

# COVID-19 LONG TERM EFFECTS AND LIFE QUALITY

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**Abstract.** Symptoms, signs, or abnormal clinical parameters persisting two or more weeks after COVID-19 onset that do not return to a healthy baseline can potentially be considered long-term effects of the disease. Management of all these effects requires further understanding to design individualized, dynamic cross-sectoral interventions in Post-COVID-19 clinics with multiple specialties, including graded exercise, physical therapy, frequent medical evaluations, and cognitive behavioral therapy when required. The e-research was conducted at Facebook group and involved patients with PCR test confirmed COVID-19 one month ago or earlier, with still persisting symptoms. The tasks of the study were to evaluate the main symptoms of prolonged COVID-19 and symptoms, mostly effecting the life quality of respondents; to identify impact on physical, psychoemotional health and social life of respondents; to reveal the awareness about rehabilitation and need for it. The results revealed that the prevailing symptoms of prolonged COVID-19 were fatigue, olfactory disorders, headache, body pains and taste disorders. The life quality effecting symptoms were fatigue, headache and body pains, exhaustion, nervousness and sadness. More than half of respondents had the reduced work capacity and daily activities, less than half of respondents had worsened life quality due to psychoemotional impairments, more than one third – due to physical health and social life impairments. The majority of respondents were not aware about possibility of primary outpatient rehabilitation, more than two thirds require such rehabilitation and only few were administered after active hospital treatment.

**Keywords:** long COVID-19, persisting symptoms, life quality, rehabilitation.

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## INTRODUCTION

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was detected in China in December 2019. Since then, more than 175 million people worldwide have been infected after a year, and over 3.8 million people have died from the coronavirus disease 2019 (Ritchie et al., 2021). Although unprecedented efforts from the scientific and medical community have been directed to sequence, diagnose, treat, and prevent COVID-19, individuals' lasting effects after the acute phase of the disease are yet to be revealed. The terminology of the prolonged novel coronavirus disease has been confusing and not standardized. Different authors have used several terms to describe prolonged symptoms following COVID-19 illness, such as “Long COVID-19”, “post-acute COVID-19”, “persistent COVID-19 symptoms”, “chronic COVID-19”, “post-COVID-19 manifestations”, “long-term COVID-19 effects”, “post COVID-19 syndrome”, “ongoing COVID-19”, “long-term sequelae”, or “long-haulers” as synonyms. Most recently, the term “post-acute sequelae of SARS-CoV-2 infection” (PASC), “long-COVID-19”, and “post-acute COVID-19”, has been utilized (Rubin, 2020). Symptoms, signs, or abnormal clinical parameters persisting two or more weeks after COVID-19 onset that do not return to a healthy baseline can potentially be considered long-term effects of the disease (Lopez-Leon et al., 2021). Although such alteration is mainly reported in severe and critical disease survivors, the lasting effects also occur in individuals with a mild infection who did not require hospitalization (Townsend et al., 2021). There are many persisting symptoms reported, but five most common effects were fatigue (58%), headache (44%), attention disorder (27%), hair loss (25%), and dyspnea (24%) (Lopez-Leon et al., 2021).

COVID-19 has a long-term impact on both hospitalized and non-hospitalized patients, which includes not just symptoms, but a broader impact on aspects of quality of life including mental health (Garratt et al., 2021).

Management of all these effects requires further understanding to design individualised, dynamic cross-sectoral interventions in Post-COVID-19 clinics with multiple specialties, including graded exercise, physical therapy, frequent medical evaluations, and cognitive behavioral therapy when required. Primary outpatient rehabilitation is administered up to 3- or 6-months term only after active hospital treatment (Ministry of Health of the Republic of Lithuania, 2021). 112753 COVID-19 cases were registered in 2020 in Lithuania, but there is no official data, how many patients were administered primary outpatient rehabilitation (Institute of Hygiene, 2020).

**The object of the study:** COVID-19 and long term effects.

**Objective of the study:** to analyse the impact of long term COVID-19 on life quality.

**Tasks of the study:**

1. To evaluate the main symptoms of prolonged COVID-19 and symptoms, mostly effecting the life quality of respondents.
2. To identify impact on physical, psychoemotional health and social life of respondents.
3. To reveal the awareness about rehabilitation and need for it.

### THE RESEARCH METHOD

The e-research was conducted at Lithuanian Facebook coronavirus reconvalescent support group in 2021 winter, using quantitative method. The anonymous questionnaire included SF-36 questions in order to assess possible changes in quality of life after the disease. The survey involved 222 patients with PCR test confirmed COVID-19 one month ago or earlier, with still persisting symptoms. The majority of respondents were females, average age 41 year, in good health condition. Data were evaluated and processed using the Microsoft Office Excel program.

### THE RESULTS AND DISCUSSION

The survey results revealed that less than half of respondents had chronic diseases or conditions: 20% of respondents had cardiovascular chronic diseases, 8% had pulmonary chronic diseases, 3% had oncologic disease, 1% had diabetes mellitus, one respondent had transplanted organ. Only more than half of respondents were entirely healthy (see Figure 1):

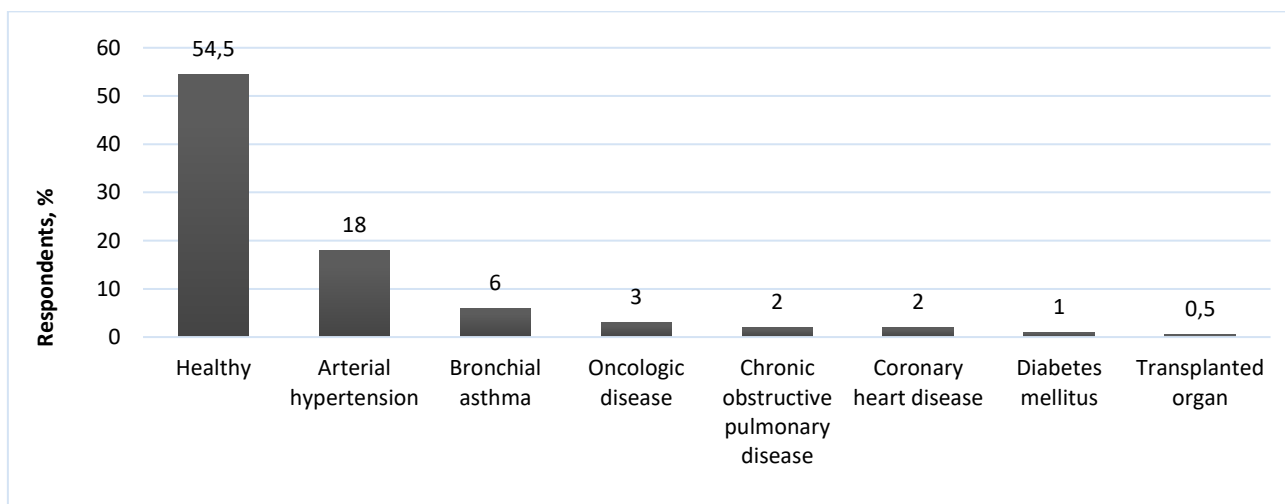


Figure 1. The comorbidity

Though almost half of respondents had comorbidity, but the majority of respondents rated their health condition before the disease as excellent, very good or good, only 12,6 % pointed out satisfactory health condition (see Figure 2).

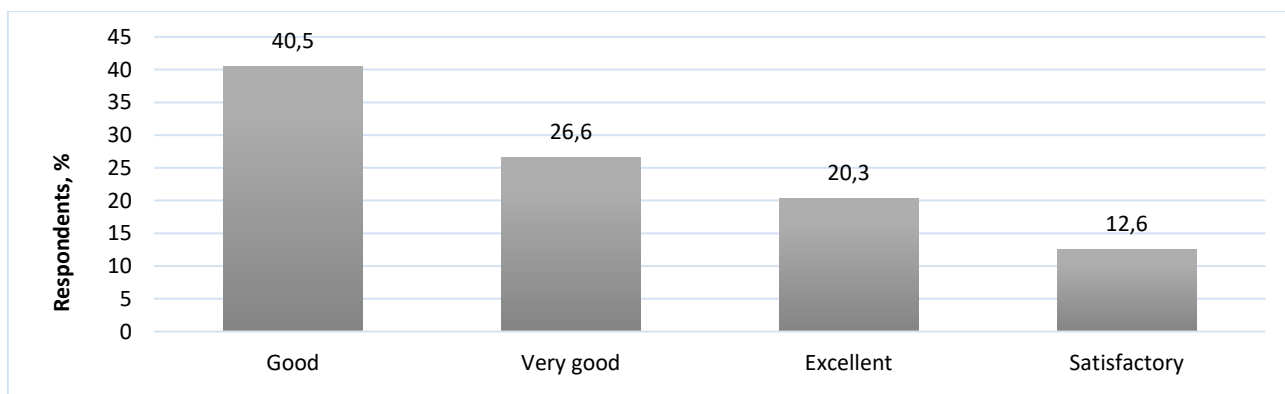


Figure 2. The health condition before the disease

Only patients with PCR positive test, confirming COVID-19 more than one month ago, were recruited to the survey. The majority of cases COVID-19 was confirmed before 5-12 weeks (see Figure 3):

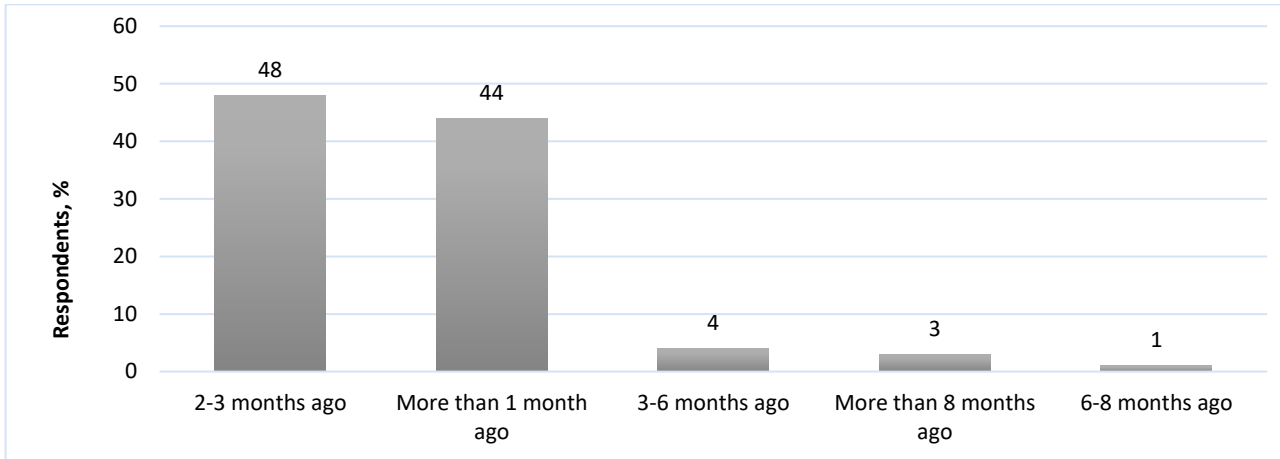


Figure 3. The COVID-19 confirmed by PCR test

According to clinical symptoms, laboratory indicators, and imaging findings, COVID-19 is classified as mild, moderate, severe, and critical.

**Mild Illness:** Individuals who have any of the various signs and symptoms of COVID-19 (e.g., fever, cough, sore throat, malaise, headache, muscle pain, nausea, vomiting, diarrhea, loss of taste and smell) but who do not have shortness of breath, dyspnea, or abnormal chest imaging.

**Moderate Illness:** Individuals who show evidence of lower respiratory disease during clinical assessment or imaging and who have an oxygen saturation ( $SpO_2$ )  $\geq 94\%$  on room air at sea level.

**Severe Illness:** Individuals who have  $SpO_2 < 94\%$  on room air at sea level, a ratio of arterial partial pressure of oxygen to fraction of inspired oxygen ( $PaO_2/FiO_2$ )  $< 300$  mm Hg, a respiratory rate  $> 30$  breaths/min, or lung infiltrates  $> 50\%$ .

**Critical Illness:** Individuals who have respiratory failure, septic shock, and/or multiple organ dysfunction (COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health, 2021). Patients who have oxygen saturation  $SpO_2 < 94\%$ , usually require oxygen therapy with or without hospitalization.

Evaluation of Covid-19 is guided by the severity of illness. According to data from China, 81% of people with Covid-19 had mild or moderate disease (including people without pneumonia and people with mild pneumonia), 14% had severe disease, and 5% had critical illness (Wu & McGoogan, 2020). The results of the study revealed that only 4,1% of respondents were hospitalized and 2,9 % required oxygen therapy at the hospital, 4,7% were treated at home and required oxygen therapy, 88,3 % were treated at home without oxygen therapy, so it can be stated that the majority of respondents had mild to moderate form of the disease without requiring hospitalization or oxygen therapy ( see Figure 4).

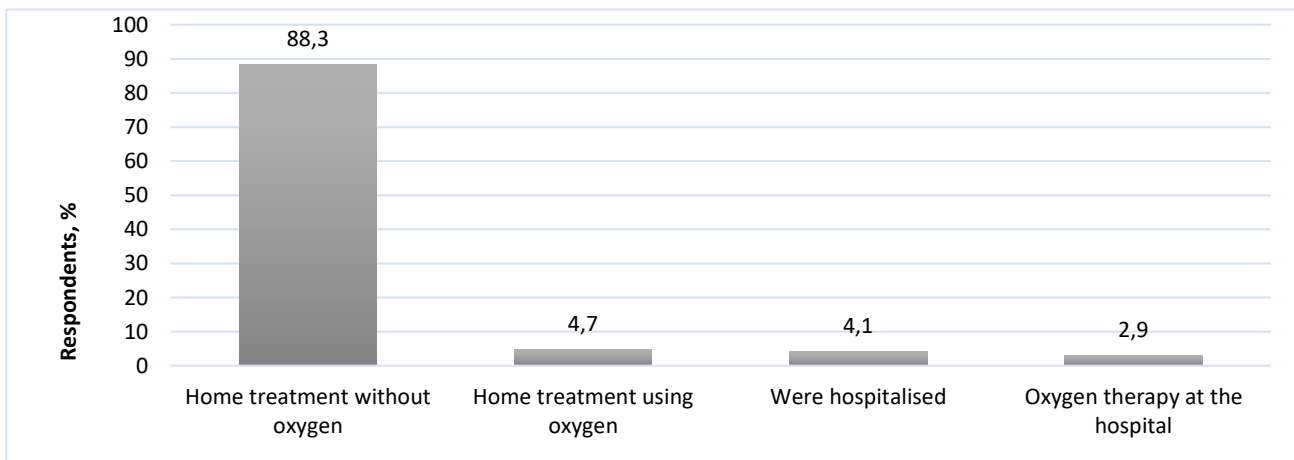


Figure 4. The disease severity

More than fifty symptoms of long lasting COVID-19 are reported (Lopez-Leon et al., 2021). Fatigue (58%) is the most common symptom of long and acute COVID-19 (Townsend et al., 2021). It is present even after 100 days of the first symptom of acute COVID-19 (Townsend et al., 2020). The results of the study revealed persisting physical, neurological, psychoemotional symptoms longer than for one month

or even for few months after the disease. Fatigue, nausea or vomiting, memory disorders, sadness, breathing shortness, diarrhea or obstipation, digestion disorders, sleep disorders, cough, intermittent subfebrility, taste disorders, body pains, headache, olfactory disorders were long lasting symptoms, reported by the respondents. The most prevailing symptoms were fatigue, olfactory disorders, headache, body pains and taste disorders (see Figure 5):

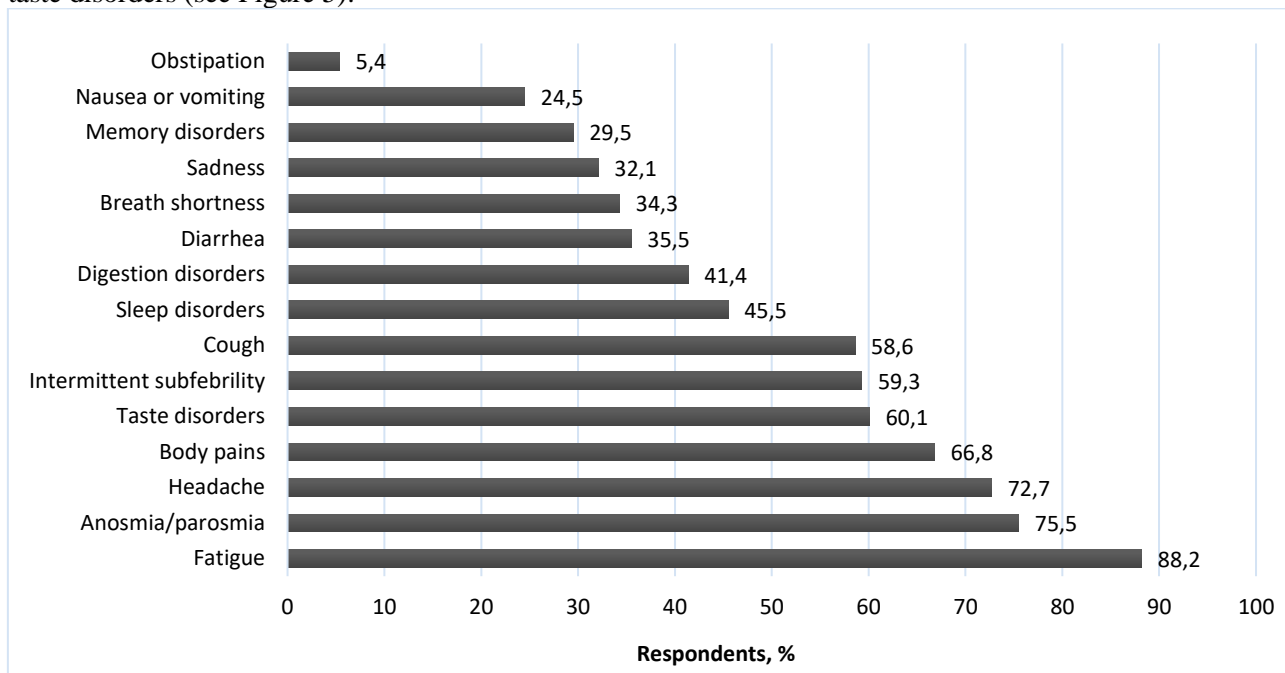


Figure 5. The persisting symptoms

The symptoms observed in post-COVID-19 patients, resemble in part the chronic fatigue syndrome (CFS), which includes the presence of severe incapacitating fatigue, pain, neurocognitive disability, compromised sleep, symptoms suggestive of autonomic dysfunction, and worsening of global symptoms following minor increases in physical and/or cognitive activity (Kingstone et al., 2020). The respondents indicated that the most disturbing symptoms, persisting for a long time, were fatigue, body pains and headache, exhaustion, nervousness and sadness. Physical symptoms were disturbing for half or less than half of respondents (see Figure 6).

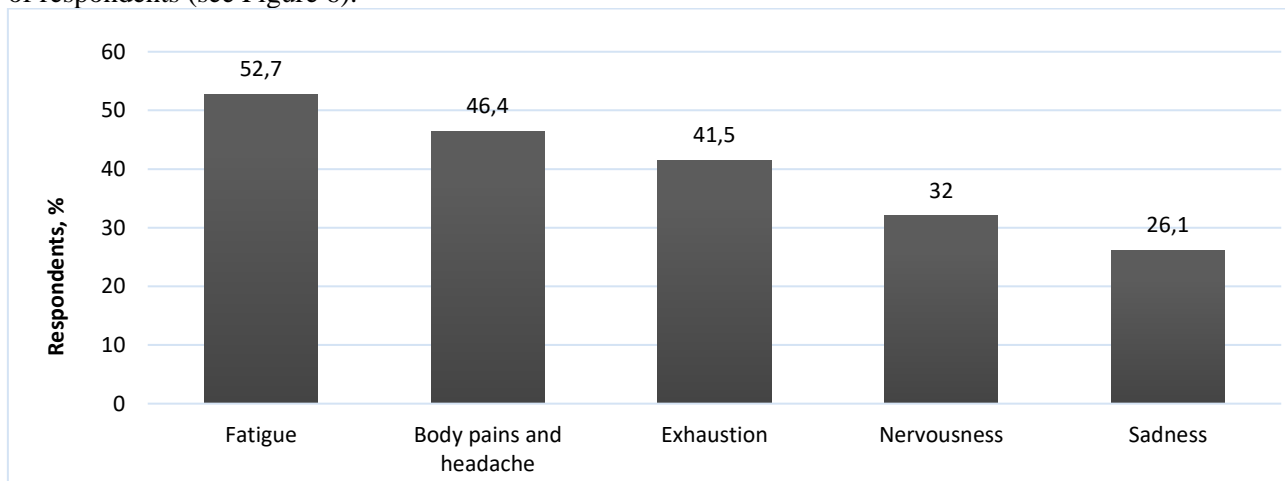


Figure 6. The most disturbing symptoms

The respondents were asked about the changes in their life quality after the disease, lasting more than one month. More than half of respondents complained of reduced work capacity and daily activities, less than half of respondents pointed out emotional health impairments as the reason of their life quality deterioration, more than one third of respondents complained of physical health impairments and social life worsening (see Figure 7):

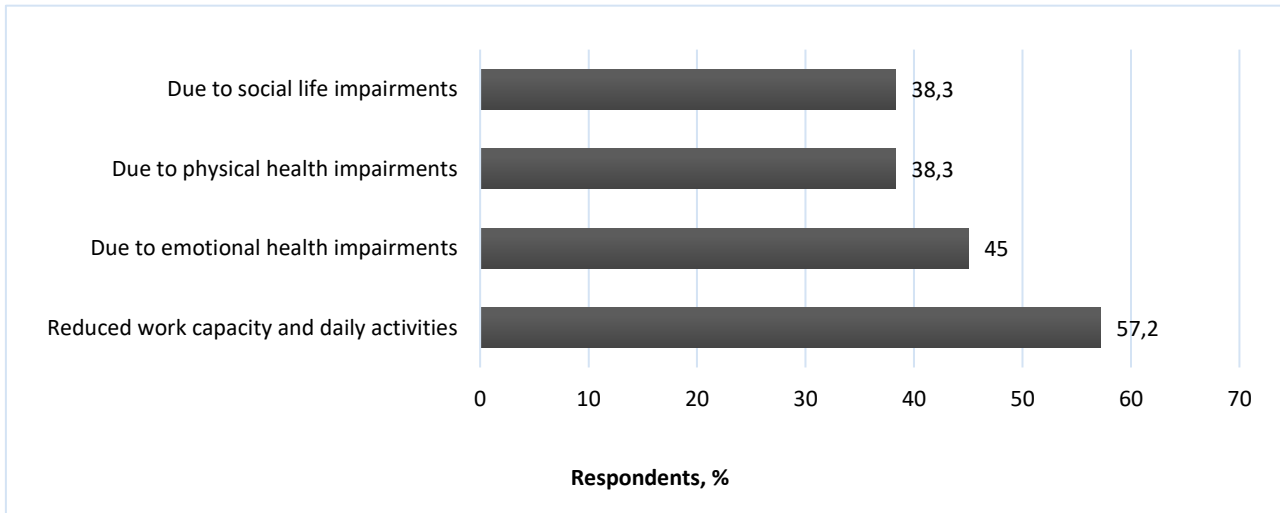


Figure 7. **The worsened life quality**

Patients require their family doctors to believe their symptoms and to demonstrate empathy and understanding. Ongoing support by primary care professionals during recovery and rehabilitation is crucial (Kingstone et al., 2020). In Lithuania COVID-19 patients are provided primary outpatient rehabilitation up to 3 and up to 6 months (in case of psychoemotional impairments) only after the discharge from the hospital (Ministry of Health of the Republic of Lithuania, 2021). This rehabilitation is reimbursed by state. All patients suffering long COVID after mild or moderate form of the disease without hospitalization, have not such possibility. The majority of respondents require the rehabilitation but were not informed about it. Though 4,1 % of respondents were hospitalized (see Figure 4), but only 1,8 % were administered rehabilitation after active treatment at the hospital (see Figure 8):

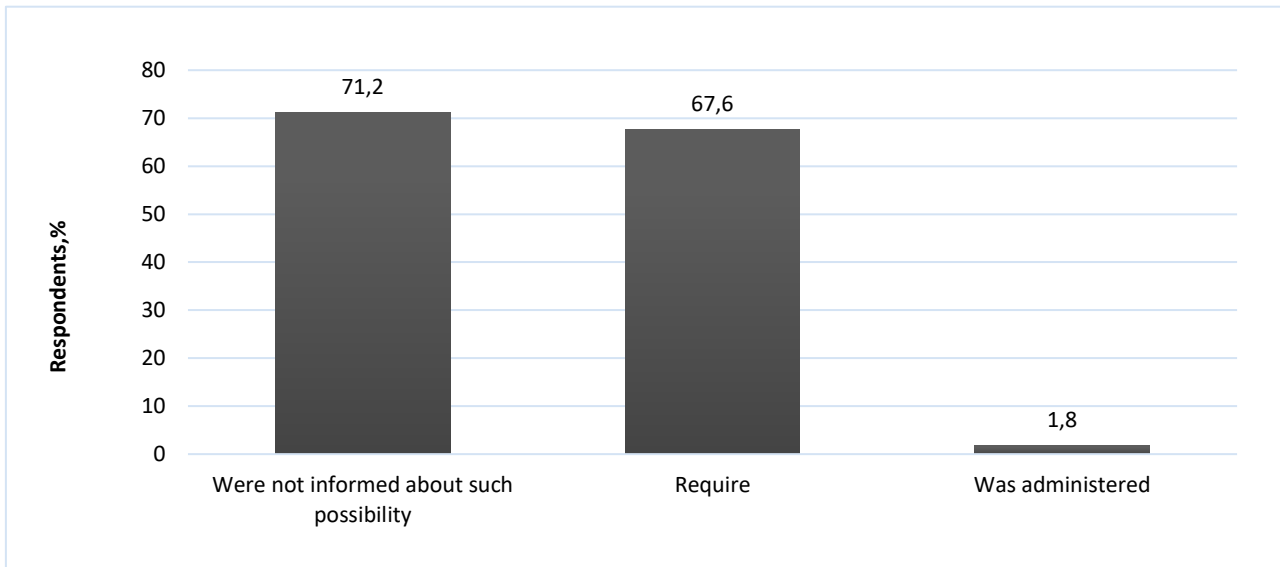


Figure 8. **The primary outpatient rehabilitation**

The majority of respondents suffered mild form of the disease, but have long lasting symptoms and life quality impairments, prevailing the reduced work capacity. The rehabilitation can solve these problems. The majority of respondents require the rehabilitation but were not aware about it. There is possibility to undergo the rehabilitation by own expenses, but patients were not provided information even if they have persisting symptoms and worsened life quality for significantly long period. Post-acute COVID-19 management at primary outpatient care is still insufficient. COVID-19 long term effects after mild or moderate form of the disease are still underestimated and require a new approach.

## CONCLUSIONS

1. The prevailing symptoms of prolonged COVID-19, pointed out of majority of respondents, are fatigue, olfactory disorders, headache, body pains and taste disorders. The most disturbing symptoms, effecting the life quality of respondents, are fatigue, headache and body pains, exhaustion, nervousness, and sadness.
2. More than half of respondents had the reduced work capacity and daily activities, less than half of respondents had worsened life quality due to psychoemotional impairments, more than one third – due to physical health and social life impairments.
3. The majority of respondents are not informed about possibility of primary outpatient rehabilitation, more than two thirds require such rehabilitation and only few were administered after active hospital treatment.

## REFERENCES

- COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health (2021). Retrieved from <https://www.covid19treatmentguidelines.nih.gov/>
- 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. The Journal of infection*, 82(5), 186–230. Retrieved from <https://doi.org/10.1016/j.jinf.2021.01.002>
- Institute of Hygiene (2020). Retrieved from [https://hi.lt/php/sr1.php?dat\\_file=serg1.txt](https://hi.lt/php/sr1.php?dat_file=serg1.txt)
- Kingstone, T., Taylor, A. K., O'Donnell, C. A., Atherton, H., Blane D. N., & Chew-Graham C. A. (2020). *Finding the 'right' GP: A qualitative study of the experiences of people with long-COVID*. BJGP. Retrieved from <https://doi.org/10.3399/bjgpopen20X101143>
- Lopez-Leon, S., Wegman-Ostrosky, T., Perelman, C., Sepulveda, R., Rebolledo, P. A., Cuapio, A., & Villapol, S. (2021). *More than 50 long-term effects of COVID-19: a systematic review and meta-analysis. Scientific reports*, 11(1), 16144. Retrieved from <https://doi.org/10.1038/s41598-021-95565-8>
- Ministry of Health of the Republic of Lithuania (2020). Lietuvos Respublikos Sveikatos Apsaugos Ministro Įsakymas dėl Lietuvos Respublikos sveikatos apsaugos ministro 2020 m. kovo 16 d. įsakymo Nr. V-383 „Dėl Vaikų ir suaugusiųjų COVID-19 ligos (koronaviruso infekcijos) diagnostikos ir gydymo tvarkos aprašo patvirtinimo“ pakeitimo, 2021 m. birželio 21 d. Nr. V-1468, Vilnius. Retrieved from <https://www.e-tar.lt/portal/lt/legalAct/041c5640d29811eba2bad9a0748ee64d>
- Ritchie, H., Ortiz-Ospina, E., Beltekian, D., Mathieu, E., Hasell, J., Macdonald, B., Giattino, C., Appel, C., Rodés-Guirao, L., & Roser, M. (2021). *Coronavirus Pandemic (COVID-19)*. Retrieved from <https://ourworldindata.org/coronavirus>
- Rubin, R. (2020). *As their numbers grow, COVID-19 "long haulers" stump experts. JAMA* 324, 1381–1383. Retrieved from <https://doi.org/10.1001/jama.2020.17709>
- Townsend, L., Dyer, A. D., Jones, K., Dunne, J., Mooney, A., Gaffney, F., O'Connor, L., Leavy, D., O'Brien, K., Dowds, J., Sugrue, J., Hopkins, D., Martin-Loeches, I., Cheallaigh, C. N., Nadarajan, P., McLaughlin, A. M., Bourke, N. M., Bergin, C., O'Farrelly, C., Bannan, C., & Conlo, N. (2020). *Persistent fatigue following SARS-CoV-2 infection is common and independent of severity of initial infection. PLoS One* 15, e0240784. Retrieved from <https://doi.org/10.1371/journal.pone.0240784>
- Townsend, L., Dowds, J., O'Brien, K., Sheill, G., Dyer, A. H., O'Kelly, B., Hynes, J. P., Mooney, A., Dunne, J., Cheallaigh, C. N., O'Farrelly, C., Burke, N. M., Conlon, N., Martin-Loeches, I., Bergin, C., Nadarajan, P., & Bannan, C. (2021). *Persistent poor health post-COVID-19 is not associated with respiratory complications or initial disease severity. Ann. Am. Thorac. Soc.* Retrieved from <https://doi.org/10.1513/AnnalsATS.202009-1175OC>
- Wu, Z., & McGoogan, J. M. (2020). *Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. JAMA* 323(13):1239–1242. doi:10.1001/jama.2020.2648.