required hospitalization and was also associated with a greater number of acute symptoms. These patients were more likely to experience prolonged dyspnea and fatigue, with 80% of patients who recovered from the disease reporting persistent dyspnea and fatigue[6,9,10].

Lung, musculoskeletal, neurological, cardiac, and psychological sequelae directly interfere with the individuals' daily life and well-being, potentially affecting their quality of life, leading to limitations[11]. In addition to physical impairments, mental health is also affected long-term after hospital discharge[1,2]. Changes in quality of life, caused by both physical and mental impairments, are among the main sequelae after the acute phase of the disease[12].

An adequate quality of life (QoL) may be considered synonymous with health for some authors, but this concept has increasingly become more comprehensive, with health conditions becoming one of the aspects to consider. With increasing life expectancy and decreasing mortality, the concept of quality of life has been revised, modified, and expanded, addressing multicultural aspects[13].

In the literature, there is more than just one meaning for the term "quality of life." Social, personal, psychological, and disability aspects are important parameters provided for understanding quality of life and better recognizing the disease process, thus enabling improved therapies and treatments[14]. Furthermore, cured patients may have persistent symptoms after the acute phase of the disease, which can be overlooked without quality of life assessment[2,15].

The World Health Organization (WHO) defines quality of life as "[...] an individual's perception of his position in life in the context of the culture and value system in which he lives and in relation to his goals, expectations, standards, and concerns". When related to health, the term reflects the impact of illness and treatment on disability and daily functioning, and also reflects the impact of health on an individual's ability to live a full life[15]. Therefore, it is important that the quality of life assessment instrument considers the various aspects of an individual's life, encompassing the multiplicity of dimensions discussed[13].

Considering that post-Covid-19 syndrome is a recent topic, assessing persistent symptoms and their duration, in addition to understanding post-Covid-19 quality of life, is of great importance because it provides individuals with a better understanding of their real needs, recognizing aspects of disability or psychological well-being, both personal and social[14]. Furthermore, it is important to identify and define aspects that could be overlooked, providing important knowledge for monitoring individuals, improving rehabilitation and treatments, or recognizing therapies with limited benefits[2,15].

Therefore, this study proposed to analyze the reported and persistent symptoms related to Covid-19 with a one-year monitoring, seeking to understand how the diagnosis and sequelae affected the individuals' quality of life.

METHOD

Ethics Certification

This research was submitted to the ethics committee of PUC-SP and the Municipal Health Department, a co-participating institution, and approved under number 45168420.0.0000.5482 and 45168420.0.3001.0086, respectively. All participants read and agreed to the research's informed consent form (ICF).

Study Design

This is an observational, cross-sectional, retrospective study. Initially, we analyzed the medical records of patients admitted to the Doutor José Soares Hungria Municipal Hospital (Pirituba Hospital) with a diagnosis of Covid-19, within one year of hospital discharge. Subsequently, the study continued observationally through telephone contact to share the form created on the Google Forms platform.

Sample

Data collection took place at the Doutor José Soares Hungria Municipal Hospital, located in Pirituba, São Paulo, SP. Data were collected from the medical records of all patients admitted with a diagnosis of Covid-19. After data collection, patients discharged from the hospital between April 2020 and March 2021 were contacted.

Data from 103 respondents were analyzed, with nine respondents' data being excluded for the following reasons:

- On the date of infection, four respondents entered their date of birth instead of their Covid-19 infection date; another three entered the date of infection incorrectly, resulting in a negative time interval between the date of infection and the date of completion of the questionnaire. Incorrectly entering the date of infection prevented us from determining how long ago the respondent was diagnosed with Covid-19;
- Two respondents did not complete any questions on the WHOQOL-Bref[17].

To assess the individual's quality of life, the WHOQOL, an assessment instrument developed by the World Health Organization Quality of Life group, was used. The instrument consists of 26 questions, the first two of which address broad quality of life and satisfaction with one's own health, respectively. The remaining 24 questions are divided into physical, psychological, social, and environmental domains[14,18]. Scores can range from 0 to 100, and higher scores indicate better quality of life.

To better understand how a Covid-19 diagnosis affected people's lives, a structured questionnaire was developed to collect general information about hospitalization characteristics, sequelae, and persistence of post-Covid-19 symptoms. It includes questions regarding:

- Date of infection;
- Need for hospitalization in a ward;
- Need for intensive care unit (ICU) admission;
- Need for intubation;
- Pulmonary impairment;
- Presence of specific post-Covid-19 symptoms and how long these symptoms persist: dyspnea, muscle weakness, loss of smell, among others;
- Presence of other symptoms;

Statistical method

Statistical analyses were performed using R software (www.r-project.org). A descriptive analysis of the responses to the structured questionnaire was performed. For qualitative variables, absolute and relative frequency distributions (n and %) were presented, and for quantitative variables, the main summary measures were presented, such as mean, standard deviation (SD), first quartile (Q1), median, and third quartile (Q3).

WHOQOL-bref domain scores were calculated following the guidelines presented in WHO[17]. Scores were compared according to time of diagnosis (date of study participation – date of Covid-19 diagnosis) using the nonparametric Kruskal-Wallis test. The significance level adopted was 5%.

RESULTS

Regarding patient characteristics, 65% of respondents had lung impairment greater than 25%. Forty-eight percent reported not requiring hospitalization. Thirteen percent reported being admitted to the ward, with 50% of them staying between 8 and 15 days. The remaining 39% reported being admitted to the ICU, with 50% staying in this condition between 22 and 59 days. Of those admitted to the ICU, the majority (53%) reported being intubated and on mechanical ventilation, with 50% of them staying in this condition between 6 and 16 days.

1) Symptoms and their persistence post-COVID-19

Table 1 presents the frequency distribution of symptoms reported by patients according to their respective duration.

Among the symptoms presented in the questionnaire, the most frequent, regardless of duration, were muscle weakness (74.8%), dyspnea (61.2%), loss of taste (48.5%), loss of smell (45.6%), desaturation (35.9%), and oxygen use (11.7%).

The most frequent duration of persistence was “up to 3 months,” regardless of the symptom.

Table 1 – Absolute (n) and relative (%) frequency distribution of post-COVID-19 symptoms according to duration of persistence

	Symptom					
Persistence time	**Dyspnea**	**Oxygen**	**Desaturation**	**Muscle weakness**	**Loss of smell**	**Loss of taste**
Up to 3 months	31 (30.1)	10 (9.7)	22 (21.4)	30 (29.1)	25 (24.3)	31 (30.1)
Up to 6 months	14 (13.6)	2 (1.9)	8 (7.8)	21 (20.4)	10 (9.7)	7 (6.8)
Up to 1 year	7 (6.8)		4 (3.9)	10 (9.7)	5 (4.9)	6 (5.8)
More than 1 year	11 (10.7)		3 (2.9)	16 (15.5)	7 (6.8)	6 (5.8)
No symptoms after hospital discharge	40 (38.8)	91 (88.3)	66 (64.1)	26 (25.2)	56 (54.4)	53 (51.5)
Total	103 (100)	103 (100)	103 (100)	103 (100)	103 (100)	103 (100)

Other symptoms also reported by patients were: body aches (18%), memory loss/failure (12%), persistent cough (5.8%), diarrhea (4.9%), numbness (4.9%), hearing loss/impairment (1.9%), nail weakness (1.9%), and worsening vision (1.9%).

2) Description of persistent post-Covid-19 symptoms by type of hospitalization

Table 2 presents the frequency distribution of persistent post-Covid-19 symptoms according to type of hospitalization. To analyze symptoms by type of hospitalization, the duration of persistence

was grouped as: no (I did not experience this symptom after hospital discharge) and yes (I experienced this symptom after hospital discharge).

With the exception of dyspnea, the other persistent symptoms were characteristic of the type of hospitalization. Patients admitted to the ward used oxygen more than patients not admitted or admitted to the ICU (not admitted: 4.1%; ward: 28.6%; ICU: 15%; p=0.0293); and the same could be observed for desaturation (not admitted: 24.5%; ward: 57.1%; ICU: 42.5%; p=0.0434). Patients who were admitted to the ICU reported more muscle weakness compared to those not admitted or admitted to the ward (not admitted: 59.9%; ward: 78.6%; ICU: 92.5%; p=0.0014). Patients who did not require hospitalization reported more loss of taste compared to those who required hospitalization in the ward or ICU (not hospitalized: 67.3%; ward: 28.6%; ICU: 32.5%; p=0.0013); the same was observed for loss of smell (not hospitalized: 63.3%; ward: 21.4%; ICU: 32.5%; p=0.0022).

Table 2 – Absolute (n) and relative (%) frequency distribution of persistent post-Covid-19 symptoms according to type of hospitalization

Symptom	Type of hospitalization			Total (n=103)	P
	No admitted (n=49)	Ward (n=14)	ICU (n=40)		
Dyspnea (n, %)					
No	23 (46.9)	3 (21.4)	14 (35)	40 (38.8)	0.1838
Yes	26 (53.1)	11 (78.6)	26 (65)	63 (61.2)	
Oxygen (n, %)					
No	47 (95.9)	10 (71.4)	34 (85)	91 (88.3)	**0.0293**
Yes	2 (4.1)	4 (28.6)	6 (15)	12 (11.7)	
Desaturation (n, %)					
No	37 (75.5)	6 (42.9)	23 (57.5)	66 (64.1)	**0.0434**
Yes	12 (24.5)	8 (57.1)	17 (42.5)	37 (35.9)	
Muscle weakness (n, %)					
No	20 (40.8)	3 (21.4)	3 (7.5)	26 (25.2)	**0.0014**
Yes	29 (59.2)	11 (78.6)	37 (92.5)	77 (74.8)	
Loss of taste (n, %)					
No	16 (32.7)	10 (71.4)	27 (67.5)	53 (51.5)	**0.0013**
Yes	33 (67.3)	4 (28.6)	13 (32.5)	50 (48.5)	
Loss of smell (n, %)					
No	18 (36.7)	11 (78.6)	27 (67.5)	56 (54.4)	**0.0022**
Yes	31 (63.3)	3 (21.4)	13 (32.5)	47 (45.6)	

3) Quality of life of post-Covid-19 patients

Tables 3, 4, and 5, respectively, present the main summary measures and boxplots for the WHOQOL-bref domain scores for the general sample and by time since COVID-19 diagnosis.

In the general sample, with the exception of the environmental domain, all domains had mean/median scores above 60%. The environmental domain had the lowest mean/median score (~15%), with the minimum and maximum scores obtained in this domain being 1.6% and 22.7%, respectively, considered very low (Table 3).

Table 3 – Main summary measures for the WHOQOL-bref domain scores for the general sample

Domain	n	Mean	sd	minimum	Q1	median	Q3	Maximum
Physical	103	60.1	20.8	10.7	46.4	60.7	78.6	100.0
Psychological	103	63.2	16.2	25.0	50.0	62.5	75.0	91.7
Social	103	62.1	21.2	16.7	50.0	66.7	75.0	100.0
Environmental	103	15.0	4.3	1.6	12.5	15.6	18.0	22.7

When we consider the time since Covid-19 diagnosis (Table 4), we find no evidence of a difference between the distributions of quality of life scores for the physical, social, and environmental domains. The exception was the psychological domain, where we observed that respondents with a diagnosis time between 3 and 6 months and between 9 and 12 months had slightly better quality of life than respondents in the other diagnosis time categories (p=0.0283).

Table 4 – Main summary measures for WHOQOL-bref domain scores according to the time since Covid-19 diagnosis

Domain	Diagnostic time	n	Mean	sd	Minimum	Q1	median	Q3	Maximum	p
Physical	**<=3 months**	13	54.9	18.6	28.6	39.3	53.6	67.9	89.3	0.1312
	3-6 months	14	73.2	15.2	46.4	68.8	71.4	83.9	96.4	
	6-9 months	31	60.4	19.3	21.4	50.0	60.7	75.0	92.9	
	9-12 months	14	56.6	23.1	10.7	47.3	55.4	73.2	89.3	
	>12 months	31	57.6	22.9	14.3	41.1	57.1	82.1	100.0	
Psychological	**<=3 months**	13	61.9	12.5	41.7	54.2	66.7	75.0	75.0	**0.0283**
	3-6 months	14	75.6	10.4	54.2	67.7	77.1	83.3	91.7	
	6-9 months	31	59.4	15.6	25.0	47.9	58.3	72.9	87.5	
	9-12 months	14	64.6	13.3	50.0	52.1	62.5	70.8	87.5	
	>12 months	31	61.4	19.4	25.0	47.9	58.3	77.1	91.7	
Social	**<=3 months**	13	65.4	21.5	16.7	58.3	66.7	75.0	100.0	0.5845
	3-6 months	14	66.1	20.5	25.0	54.2	75.0	81.3	91.7	
	6-9 months	31	64.2	22.2	25.0	50.0	66.7	83.3	100.0	
	9-12 months	14	57.1	20.1	16.7	50.0	58.3	72.9	83.3	
	>12 months	31	59.1	21.3	16.7	45.8	58.3	75.0	100.0	
Environmental	**<=3 months**	13	16.2	2.6	10.2	14.8	16.4	18.0	20.3	0.3049
	3-6 months	14	16.9	3.3	11.7	14.3	17.2	18.6	21.9	
	6-9 months	31	14.5	4.9	5.5	10.9	14.8	18.4	21.9	
	9-12 months	14	15.1	4.7	7.8	10.9	15.6	18.9	21.9	
	>12 months	31	14.3	4.2	1.6	11.7	14.1	16.8	22.7	

When considering the type of hospitalization (Table 5), we find no evidence of a difference in the distributions of quality of life scores for all WHOQoL-bref domains.

Table 5 – Main summary measures for WHOQoL-bref domain scores by type of hospitalization

Domain	Admitted	n	mean	sd	minimum	Q1	median	Q3	maximum	P
Physical	**Not admitted**	49	63.0	19.9	17.9	50.0	60.7	82.1	100.0	0.3759
	Ward	14	57.4	24.8	28.6	33.0	57.1	76.8	96.4	
	ICU	40	57.4	20.4	10.7	46.4	55.4	71.4	92.9	
Psychological	**Not admitted**	49	61.7	15.2	33.3	50.0	58.3	75.0	91.7	0.4603
	Ward	14	62.2	20.6	25.0	46.9	68.8	78.1	87.5	
	ICU	40	65.4	15.9	25.0	54.2	66.7	79.2	91.7	
Social	**Not admitted**	49	58.5	20.0	16.7	50.0	66.7	75.0	100.0	0.2031
	Ward	14	64.3	15.5	33.3	52.1	62.5	75.0	83.3	
	ICU	40	65.8	23.9	16.7	50.0	70.8	83.3	100.0	
Environmental	**Not admitted**	49	14.8	4.6	1.6	13.3	15.6	18.0	22.7	0.5436
	Ward	14	16.3	4.7	7.8	13.5	16.4	21.1	21.9	
	ICU	40	14.8	3.6	7.0	11.7	14.8	17.2	21.9	

DISCUSSION

Through the formulation and administration of a structured questionnaire, this study analyzed self-reported symptoms related to Covid-19 and their effects on patients' quality of life, with a one-year monitoring period (April 2020 to March 2021).

The main persistent symptoms reported by more than half of the respondents were muscle weakness (74.8%) and dyspnea (61.2%). This result corroborated findings in the literature[6,7,19-23], in which, in addition to fatigue and dyspnea, sleep and memory disorders, headaches, joint pain, hair loss, and loss of smell and taste, among others, were also reported. In the present study, symptoms such as headaches, memory disorders, and hair loss had prevalence rates of 18.5%, 11.7%, and 9.7%, respectively, in line with data found in the literature. The persistence of symptoms after the acute phase of Covid-19 is defined as long Covid or post-Covid-19 syndrome. The length of symptom persistence remains uncertain, and for this reason, it is a topic being studied by professionals. The most common duration of symptom persistence among survey respondents was up to three months, with the most frequently reported symptoms during this period being dyspnea, loss of taste, muscle weakness, loss of smell, desaturation, and oxygen use.

Symptoms such as muscle weakness and dyspnea showed a persistence pattern that differs from the other symptoms assessed. Their persistence decreases up to the one-year mark, but after that, the percentage of patients reporting these sequelae increases again.

This finding was an exception, as the persistence of other symptoms tends to decrease over the months. We can observe this phenomenon when analyzing the persistence of desaturation, for example, which was reported by 21% of respondents for up to 3 months; 8% for up to 6 months; 4% for up to a year; and 3% for more than a year. This symptom may be related to lung impairment, which, in the case of infection caused by Covid-19, is associated with pulmonary fibrosis. Pulmonary fibrosis is considered a sequelae of acute respiratory distress syndrome (ARDS), one of the main manifestations of Covid-19. Therefore, Covid-19 survivors are highly likely to develop fibrosis as a pulmonary sequelae[24-26]. This improvement in desaturation, evidenced in this study, can be explained by the passage of time and the introduction of pulmonary rehabilitation.

These results corroborate those of Huang et al.[27], who conducted assessments 6 months, 12 months, and 2 years after Covid-19 infection to analyze the health outcomes of hospital survivors. The main symptoms reported after two years were fatigue and muscle weakness, consistent with the

findings of the present study, in which even after one year, 15.5% of respondents still reported muscle weakness.

Regarding the percentage of individuals with persistent sequelae, we observed that all patients developed some symptom after hospital discharge. This finding is consistent with data presented in the literature, where the results are also high[7,21], reaching 76% and 89.2% of individuals with persistent symptoms, lasting up to 2 years[27]. Regarding hospitalization characteristics, more than half (52%) remained hospitalized, either in a ward or in the ICU. Thirteen percent reported hospitalization in a ward, with 50% of them staying between 8 and 15 days. The remaining 39% reported being admitted to the ICU, with 50% remaining in this condition for between 22 and 59 days. When comparing the mean length of stay in this study, the results are higher than those of others found in the literature. In a study conducted in Brazil on the profile of hospitalizations due to Covid-19 in the SUS, which observed 84,405 admissions, the mean hospital stay was 10 (± 8.5) days and in the ICU, the mean was 7.6 (± 6.8) days[28]. In the present study, the mean length of stay was 29 days and 30 days, respectively.

Similarly, two other studies, one conducted in a hospital in Wuhan, China, between January 2020 and May 2020[7], and another conducted in a hospital in Italy between April 2020 and May 2020[6], found that both ICU admissions and hospital stays had a mean length of 14 days, shorter than those found in this study.

Other findings in the literature show lower values than those found in this study regarding the number of ICU admissions. Huang et al.[7] state that 4% of patients were admitted to the ICU in the hospital in Wuhan, China, compared to 39% of respondents in this study.

One hypothesis for the prolonged hospital stay may be due to pre-existing comorbidities of patients prior to Covid-19 infection, a fact not investigated in this study, interfering with the progression and severity of the disease, requiring hospital care and leading to longer hospital stays (in the ward and ICU). Furthermore, the prolonged hospitalization time may also be explained by the lack of qualified professionals to deal with the severe consequences of Covid-19, forcing the service to make emergency hiring during critical periods of the pandemic.

When comparing our results with the WHO's prediction at the beginning of the pandemic that 5% of patients would reach a critical stage of the disease, requiring ICU admission and mechanical ventilation[29], we can see that the numbers were higher than expected. Contrary to this prediction, here, in addition to the high percentage of hospitalizations, 53% of ICU patients required intervention through invasive mechanical ventilation.

The results of this study showed differences in the persistence of all symptoms, except dyspnea, according to the type of hospitalization.

It is noteworthy that the prevalence of muscle weakness was higher in patients admitted to the ICU. In addition to being caused by the primary disorder itself, it can develop as a secondary disorder while the underlying disease is being treated, resulting from immobility, and can be termed "ICU-acquired muscle weakness"[30].

Stevens et al.[31] highlighted the prevalent neuromuscular dysfunction in critically ill patients and concluded that it is a determinant of long-term disability in ICU survivors. This dysfunction is directly related to the duration of mechanical ventilation, pulmonary impairment, and the use of sedation and corticosteroids.

The presence of persistent symptoms affects physical and cognitive function, compromising quality of life by reducing the individual's participation in society[23.] This may also be associated with symptom severity[20]. One of the aforementioned sequelae, pulmonary fibrosis, reduces quality of life, as it directly affects an individual's functionality, compromising his daily activities, and can interfere with his return to work, thus affecting his quality of life[32,25].

Health-related quality of life can be understood as a multidimensional and subjective factor that includes measures aimed at providing information on personal and social issues, as well as physical and psychological aspects, based on the patient's understanding.

Regarding the investigation of how Covid-19 infection affected participants' quality of life, the domain with the lowest score on the WHOQoL-bref questionnaire was environmental. This domain encompasses aspects related to access to and quality of conditions that affect respondents' daily lives, such as financial resources, physical safety, health and social assistance, recreation and leisure activities, physical environment, home environment, and transportation[33]. Therefore, we can interpret this result as a result of the low quality and difficulty of access to factors that interfere in the daily lives of respondents, as well as the lack of financial resources resulting from the pandemic. Thus, individual participation in this context was impaired.

Furthermore, with Covid-19 and the consequences many were subjected to during the post-Covid-19 period, the return to work for many had to be postponed. The enormous rate of informal work during this period must also be considered, which, according to the Brazilian Institute of Geography and Statistics[34], was 40.1%. In other words, approximately 38.5 million Brazilian citizens were without labor rights or social protection.

Studies have shown an association between Covid-19 infection and a worse quality of life among people with fewer resources, compared to those with greater purchasing power, indicating a negative impact of the infection on financial hardship and, therefore, on quality of life[35].

Therefore, knowing the characteristics of the environmental domain and considering the large number of informal workers, who are not adequately included in social protection programs and whose labor rights are not regulated, the aspects addressed by this domain are related to political and social aspects, directly and/or indirectly interfering with quality of life.

The other domains covered by the questionnaire – physical, psychological, and social – presented mean/median scores above 60%, indicating a satisfactory quality of life. In line with these results, a study that evaluated health-related quality of life in patients with Covid-19 also concluded that the results were quite satisfactory, considering that, after more than 100 days from the date of hospitalization, most patients who were working before the infection returned to work, although it did not specify whether the return was delayed[19]. Another study that also addressed health-related quality of life in Covid-19 patients found that the domains continued to improve over time, especially regarding the proportion of individuals with anxiety and depression[27].

Findings in the literature differ from those of this study regarding quality of life related to the type of hospitalization. No difference was found between the distributions of quality of life scores for all WHOQoL-bref domains.

According to Iob et al.[35] and Halpin et al.[36], the quality of life reported by critically ill patients admitted to the ICU was lower than that reported by those admitted to the ward, because the severity of the disease impacted the individual's physical health, affecting well-being and reducing quality of life. The study by Amdal et al.[2], emphasized the comprehensive range of post-Covid-19 symptoms and the extent to which they could cause harm. Physical and psychological symptoms were continuous. Fatigue, anxiety, and depression were reported during the active phase of the disease, but new symptoms were also described, such as attention deficit, concentration deficit, and obsessive-compulsive symptoms.

Considering the time since diagnosis, the psychological domain stood out with better results in the period of three to six months compared to the other categories. This was also the period with the best quality of life scores across all domains. However, after the 12-month period, these same results declined again, particularly for the psychological domain. Symptoms such as muscle weakness and

dyspnea persisted among respondents after a one-year period. One hypothesis for this finding may be related to patients who were hospitalized and developed severe disease, requiring ICU care.

CONCLUSION

All study participants developed some post-Covid-19 symptom, with muscle weakness and dyspnea being the most prevalent for most individuals. There was a significant difference in persistent symptoms according to the type of hospitalization. The period of longest symptom persistence was up to three months, tending to decrease over time.

These persistent symptoms affected quality of life, hindering the return to work and leisure activities, and were influenced by external political and social factors that negatively impacted the environmental domain.

STUDY LIMITATIONS

The lack of information in the medical records of patients hospitalized with Covid-19 hindered analysis and comparison regarding the variables of interest in our study.

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