



SI-PANDA
Behavioural Insights
Survey on COVID-19:
Slovenia

NIJZ

National Institute
of **Public Health**

COVID-19 PANDEMIC IN SLOVENIA

**Results of a panel online survey on the impact
of the pandemic on life (SI-PANDA),
25th iteration**

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CONTENTS

INTRODUCTION	1
METHODOLOGICAL NOTES	3
KEY FINDINGS OF THE 25 TH ITERATION	4
RESULTS	6
Supporting current recommendations to control the spread of SARS-CoV-2 infections	6
Vaccination against COVID-19	8
Vaccination against seasonal influenza and influenza virus infection	14
Compliance with isolation and quarantine and action in case of cold symptoms or respiratory infection	15
Problems after recovering from infection with the SARS-CoV-2 virus – post-COVID syndrome or long COVID	17
Quality of life	24
Mental well-being and mental health problems	26

INTRODUCTION

The COVID-19 pandemic has had a significant impact on all areas of human life, both in Slovenia and around the world. It has been three years since the first SARS-CoV-2 infection occurred in Slovenia on 4 March 2020. Since then, Slovenia has experienced several epidemic waves, affecting the entire country and all its inhabitants in one way or another. This time has been important for researching the impact and consequences of the pandemic on the individual and society as well as on the health system. The severity and the scope of the COVID-19 pandemic and the introduction of measures to prevent and limit the transmission of the infection have had a profound impact on the daily lives of all people in 2020 and 2021, including those not directly affected by the virus. The uncertain and long-lasting period of health and social crisis has led to a gradual exhaustion of compensatory mechanisms in humans, and thus to a lower success rate of measures to prevent the spread of SARS-CoV-2 infection among the population.

In order to better understand people's behaviour in the context of a crisis situation, both in terms of adherence to recommended measures such as vaccination against COVID-19, use of a mask, keeping safety distance, etc., as well as to gain insight into changes in their lifestyle, physical and mental health, we have already launched the SI-PANDA survey on 4 December 2020, which studies the impact of the COVID-19 pandemic on the lives of Slovenians. After 19 iterations of the survey in 2020 and 2021 (the last was carried out from 7 to 10 December 2021), a new set of 6 surveys is now on the way, with the first iteration carried out from 20 to 23 September 2022.

External circumstances have changed in the meantime. The SARS-CoV-2 virus has become our constant companion, as they call it our "new normal". We seem to have forgotten very quickly that anyone of us, at any age, can become seriously ill or even die from COVID-19. It is also true that most people who become infected with SARS-CoV-2 today, when Omicron is the predominant variant, are likely to have mild to moderate respiratory illness and will recover without special treatment. We seem to have forgotten very quickly that anyone among us, at any age, can become seriously ill or even die from COVID-19. It is also true that most people who become infected with SARS-CoV-2 today, when Omicron is the predominant variant, are likely to have mild to moderate respiratory illness and will recover without special treatment. However, there are people among us, especially the elderly and those with chronic conditions, who are at greater risk from the disease. As a solidarity society, we have a duty to protect them through our behaviour. We are also facing the post-COVID syndrome or long COVID. This is a condition after SARS-CoV-2 infection, when various health problems persist for two months or longer, they cannot be explained by an alternative diagnosis, and severely affect an individual's functioning at work or at home.

The new set of SI-PANDA research aims to determine how often people have been exposed to SARS-CoV-2 infection since the beginning of the pandemic, and to study the consequences of recovering from SARS-CoV-2 infection. Given that vaccination against COVID-19 is still one of the most effective measures, we are also interested in people's attitudes towards vaccination and the reasons for their hesitation.

The results of the research presented in the report are aimed at experts and decision-makers, as well as the media and general public. This also implements the WHO recommendation¹ that countries should regularly conduct qualitative and quantitative population surveys, which should be the basis for further action.

¹ <https://apps.who.int/iris/bitstream/handle/10665/335820/WHO-EURO-2020-1160-40906-55390-eng.pdf>.

METHODOLOGICAL NOTES

The research in the form of an online survey is being conducted in twenty-six iterations starting on 4 December 2020. The first set of the survey (up to and including the 12th iteration) was conducted by the Mediana Institute for Market and Media Research on behalf of the National Institute of Public Health (NIJZ) while the second and third sets are being conducted by Valicon. The first twelve iterations were conducted once every two weeks and the second part, including the 19th iteration, once a month. The third set of survey, which is being carried out after a nine-month break, will also be carried out once a month. The data are analysed at the NIJZ.

Selected panel members are invited to the online survey, which takes place through the online panel. Each iteration of online survey involves a representative sample of about 1,000 adults aged 18 to 74.

At the beginning of research, we used the World Health Organization (WHO) questionnaire² as a basis, which we translated and adapted to the situation in our country according to the WHO guidelines. We also used the translated WHO-5 questionnaire to measure individuals' mental health and the 7C questionnaire to determine the willingness to vaccinate. We have also included some questions that have been used in previous surveys carried out by the National Institute of Public Health and questions that members of the research team and colleagues have designed according to current needs.

The data presented in the report are weighted by gender, age groups and statistical region.

The report presents data from the **25th iteration** of the online survey, that took place **from 21 February 2023 to 24 February 2023** on a sample of 1,018 adults aged 18 to 74 years. Some comparisons with previous iterations of the survey are also shown.

Research carried out so far:

1st iteration from 4 Dec 2020 to 6 Dec 2020
2nd iteration from 18 Dec 2020 to 21 Dec 2020
3rd iteration from 4 Jan 2021 to 5 Jan 2021
4th iteration from 15 Jan 2021 to 17 Jan 2021
5th iteration from 29 Jan 2021 to 30 Jan 2021
6th iteration from 12 Feb 2021 to 15 Feb 2021
7th iteration from 26 Feb 2021 to 1 Mar 2021
8th iteration from 12 Mar 2021 to 15 Mar 2021
9th iteration from 26 Mar 2021 to 29 Mar 2021
10th iteration from 9 Apr 2021 to 12 Apr 2021
11th iteration from 23 Apr 2021 to 26 Apr 2021
12th iteration from 7 May 2021 to 9 May 2021
13th iteration from 8 Jun 2021 to 10 Jun 2021

14th iteration from 6 Jul 2021 to 9 Jul 2021
15th iteration from 25 Aug 2021 to 28 Aug 2021
16th iteration from 21 Sept 2021 to 23 Sept 2021
17th iteration from 12 Oct 2021 to 15 Oct 2021
18th iteration from 9 Nov 2021 to 12 Nov 2021
19th iteration from 7 Dec 2021 to 10 Dec 2021
20th iteration from 20 Sept 2022 to 23 Sept 2022
21st iteration from 18 Oct 2022 to 21 Oct 2021
22nd iteration from 22 Nov 2022 to 25 Nov 2022
23rd iteration from 14 Dec 2022 to 17 Dec 2022
24th iteration from 24 Jan 2023 to 27 Jan 2023
25th iteration from 21 Feb 2023 to 24 Feb 2023

² <https://www.euro.who.int/en/health-topics/health-determinants/behavioural-and-cultural-insights-for-health/tools-and-resources/who-tool-for-behavioural-insights-on-covid-19/survey-tool-and-guidance-behavioural-insights-on-covid-19-produced-by-the-who-european-region>.

KEY FINDINGS OF THE 25TH ITERATION

➤ Supporting current recommendations

In the 25th iteration of the survey, the respondents gave the highest levels of support to the recommendation of effective ventilation of enclosed spaces (83.6%) and effective ventilation in educational institutions (80.3%), isolation for persons with confirmed SARS-CoV-2 infection (71.2%), and the use of masks in health care facilities, pharmacies, and homes for the elderly (63.0%). Most support for the current recommendations comes from people in the 65–74 age group. Those vaccinated against COVID-19 are more likely to support all of these recommendations than those who are not vaccinated.

➤ Vaccination against COVID-19 and seasonal influenza

In the most recent iterations of SI-PANDA, the proportion of people who do not intend to be vaccinated against COVID-19 has been relatively stable at around one-quarter of respondents, rising to around 30% in the most recent, 25th iteration of the survey. People who have not been vaccinated against COVID-19 are most concerned about the side effects of vaccination, the long-term impact on their health and the safety of vaccines. The main reasons given by those who received the COVID-19 vaccine were prevention of a more severe course of the disease or its consequences, and the protection of one's health and the health of their loved ones. In the 2022/2023 season, 8.4% of respondents were vaccinated against seasonal influenza. According to self-assessment, 8.0% of persons had had influenza in the last six months, of whom less than a quarter had laboratory-confirmed influenza virus infection.

➤ Compliance with isolation and quarantine and action in case of cold symptoms or respiratory infection

If they had symptoms of a cold or respiratory infection, most people would self-test for SARS-CoV-2 (65.8%), a good third would wait to see how their symptoms developed, and just under a quarter would self-isolate. Upon contact with a person who tested positive for the SARS-CoV-2 virus, despite not developing symptoms themselves, 65.6% of people would get tested.

➤ Long COVID

The majority of people who have been infected with SARS-CoV-2 at least once (55.9%) report that their infection was asymptomatic or with mild symptoms. Among respondents who had already been infected with SARS-CoV-2, about 60% reported that they had some problems three months after their first or only infection, or their second infection that lasted at least two months. After recovering from a COVID-19 infection, the most common problems reported by respondents are fatigue and lack of energy, both after the first or only infection and after a second infection. About 40% of people still have problems after recovering from COVID-19. People who still have problems after recovering from COVID-19 report a worse quality of life compared to people who no longer have these problems.

➤ Mental well-being and mental health problems

Overall average mental well-being has slightly worsened since September 2022, with an increase in mental health problems and symptoms of depression. There is a slight improvement in the 25th iteration of the survey compared to the 24th iteration, which is noticeable in almost all age groups. We found that around a third of adults have mental health problems, of which less than a tenth are more likely to have a depressive disorder. Mental health problems are most common in younger adults and least common in the oldest respondents. People who are satisfied with their

lives, those who are better off financially than before and those who no longer have problems after recovering from COVID-19 have fewer mental health problems.

RESULTS

Supporting current recommendations to control the spread of SARS-CoV-2 infections

Within days of the declaration of a coronavirus epidemic in Slovenia (12 March 2020), a number of measures were taken to limit the spread of SARS-CoV-2 infections, which varied according to the epidemiological situation in the country. At the end of May 2022, the Government adopted a decision on the expiry of the Ordinance on the temporary measures for the prevention and control of infectious disease COVID-19. Throughout the duration of the measures, as well as after their termination, there are recommendations for protecting health and preventing the spread of infections, which are also valid in the current epidemiological situation.

In August 2022, the Expert baselines and guidelines for preparedness and response to SARS-CoV-2 infections in the autumn-winter season 2022/2023 in Slovenia³ were prepared, according to which public health measures will be adapted according to the epidemiological situation. Five possible long-term scenarios for the evolution of the epidemic have been developed, linked to: virus characteristics, population susceptibility, social factors and pharmacological measures. The objectives are based on five pillars (vaccination, transmission control, testing and treatment, SARS-CoV-2 monitoring and contact reduction measures). Each pillar has specific recommendations relating to the baseline (Phase 1) and the escalation phase (Phase 2). From 22 July 2022, we are in Phase 1, which aims to protect the most vulnerable groups of the population in order to prevent an increase in the number of people with the more severe form of COVID-19. Measures aimed at limiting the spread of the SARS-CoV-2 virus are recommended, but do not interfere significantly with the daily lives of most individuals.

Between 21 and 24 February 2023, we asked respondents how supportive they were of the current recommendations.

The highest proportion of people support effective ventilation of enclosed spaces (83.6%). Effective ventilation in educational institutions (80.3%), isolation for people with confirmed SARS-CoV-2 infection (71.2%), and 63.0% support the use of masks in health care facilities, pharmacies and homes for the elderly. 38.9% support the use of masks in public transport and 38.5% support the use of masks in enclosed public spaces. Even in this iteration of the survey, respondents gave the least support to the use of Ostani zdrav application in colleges and universities (31.3%). Most of the current recommendations are more supported by people in the 65–74 age group (Figure 1).

³ https://www.nijz.si/sites/www.nijz.si/files/uploaded/strokovna_izhodisca_in_usmeritve_za_pripravljenost_in_odzivanje_na_okužbe_z_virusom_sars-cov-2.pdf.

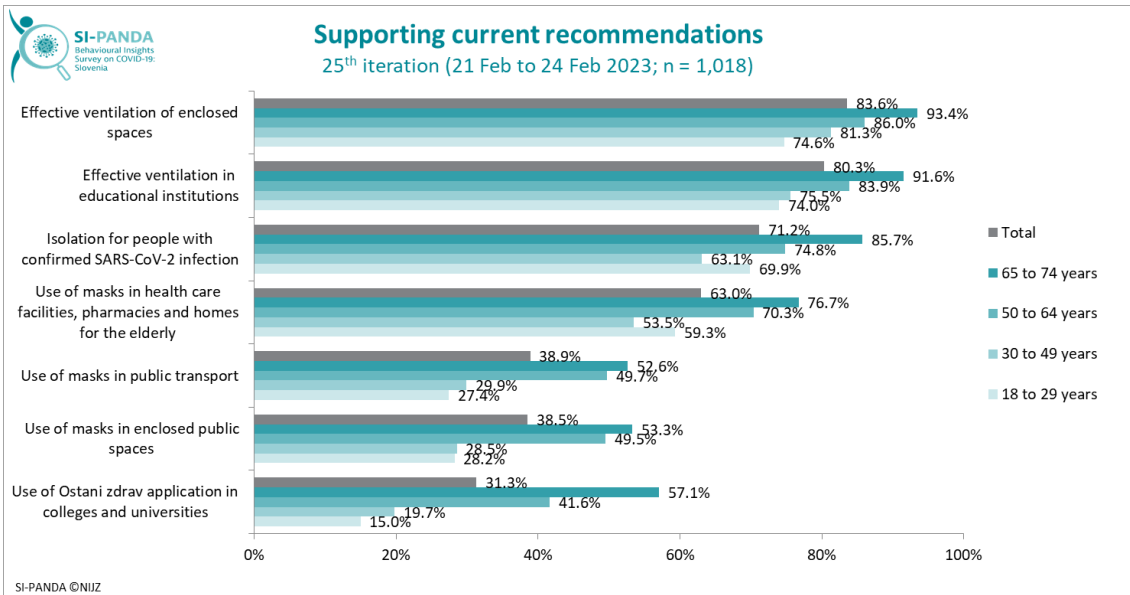


Figure 1: Supporting current recommendations, total and by age groups.

Compared to those who will not be vaccinated, people who have received at least one dose of COVID-19 vaccine are statistically significantly more likely to support all of these recommendations; effective ventilation of enclosed spaces (87.4%), effective ventilation in educational institutions (85.0%), isolation for people with confirmed infection (78.3%), use of masks in health care facilities, pharmacies and homes for the elderly (73.3%), use of masks in public transport (46.6%), use of masks in enclosed public spaces (47.5%) and use of Ostani zdrav application in colleges and universities (40.0%) (Figure 2).

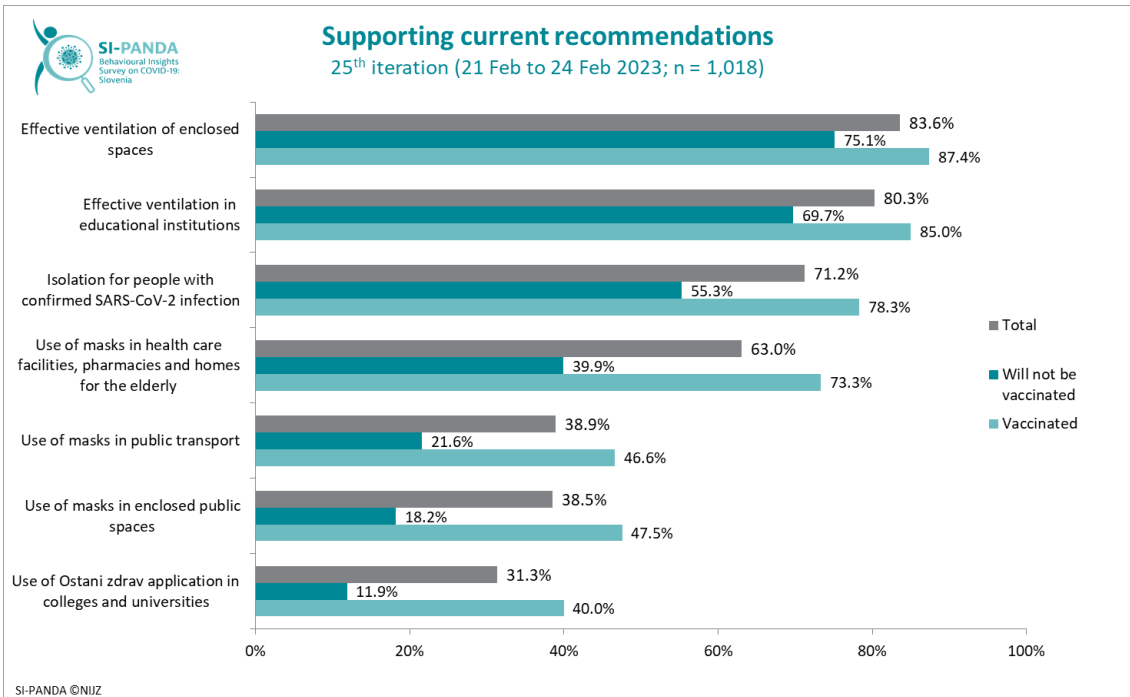


Figure 2: Supporting current recommendations, total and by vaccination status.

Vaccination against COVID-19

In the 25th iteration of the SI-PANDA survey, 69.2% of the respondents answered that they had already been vaccinated against COVID-19 with at least one dose of the vaccine. Similarly, data from the Electronic Registry of Vaccinated Persons (s/ov. elektronski register cepljenih oseb – eRCO) show that 71% of adults have received at least one dose of COVID-19 vaccine by 24 February 2023. In the 25th iteration of the SI-PANDA survey, 7.2% of persons responded that they had received one dose of vaccine, 22.7% of respondents received two doses of vaccine, 32.8% of respondents stated that they had received the first booster dose and 6.4% respondents received the second booster dose. Statistically significantly more people who do not intend to be vaccinated are in the 18–49 age group (35.5–39.5%), compared to older people aged 50–74 (16.9–19.7%). Just under a third (29.5%) of respondents do not intend to be vaccinated, and 1.2% have not been vaccinated due to health reasons (Figure 3). According to eRCO, by 24 February 2023, 38% of the adult Slovenian inhabitants had been vaccinated with the first booster dose, and 5% with the second booster dose.

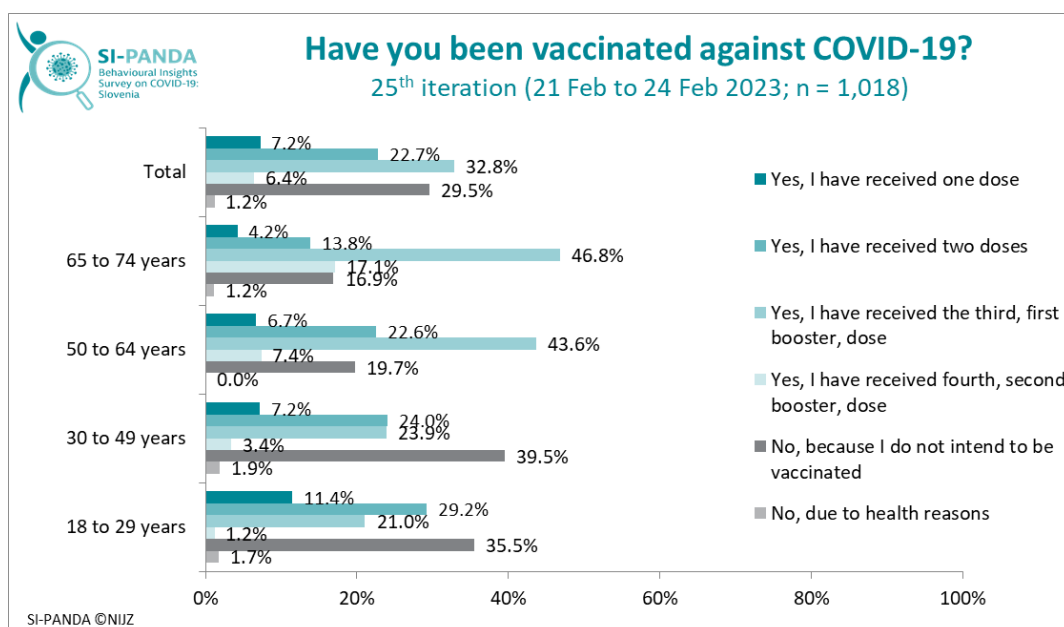


Figure 3: Vaccination against COVID-19, total and by age groups.

A good half (50.7%) of the respondents agreed that the COVID-19 can prevent the more severe course of COVID-19, 14.8% were undecided and a good third disagreed. The proportion of people who believe that the vaccine can prevent a more severe course of the COVID-19 is statistically significantly higher in the 50–74 age group (60.4% and 64.4% respectively), compared to 18–49 year olds (48.3% and 39.0% respectively) (Figure 4).

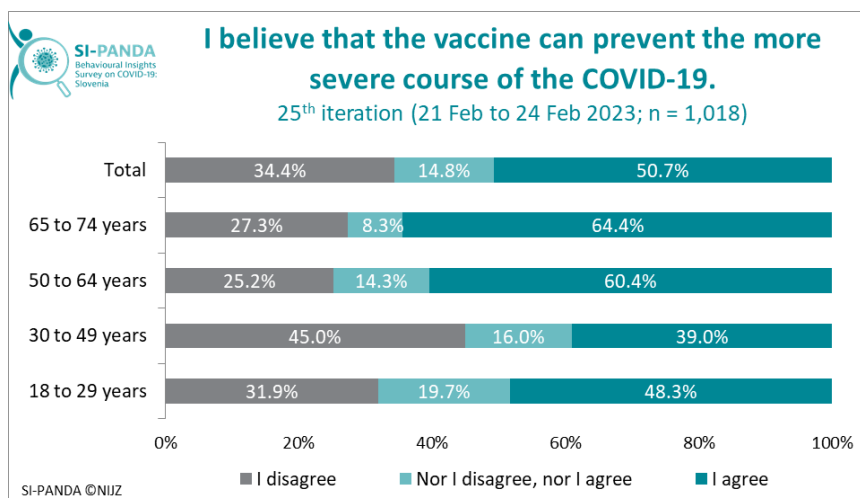


Figure 4: Opinion on whether vaccination can prevent more severe course of the disease, total and by age groups.

38.6% of respondents believe that vaccination against COVID-19 is not necessary and that it is better to get over the disease naturally. More 18–49 year olds (36.2–48.2%) than 50–74 year olds (29.9–31.9%) believe that vaccination against COVID-19 is not necessary and that it is better to get over the disease naturally (Figure 5). Statistically significantly more people who will not get vaccinated against COVID-19 (72.4%) agree that it is better to get over the disease naturally compared to those who are vaccinated (23.6%).

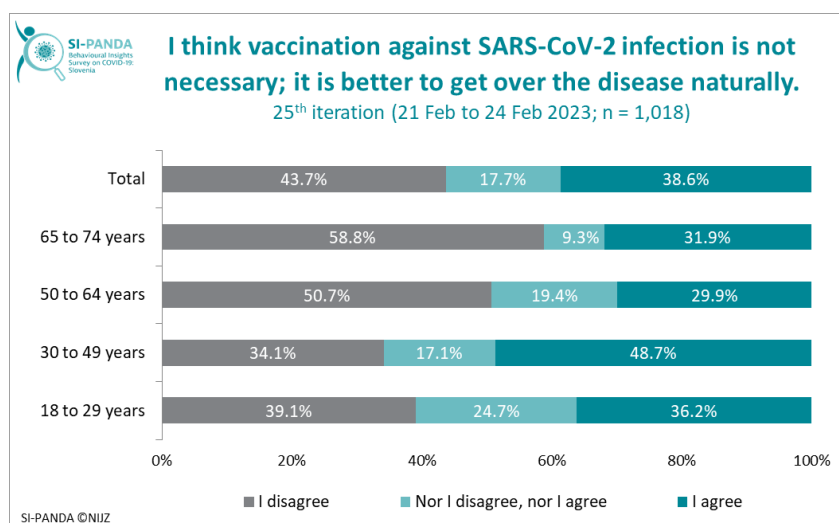


Figure 5: Opinion on whether it is better to get over the disease naturally, total and by age groups.

In the 25th iteration of the survey, respondents were asked again about the factors that influenced or would influence their decision to be vaccinated against COVID-19. As in previous iterations of the survey, the 25th iteration showed that, on average, respondents were most likely to agree that their decision to vaccinate depended / will depend on whether there was / is enough information available whether the vaccine is safe and effective (average score on the 7-point scale for safety and effectiveness is 4.1). The decision was / is also influenced by whether the vaccine has been in use for a long time (3.8) and the magnitude of the risk of SARS-CoV-2 infection at the time of vaccination (3.8). On average, respondents were least likely to agree that the decision to vaccinate depended or will depend on the recommendations of the Ministry of Health (3.2) and on the accessibility of vaccination (3.2). Those who had been vaccinated in the last three months

reported that their decision to be vaccinated was mostly influenced by the magnitude of their risk of SARS-CoV-2 infection (5.3), the recommendations of the NIJZ (5.1), the recommendations of their personal physician (5.0) and the recommendations of the Ministry of Health (4.8) (Figure 6).

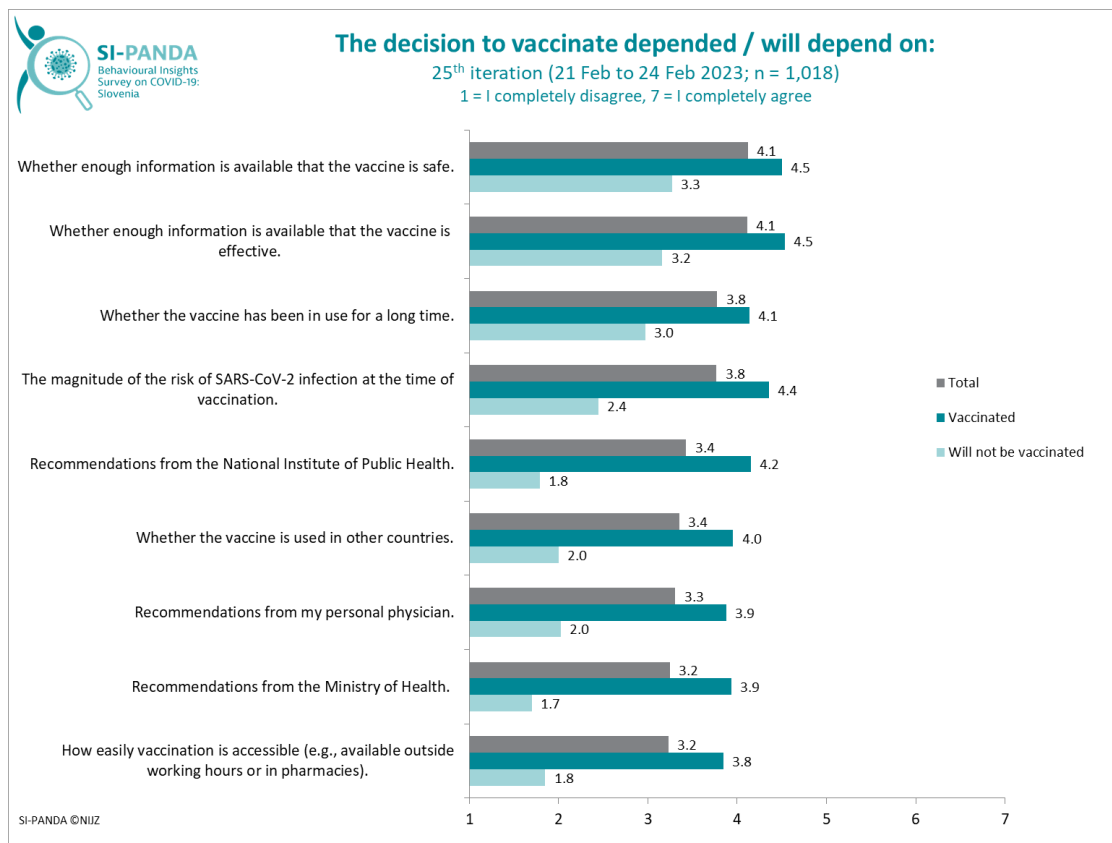


Figure 6: What the decision to vaccinate against COVID-19 depends on, total and by vaccination status.

In general, 33.4% of respondents believe that everyone should be vaccinated according to the national vaccination programme, regardless of the SARS-CoV-2 virus (Figure 7).

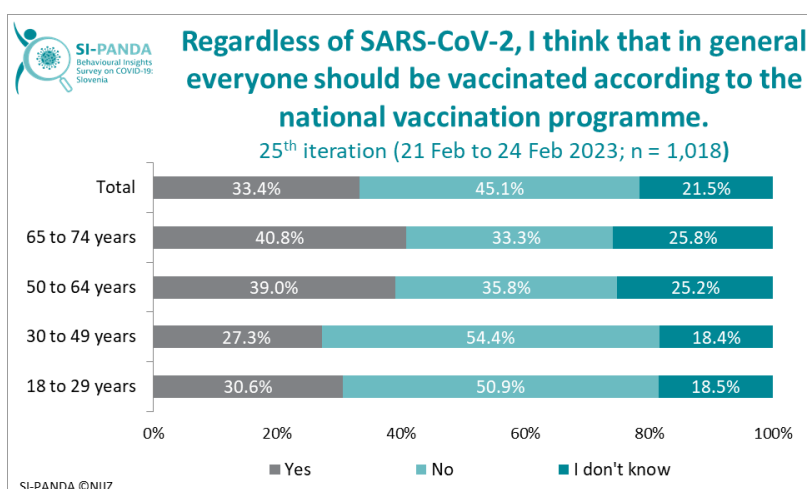


Figure 7: Opinion on vaccination in accordance with the national vaccination programme, total and by age groups.

People who had received primary doses of vaccine against COVID-19 (30.0%) were asked how likely they were to be vaccinated with the first booster dose against COVID-19: 15.7% reported

they were likely to be vaccinated and 71.1% reported they were unlikely to be vaccinated with the first booster dose against COVID-19. People who had received the primary doses of vaccine were asked about their reasons for not receiving the third dose (the first booster dose). Just under half of respondents thought that the booster dose would not give them additional protection (44.6%), 36.7% were concerned about the long-term health effects, and 26.4% were concerned about the side-effects of the booster dose, 17.5% were unsure whether a booster dose was even recommended for them, 17.1% felt that the first and second doses gave sufficient protection, 15.1% had experienced side effects after previous vaccinations. The three least frequent reasons for not vaccinating with the first booster dose are: because they already meet the RVT condition (13.5%), because they are waiting for a vaccine adapted to the current disease variant (9.8%), and because they are pregnant or trying to conceive and are worried about the baby (5.1%) (Figure 8). Respondents could give several reasons why they would not be vaccinated with the third dose (the first booster dose).

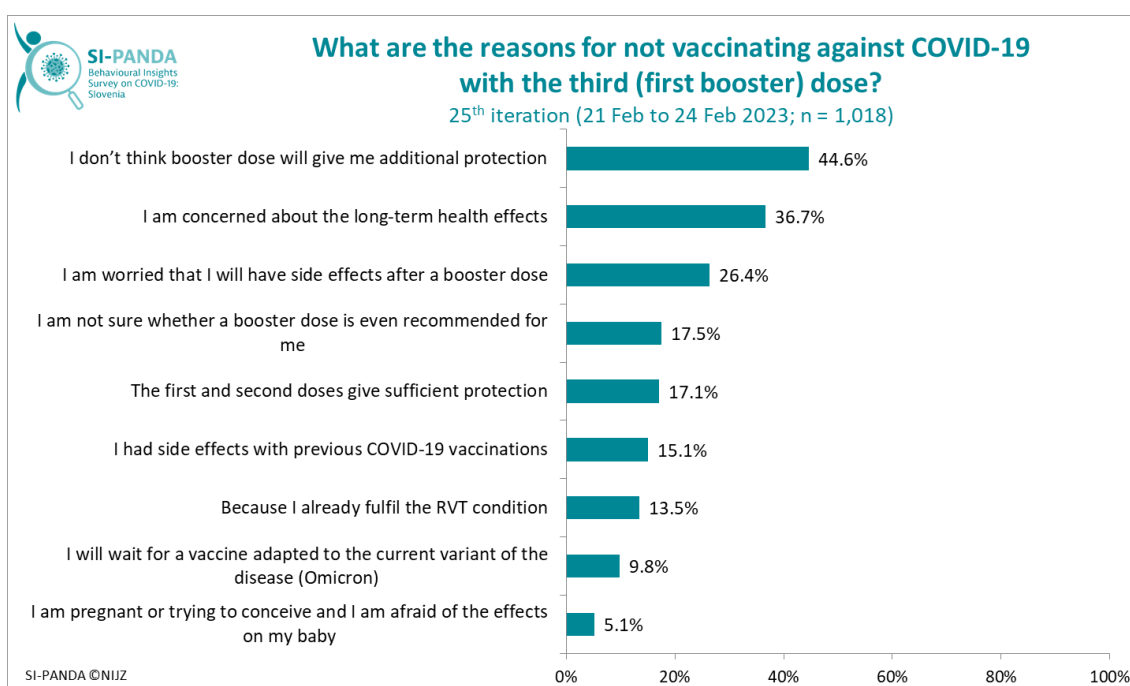


Figure 8: Reasons against vaccination with a third dose of COVID-19 vaccine among persons who received first two doses of COVID-19 vaccine and who are unlikely to be vaccinated with a third dose of COVID-19 vaccine, total.

Note: Several answers were possible.

Those who reported having received a third dose (first booster) of COVID-19 vaccine (39.3%) were asked how likely they were to be vaccinated with a second booster dose (fourth dose) of COVID-19 vaccine. 35.7% indicated that they were likely to be vaccinated with a second booster dose, 41.0% indicated that they were unlikely to be vaccinated with a second booster dose of COVID-19 vaccine, and 23.3% were undecided.

Those who had already received the first booster dose were asked about their reasons for not receiving a fourth (second booster) dose of COVID-19 vaccine, and could give several reasons for not receiving the fourth (second booster) dose. Just over a half of the respondents (53.6%) felt that a booster dose would not give them additional protection, 33.4% were concerned about long-term health effects, and 22.1% felt that the doses they had already received gave them sufficient protection. Just under a fifth of people were worried about having side effects after the second booster dose, 18.2% stated that they had experienced side effects after previous vaccinations, 16.6% of the respondents were unsure whether a booster dose was even

recommended for them, and 14.3% state that they will wait until the vaccine is adapted to the current variant. The least frequently cited reason for not receiving a second booster dose is meeting the RVT condition (10.9%) (Figure 9).

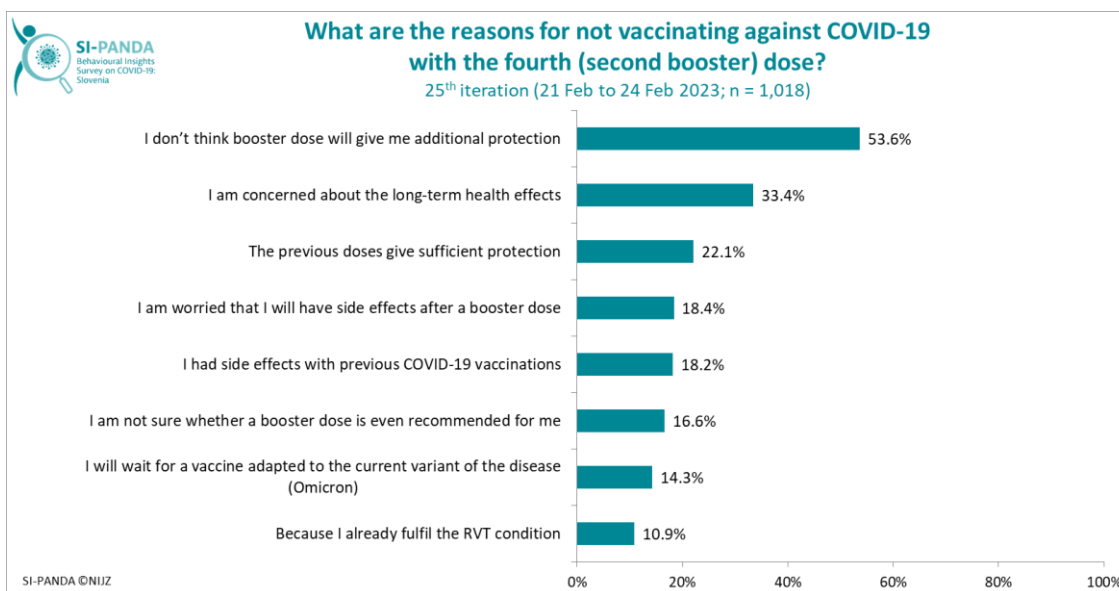


Figure 9: Reasons against vaccination with a fourth dose of COVID-19 vaccine among persons who received first two doses of COVID-19 vaccine, and who received the first booster dose COVID-19 vaccine and are not likely to be vaccinated with the fourth dose of COVID-19 vaccine, total.

Note: Several answers were possible.

We asked people who had side effects after previous vaccinations against COVID-19 about them. Most of the people who experienced side effects after vaccination reported several problems at the same time. Most people reported headaches, fatigue, muscle and joint pains, fever and pain at the injection site. To a lesser extent, breathing difficulties, vomiting and swollen lymph nodes were also reported. According to the official data on adverse reactions after vaccination with the different COVID-19 vaccines available in Slovenia, the most frequently reported adverse reactions were generalised problems and changes at the site of vaccine administration, and nervous system problems. Fewer problems were associated with the musculoskeletal system, connective tissue and the gastrointestinal tract⁴.

Respondents who had already received at least one dose of COVID-19 vaccine (69.2%) reported that their main reasons for deciding to vaccinate were to protect their own health (51.7%), to protect the health of their loved ones (51.2%), to prevent a more severe course of the disease or its consequences (50.9%), to comply with the RVT condition (46.5%), and to help contain the epidemic and normalize their lives as soon as possible (43.8%) (Figure 10).

⁴ <https://www.cepimose.si/aktualno/nezeleni-ucinki-po-cepljenju/>

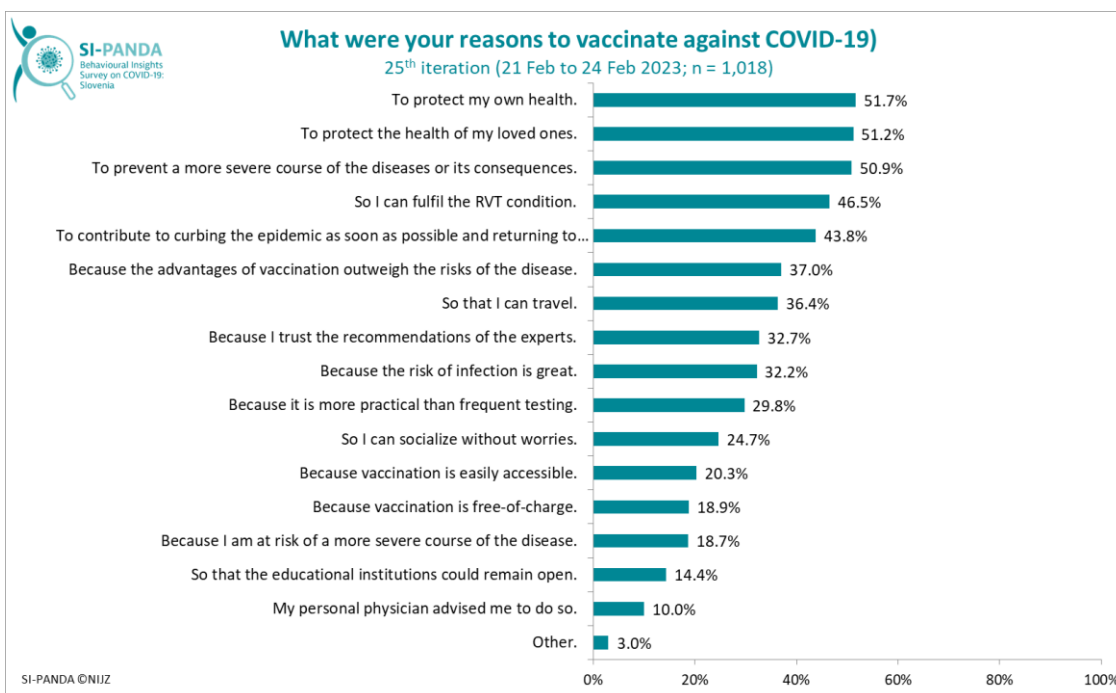


Figure 10: Reasons for vaccination against COVID-19, total.
Note: Several answers were possible.

In the 25th iteration of the survey, non-vaccinated persons (30.8%) were also asked for more detailed reasons why they did not intend to be vaccinated. As in previous iterations, in the 25th iteration, the main reasons were concerns about adverse reactions after vaccination (63.2%), the perception that the vaccine is unsafe (59.9%), concerns about the long-term impact on health (58.1%), and because there is too much pressure to vaccinate (51.4%) (Figure 11).

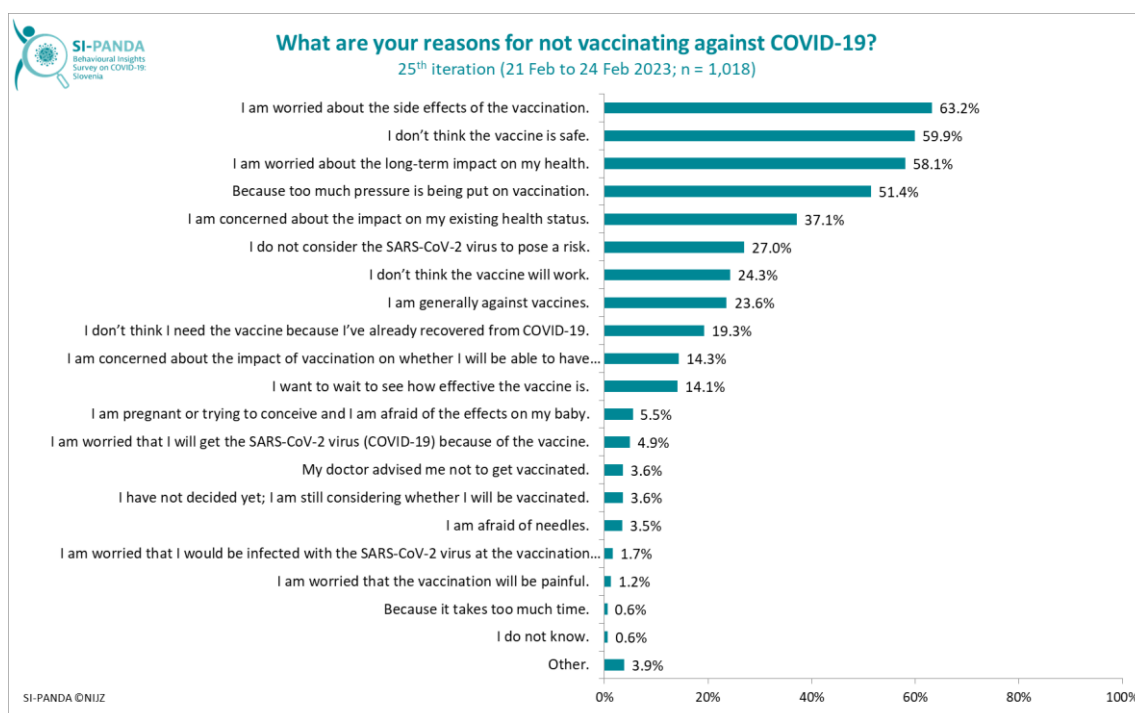


Figure 11: Reasons for not vaccinating against COVID-19, total.
Note: Several answers were possible.

Vaccination against seasonal influenza and influenza virus infection

Given that vaccination against seasonal influenza was still taking place at the time of the 25th iteration of the survey, we asked the respondents how likely it is that they will be vaccinated against seasonal influenza in the 2022/23 season. 8.4% of the respondents have already been vaccinated against the influenza in the 2022/23 season, and 8.3% of them indicate that they were likely to be vaccinated against the influenza.

The proportion of respondents who have received the influenza vaccine is statistically significantly higher among those aged 65 to 74 years (21.4%) compared to those aged 18 to 64 years (3.0–9.4%). More people with at least one chronic disease (13.0%) were vaccinated against seasonal influenza compared to those without chronic diseases (5.7%). Statistically significantly more people who were vaccinated against COVID-19 received the influenza vaccine (11.8%) compared to those who were not vaccinated against COVID-19 (0.6%).

According to self-assessment, 8.0% of people have had influenza in the last six months. The youngest age group (18–29 years) has the highest proportion of people with influenza (11.4%), while the oldest age group has the lowest proportion of such people (3.5%) (Figure 12). Only just under a quarter of people who stated they had the influenza also had the laboratory confirmation of the influenza virus.

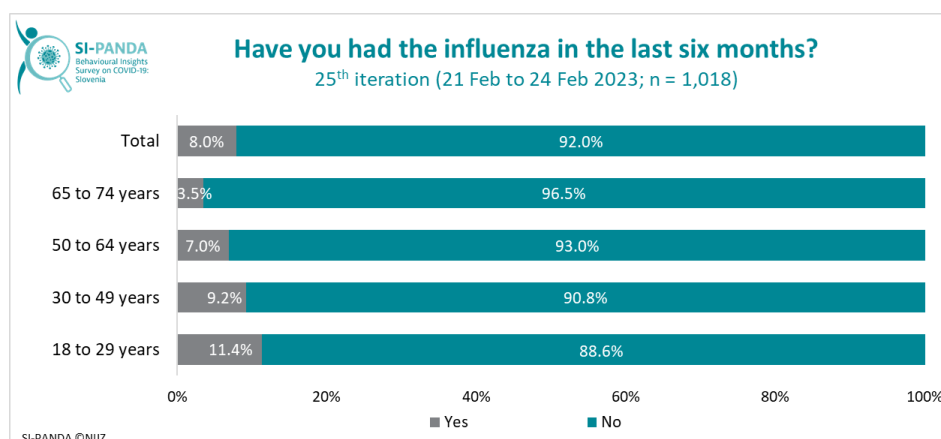


Figure 12: Persons who self-assessed having influenza in the last six months, total and by age groups.

Compliance with isolation and quarantine and action in case of cold symptoms or respiratory infection

In 25th iteration of the survey, we were interested in how people would act if they had cold symptoms or respiratory infection. Respondents could select several possible answers to this question. The majority (65.8%) indicated that they would self-test for SARS-CoV-2. A good third would wait to see how symptoms develop, less than a quarter would self-isolate, 18.2% of persons would call their general physician, 18.1% would inform their high-risk contacts about the symptoms. 14.5% would go to an official testing site for testing. 5.0% would do nothing if they had a cold or respiratory infection (Figure 13).

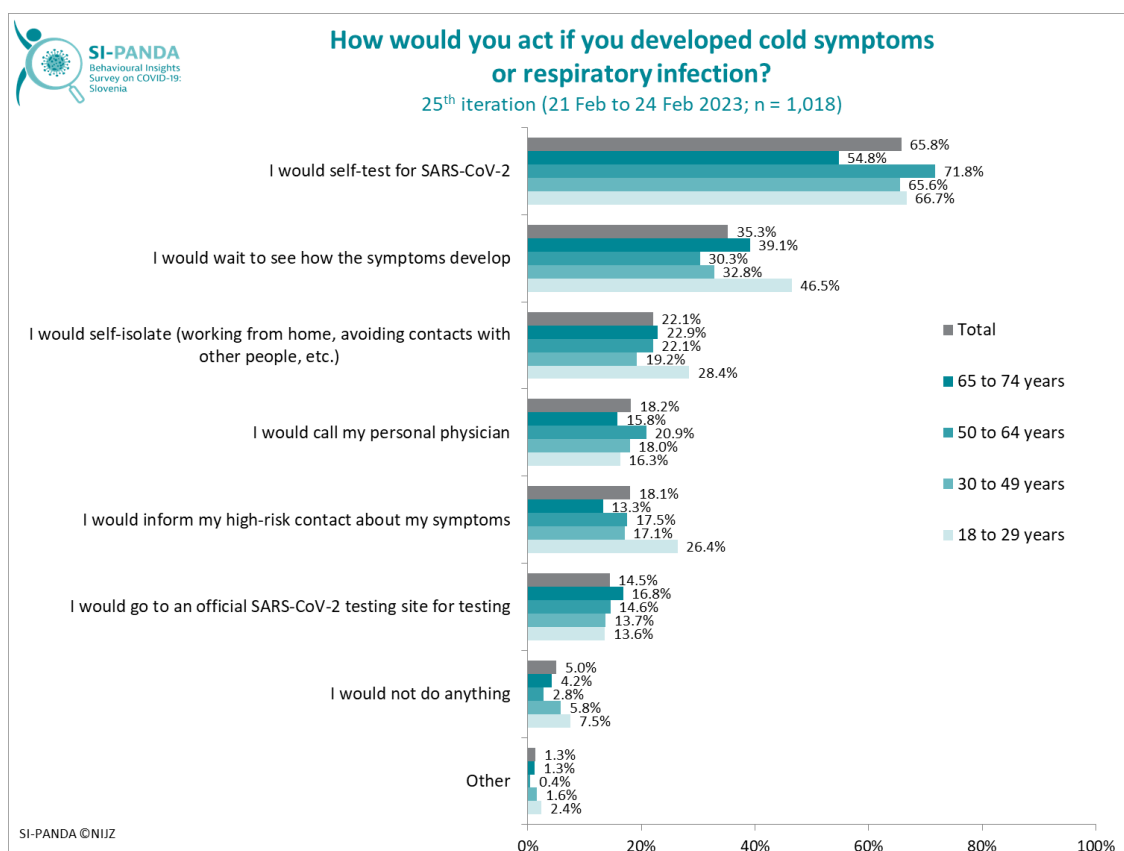


Figure 13: Acting in case of cold symptoms or respiratory infection, total.
Note: Several answers were possible.

In recent iterations of the survey, we observed an increasing trend in the proportion of people who would do not do anything if they had cold symptoms or respiratory infection. While in September 2022 the proportion of people who would not do anything if they developed cold symptoms or respiratory infection was 1.7%, it rose to 5.0% in February 2023, the highest among all measurements in the last five survey iterations. In the survey from January 2023, we do see a decrease in the proportion of people who would not do anything if they developed symptoms of a cold or respiratory infection, both in the vaccinated group and in the group of people who will not be vaccinated, but in the latest February 2023 survey, the trend reverses again upwards. Among those who will not be vaccinated against COVID-19, the proportion of those who would not do anything is statistically significantly higher (5.2–10.5%) compared to those who were vaccinated against COVID-19 with at least one dose (1.9–3.0%) from the 20th to the 25th iteration of the SI-PANDA survey (Figure 14).

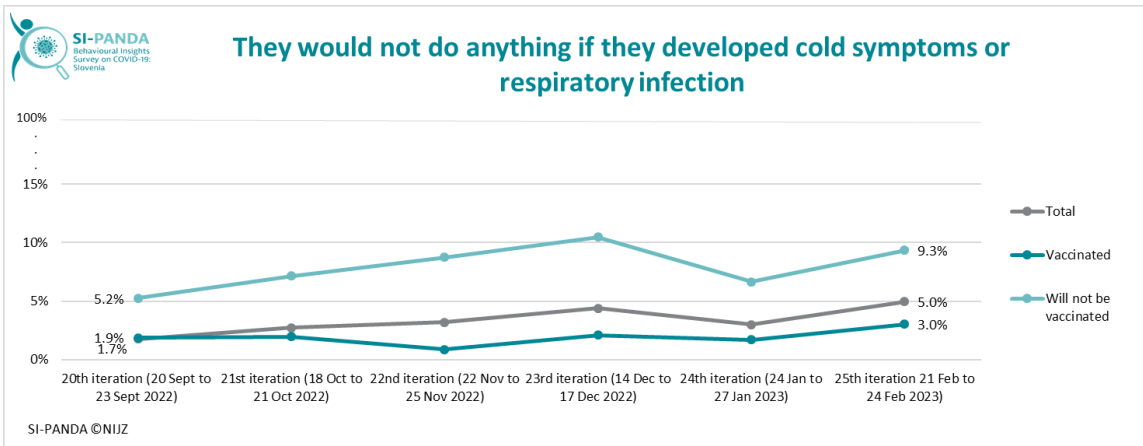


Figure 14: The proportion of persons who would not do anything in case of developing cold symptoms or respiratory infection, total and by vaccination status, from 20th to 25th iteration of the SI-PANDA survey.

In the 25th iteration of the survey 65.6% of people answered in the affirmative to the question whether they would get tested if they had been in contact with someone who had tested positive for SARS-CoV-2 and had not developed symptoms themselves. In the last five iterations of the survey, despite not developing any symptoms themselves, statistically significantly more people who received at least one dose of the COVID-19 vaccine would be tested upon contact with a person who tested positive for SARS-CoV-2, compared to people who will not be vaccinated. In the latest iterations of the survey, we note a slight downward trend in the proportion of people who would be tested, despite the fact that they would not develop symptoms. Among people who received at least one dose of the COVID-19 vaccine, the proportion of people who would be tested upon contact with a person who tested positive for SARS-CoV-2 virus, despite not having developed symptoms themselves, is relatively stable from September 2022 to February 2023 (Figure 15).

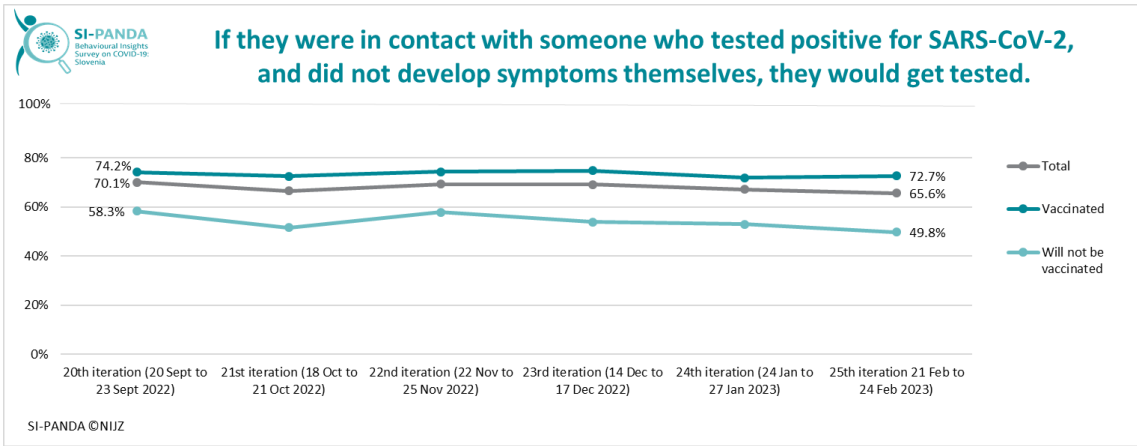


Figure 15: Testing in case of contact with a person who tested positive for SARS-CoV-2 virus, and not developing symptoms themselves, total and by vaccination status.

According to the 25th iteration of the survey, the majority of respondents (94.6%) consistently adhered to the quarantine ordered at the time of infection. The proportion of persons who consistently adhered to the quarantine has remained stable at around 95% during the surveys carried out from September 2022 to February 2023.

Problems after recovering from infection with the SARS-CoV-2 virus – post-COVID syndrome or long COVID

Most people who contract COVID-19 recover completely within a few weeks of the onset of the disease. However, research shows that in some people individual problems may persist long after SARS-CoV-2 infection, or may disappear and reappear (same or different problems) several weeks or months after the initial recovery. Abroad, these problems have been called post-acute COVID-19, post-COVID syndrome or long COVID. It is more common among patients with a more severe course of the disease and older patients, but also occurs in those who have overcome a milder form of the disease and also among young adults who had no health problems before the infection⁵. The symptoms of long COVID are diverse: the most common are fatigue, shortness of breath, insomnia, problems with memory and concentration (the so-called “Brain fog”), heart palpitations (an unpleasant feeling of the heartbeat), pain in various body parts, diarrhoea, nausea, etc.⁶. In the 25th iteration of the SI-PANDA survey, 44.1% of the respondents reported that they had never been infected with SARS-CoV-2 virus, 37.0% had been infected once, 17.3% reported that they had been infected twice, and 1.5% reported that they had been infected three or more times. In the 65–74 age group, the proportion of people who reported that they had not yet been infected with SARS-CoV-2 was 55.6%, while in the youngest age group, 37.6% of people had not yet been infected with SARS-CoV-2. The proportion of respondents who have never been infected with the SARS-CoV-2 virus is statistically significantly higher in people aged 50 and over (50.4–55.6%) compared to younger people aged up to 50 (37.5–37.6%) (Figure 16).

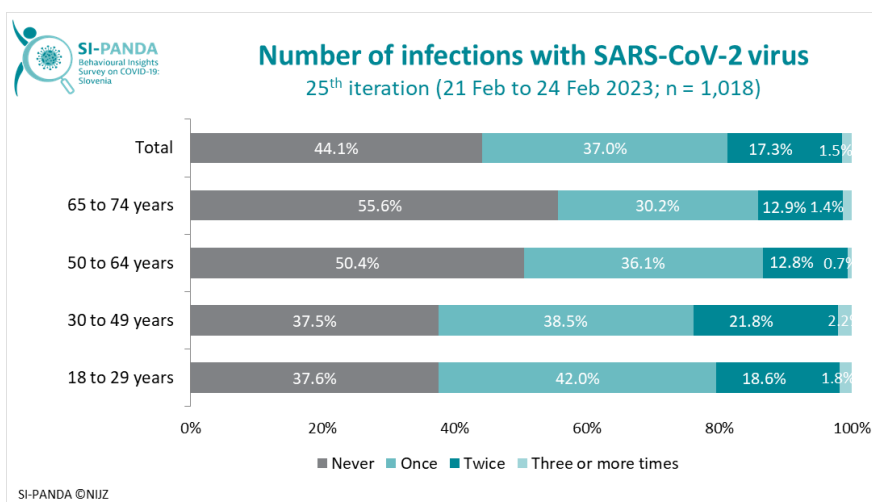


Figure 16: Number of infections with SARS-CoV-2 virus, total and by age groups.

The first or only infection with the SARS-CoV-2 virus in the majority (77.0%) was without symptoms or the symptoms were mild, 23.0% of persons reported a more severe course of the disease, which in some cases also required treatment in hospital. The course of the second infection was also described by the vast majority (91.1%) as asymptomatic or mild, and 8.9% as more severe, but no person required hospital treatment. The course of the third infection is represented by less precise data, but we can see that the third infection also took place without or with mild symptoms in the majority (93.4%) (Figure 17).

⁵ Brackel, CLH, Lap, CR, Buddingh, EP, et al. Pediatric long-COVID: An overlooked phenomenon? *Pediatric Pulmonology*. 2021; 56: 2495–502. <https://doi.org/10.1002/ppul.2552>.

⁶ Nalbandian, A., Sehgal, K., Gupta, A. et al. Post-acute COVID-19 syndrome. *Nat Med* 27, 601–15 (2021). <https://doi.org/10.1038/s41591-021-01283-z>.

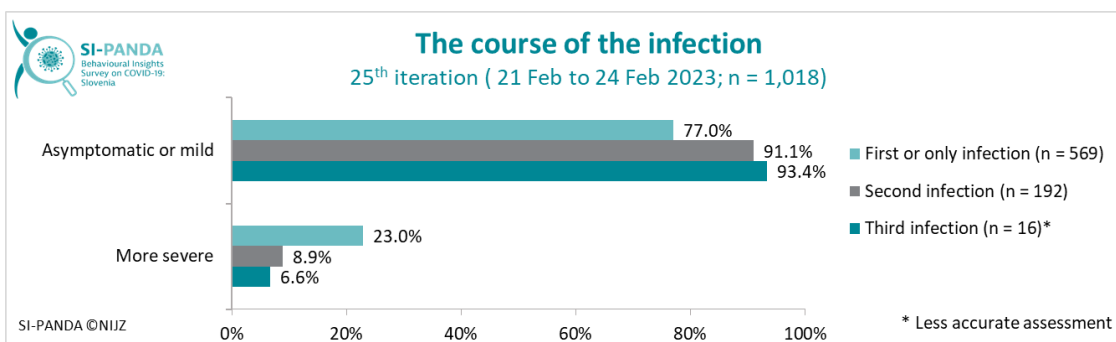


Figure 17: The course of the infection with SARS-CoV-2 virus among persons who recovered from COVID-19 at least once, by consecutive infection.

We were interested in whether the course of the infection depended on which variant of the SARS-CoV-2 virus the respondents were infected with. We ask the respondents in which month they were infected with the SARS-CoV-2 virus and thus obtain information in which time period they were infected. We further explain the scenario used to determine the prevalent variant of the SARS-CoV-2 virus upon infection. Since March 2020, when we discovered the first case of infection with the SARS-CoV-2 virus in Slovenia, several variants of the virus have been identified until today. According to National Laboratory of Health, Environment and Food (NLZOH), since the emergence of the virus in our country, there have been four predominant variants, which have occurred in different time periods⁷. Based on the NLZOH data on the predominant SARS-CoV-2 virus variants, four time periods were created according to the prevalent SARS-CoV-2 virus variant (B258.17 and previous variants, Alpha, Delta and Omicron). The period of the prevalent variant of the SARS-CoV-2 virus was determined when more than 60% of all studied infections were on the side of this particular variant. From the 20th iteration of the SI-PANDA survey onwards, respondents were asked about the month and year of infection (first or the only, second and third infection). Based on these data, we assumed that a single person infected with COVID-19 between March 2020 and March 2021 was infected at a time when B.258.17 and earlier variants were prevalent. People who were infected between April 2021 and June 2021 were classified in the Alpha variant group. People infected between July 2021 and December 2021 were classified in the group infected during the prevalent Delta variant. Those infected from January 2022 onwards were classified as infected at the time of the prevalent Omicron variant (Table 1).

Table 1: Prevalent SARS-CoV-2 virus variant during the observation period from March 2020 to the present.

Observed period	Prevalent SARS-CoV-2 virus variant
March 2020 – March 2021	B.258.17 or previous
April 2021 – June 2021	Alfa
July 2021 – December 2021	Delta
January 2022 →	Omicron

38.6% of persons were infected for the first time or only once during the period when the B.258.17 or previous variants were prevalent, 12.3% when the Delta variant was prevalent, and 45.2% of respondents were infected for the first or only time, when the Omicron variant was prevalent. Only 3.9% of respondents were infected for the first time between April 2021 and June 2021, when the Alpha version was prevalent. For the second infection, the vast majority of respondents (81.1%) reported that they had been infected from January onwards when the Omicron variant was prevalent, 9.4% were infected for the second time when the Delta variant was prevalent, 3.7%

⁷ <https://www.nlzoh.si/objave/sledenje-razlicicam-sars-cov-2-61/>.

when the Alpha variant was prevalent, and 5.8% when B.258.17 or previous variants were prevalent (Figure 18).

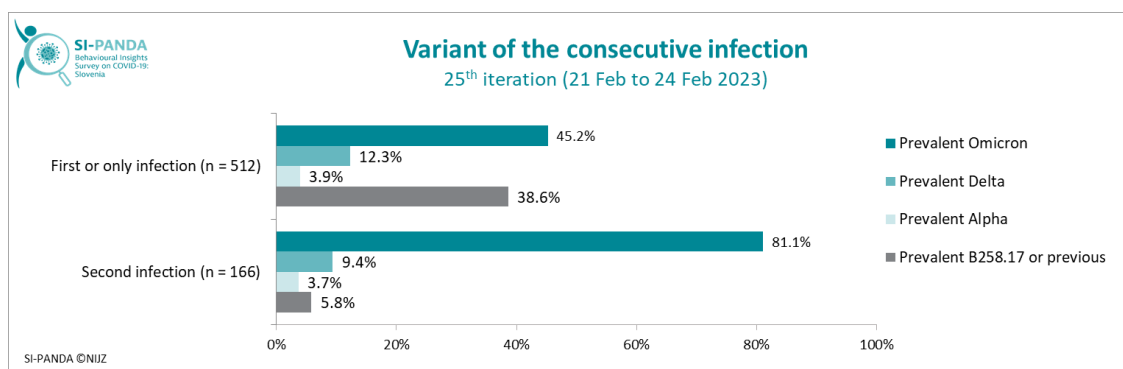


Figure 18: Prevalent SARS-CoV-2 virus variant, by consecutive infection.

According to the WHO, from 10 to 20% of people infected with the SARS-CoV-2 virus still have some health problems at least two months after infection, and one in ten recovered persons even after 12 weeks⁸. Thus, we were interested in whether the respondents had or have any of the listed problems three months after recovering from COVID-19, it was possible to report several problems.

Approximately 65% of respondents infected with the SARS-CoV-2 virus stated that three months after recovering from first or only infection they still had or have certain problems that lasted or they last at least two months, and there was about 60% of such people after recovering from the second infection. The most common long-term problem reported both after the first (or only) and after the second infection is fatigue and lack of energy (37.1% after the first infection, 26.6% after the second). The second most common problem after recovering from the first or only infection, as well as after a second infection, was reduced physical capacity (24.8% after the first infection, 21.3% after the second) (Figure 19).

⁸ WHO Policy brief 39 In the wake of the pandemic, Preparing for Long COVID, <https://apps.who.int/iris/bitstream/handle/10665/339629/Policy-brief-39-1997-8073-eng.pdf>
<https://www.who.int/europe/news-room/fact-sheets/item/post-covid-19-condition>

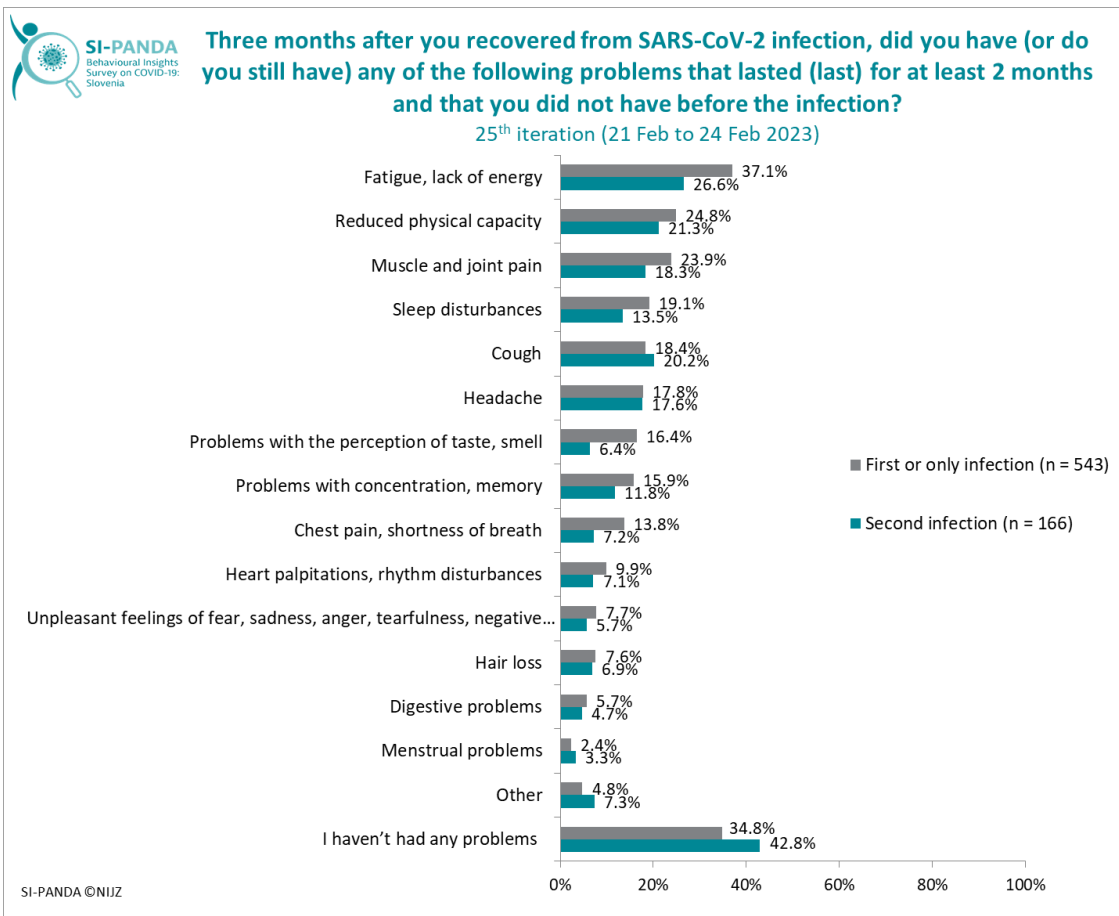


Figure 19: Health problems present three months after the infection, lasting at least two months among persons who have had an infection with the SARS-CoV-2 virus, total and by consecutive infection. Note: Several answers were possible.

Four out of ten people who had recovered from COVID-19 reported fatigue and lack of energy after their first or only infection, and after their second infection, three out of ten reported problems with fatigue and lack of energy. Three out of ten people reported reduced physical capacity after recovering from the first infection, and two out of ten people reported this problem after recovering from the second infection. After recovering from the first or only infection as well as the second infection, two out of ten people reported muscle and joint pain, headache and cough. After recovering from the first or only infection, two people in ten reported problems with the perception of taste and smell, and after recovering from the second infection, one person in ten reported this problem. Two out of ten people had problems with concentration and memory after recovering from the first infection, and one in ten after recovering from the second infection. Sleep disturbance was a problem for two out of ten people after recovering from their second infection, and for one out of ten people after their first infection. One in ten people experienced chest pain and shortness of breath, heart palpitations and rhythm disturbances, unpleasant feelings of fear, sadness, anger, tearfulness and negative thoughts, and hair loss after both the first and second infections. One in ten people had digestive problems after recovering from their first or only infection, and less than one in ten after recovering from their second infection. Less than one in ten people had menstrual problems both after recovering from the first and second infection. Other problems appeared in one out of ten people only after recovering from their second infection. Three out of ten people haven't had any problems after recovering from their first infection and four out of ten people haven't had any problems after recovering from their second infection (Figure 20).

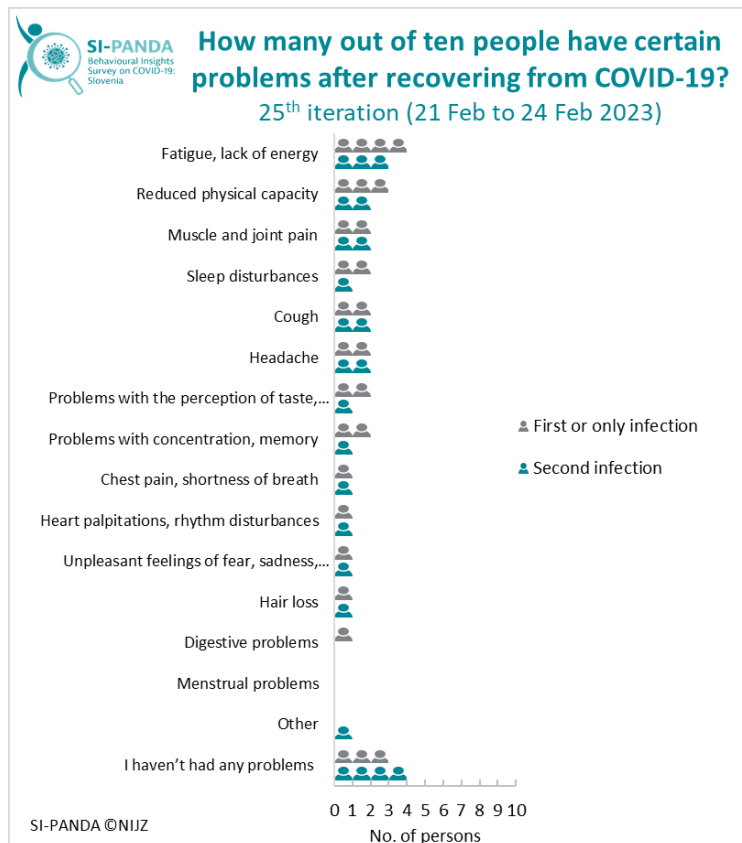


Figure 20: Health problems present after three months from recovered infection which last / have lasted at least two months, among persons who have had an infection with the SARS-CoV-2 virus, incidence by ten persons, by consecutive infection.
Note: Several answers were possible.

When asked how long the longest-lasting problem had lasted after the infection, just over half of the respondents answered that it lasted up to three months (50.8%), 27.2% had experienced such problems more than 6 months after the infection, and 22.0% from 3 to 6 months after the infection. 39.7% of people who stated that they have or had problems consulted a doctor due to the problems that occurred after recovering from SARS-CoV-2 infection. Statistically significantly more people with at least one chronic disease (52.0%) compared to people without chronic diseases (32.3%) consulted a doctor due to problems after recovering from the infection.

People who had problems after their first, only or second SARS-CoV-2 infections also reported whether they still had problems after their recovery. 38.0% of people still have problems after recovering from their first infection, and 39.9% of people still have problems after recovering from their second infection (Figure 21). Statistically significantly more people with at least one chronic disease reported that their problems still persisted after recovering from first and second infections (first or only infection: 48.5%, second infection: 62.1%*) compared to people without chronic diseases (first or only infection: 31.6%, second infection: 28.7%*).

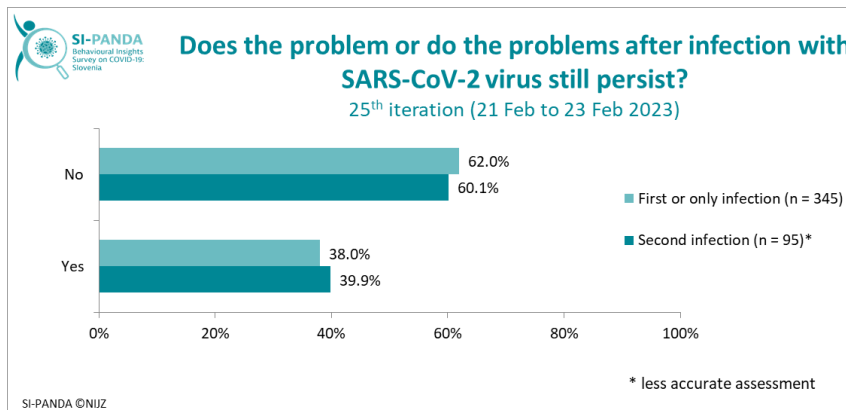


Figure 21: Problems that still persist after recovering from the first, only or second infection, by consecutive infection.

The problems that people had after recovering from the infections had the greatest impact on the area of performing leisure activities, as approximately 80% of people report that the problems after recovering from infections had impacted their leisure activities slightly, very or extremely. Approximately 70% of people stated that the problems slightly impacted their well-being and interpersonal relationships, care for home, family, children and household chores, as well as work and job (Figure 22).

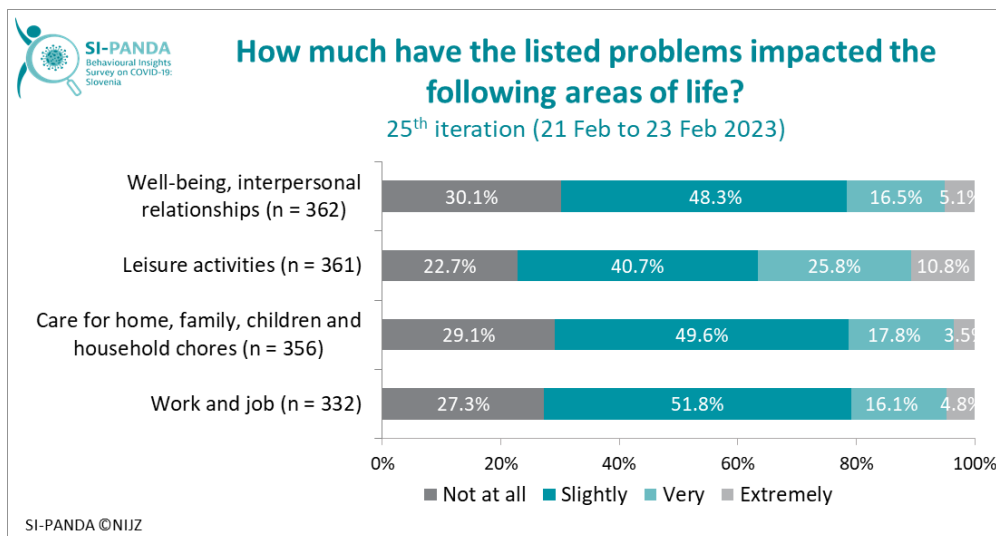


Figure 22: The impact of problems after recovering from SARS-CoV-2 infection on different areas of life among persons with at least one problem after recovering from the infection, total.

The consequences of recovering from and infection with SARS-CoV-2 virus can affect various areas of a person's life. On the one hand, these are a mild and non-specific health problems, but on the other hand, they are often quite complex and still receive insufficient attention from the profession, both from a research and a clinical point of view.

Much is still unknown about the causes and long-term consequences of SARS-CoV-2 infection, but research is ongoing. It is already clear that post-COVID syndrome is relatively common and has a significant impact on an individual's ability to work and their daily life. All this can have economic consequences for the individual, their family and society as a whole.

In Slovenia, there are already specialized clinics for people who have long-term health problems after recovering from COVID-19. Most patients with problems after recovering from COVID-19

are treated in the outpatient department of the Infection Clinic. Patients with consequences of the diseases are cared for at the URI Soča and as part of the outpatient clinic for lung diseases and allergies at the University Clinical Centre Ljubljana. Rehabilitation of patients with long-COVID also takes place at the primary level, within Health Promotion Centres in Community Health Care Centres.

Most people with COVID-19 recover relatively quickly. Given that research shows that the risk of long-term health problems after SARS-CoV-2 infection is not so low, vaccination against COVID-19 is also important in this respect. In order to prevent and limit the transmission of infection, it is also important to follow the recommendations for health promotion and disease prevention in the current epidemiological situation since no one is safe from the consequences of an infection.

Quality of life

Also in the 25th iteration of the SI-PANDA survey, we measured the quality of life of individuals using the SF-36 questionnaire, which measures the physical and mental components of quality of life, and in total consists of eight quality of life⁹ indicators¹⁰, where a higher score means a better quality of life, and the maximum possible score is 100. Physical functioning scores the highest among all the quality of life components, and is better for younger people aged 18–49 years (average 89.5–90.5 points) compared to older people aged 65–74 years (average 79.0 points). Other components of quality of life that scored higher were social functioning (79.8 points), emotional problems (77.6 points), limitations in physical capacity (77.4 points) and body pain (74.9 points). People aged 18 to 29 have the lowest average scores for social functioning and emotional problems components, compared to people in the other age groups. People aged 64 to 74 years have the lowest average scores for the physical fitness, Limitations in physical capacity and Body pain components. General health (66.6 points), mental health (65.2 points) and vitality (53.6 points) are among the lowest scoring quality of life indicators. General health is better rated by younger people, while mental health and vitality are better rated by older people (Figure 23).

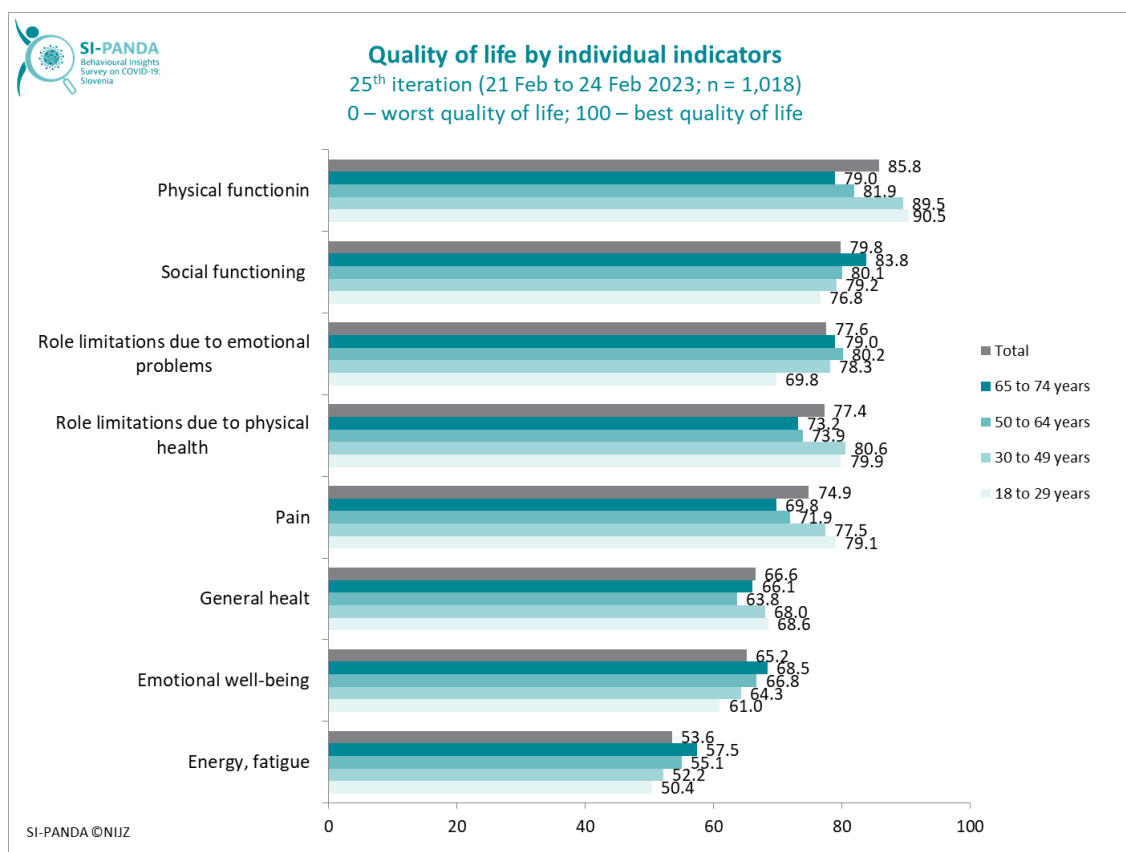


Figure 23: Quality of life shown in eight indicators, total and by age groups.

We also checked the quality of life in terms of the current presence of problems after recovering from COVID-19. Through all eight indicators, the quality of life is statistically significantly higher

⁹ Bren, A., Logar Zakrajšek, B. (2014). Kakovost življenja bolnikov s končno ledvično odpovedjo (KLO). V 30-letnica kontinuirane ambulantne peritonealne dialize v Sloveniji (str. 5–18). Ljubljana : SZD – Slovensko nefrološko društvo.

¹⁰ Translation of indicators summarised from:

https://www.researchgate.net/publication/323137074_Pilotna_raziskava_psihometričnih_lastnosti_vprasanikov_SF-36v2_in_ESRD-SCL-TM_za_merjenje_z_zdravjem_povezane_kakovosti_zivljenja_bolnikov_po_presaditvi_ledvice/fulltext/5a823a0f45851504fb3558fd/Pilotna-raziskava-psihometričnih-lastnosti-vprasanikov-SF-36v2-in-ESRD-SCL-TM-za-merjenje-z-zdravjem-povezane-kakovosti-zivljenja-bolnikov-po-presaditvi-ledvice.pdf?origin=publication_detail.

in persons who no longer have problems or symptoms after recovering from COVID-19. People who still have problems or symptoms after recovering from the disease rate their vitality and general health the worst (Figure 24).

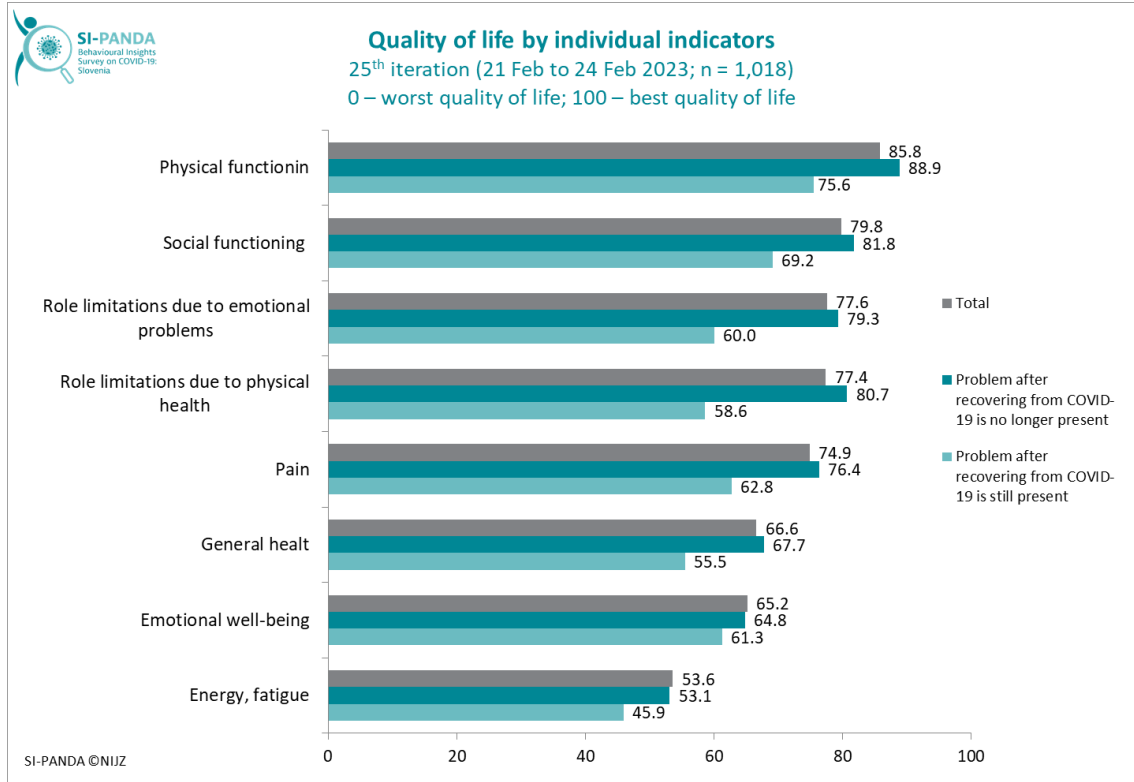


Figure 24: Quality of life by individual indicators, total and by current presence of problems after recovering from COVID-19, among respondents who have at least once recovered from COVID-19 and had at least one problem after recovering from COVID-19.

Mental well-being and mental health problems

The COVID-19 pandemic and the worsening financial situation have also had a significant impact on people's mental health and created new barriers for those who already had mental disorders. Since the beginning of the COVID-19 pandemic, in Slovenia, as well as in other countries, we have noticed a deterioration in mental well-being and a higher frequency of mental health problems in many population groups¹¹. The pandemic has had a negative impact on the mental well-being of our society and has increased the incidence of mental health problems (e.g. experiencing anxiety or depressive symptoms)¹² compared to the pre-pandemic period. In this chapter, we present an assessment of mental well-being and the presence of mental health problems among adult residents of Slovenia. We used the WHO-5 questionnaire, which asks about the frequency of experiencing pleasant emotions in the last 2 weeks, namely the average values and dividing them into 3 groups: then group without problems, the group with problems and the group with a high probability of depression.

The overall mean of mental health well-being in the 25th iteration was 60.2. The older group of respondents aged 50 to 74 rated their mental well-being as better compared to the younger group of participants aged 18 to 49 (Figure 25). Even in foreign research, poorer mental well-being is noted in younger adults¹³. Those with chronic conditions and those whose financial situation worsened during the pandemic have worse mental well-being. The measured total average well-being of society in the 25th iteration is slightly better than in the 22nd, 23rd and 24th iterations, but slightly worse than in the 20th and 21st iterations. Compared to the 24th iteration, the 25th iteration shows an improvement in mental well-being in almost all age groups.

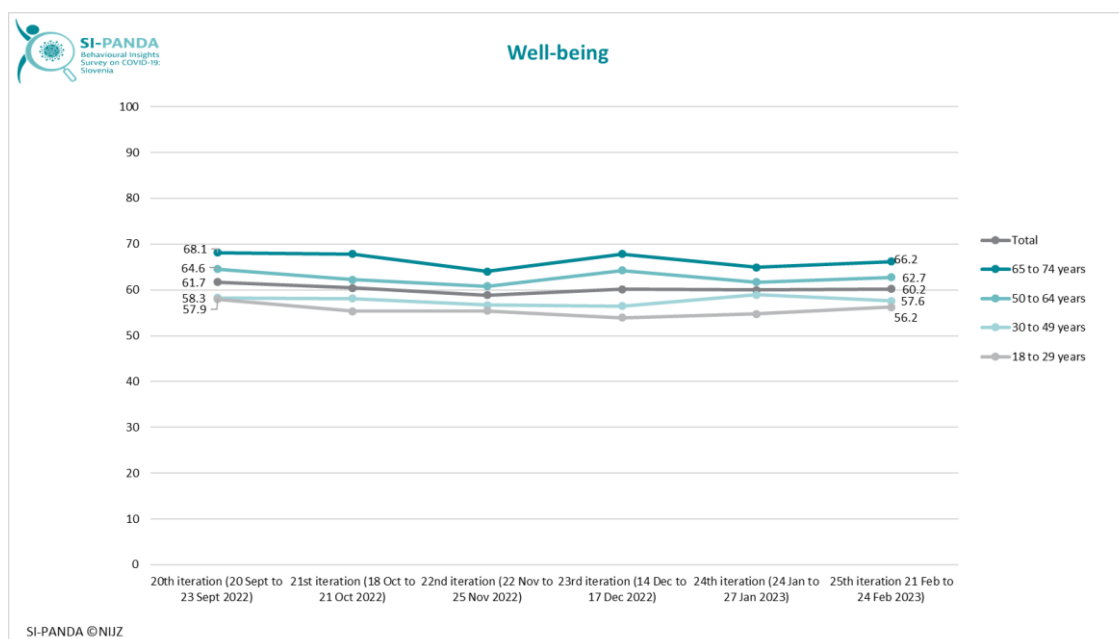


Figure 25: Average value of well-being, total and by individual age groups from the 20th to the 25th iteration.

¹¹ Santomauro DF, Mantilla Herrera AM, Shadid J, Zheng P, Ashbaugh C, Pigott DM, et al. Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *Lancet*. 2021;398(10312):1700–12.

¹² Gabrijelčič Blenkuš idr. (ur.). Neenakosti v zdravju - izziv prihodnosti v medsektorskem povezovanju. Ljubljana, Slovenija: NIJZ; 2021. Available at: https://www.nijz.si/sites/www.nijz.si/files/publikacije-datoteke/neenakosti_e_verzija.pdf.

¹³ Dale, R., Budimir, S., Probst, T., Stippl, P. in Pieh, C. (2021). Mental Health during the COVID-19 Lockdown over the Christmas Period in Austria and the Effects of Sociodemographic and Lifestyle Factors. *International journal of environmental research and public health*, 18(7), 3679. f.

In total, about a good third (31.5%) of adults in Slovenia have mental health problems, of which less than a tenth (9.3%) have an increased likelihood of having a depressive disorder. Mental health problems occur in the largest proportion among younger adults (30.9%), and the increased probability of the presence of a depressive disorder occurs in the age group of 30 to 49 years (11.4%). Without mental health problems, the largest proportion are the oldest (79.4%) (Figure 26).

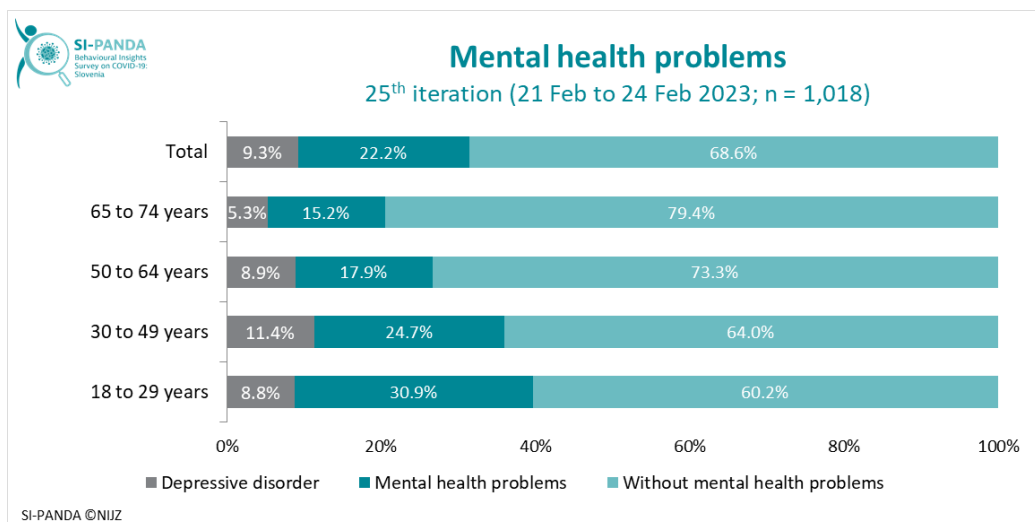


Figure 26: Mental health problems, total and by age groups.

Individuals who are dissatisfied with their lives (54.6%) have the highest probability of having a depressive disorder or mental health problems, while those who are satisfied with their lives have the least problems. Individuals satisfied with life also have the lowest proportion (18.4%) of increased probability of the presence of depressive disorders and mental health problems (Figure 27). Our findings are consistent with foreign research that also report a direct link between life satisfaction and better mental health¹⁴.

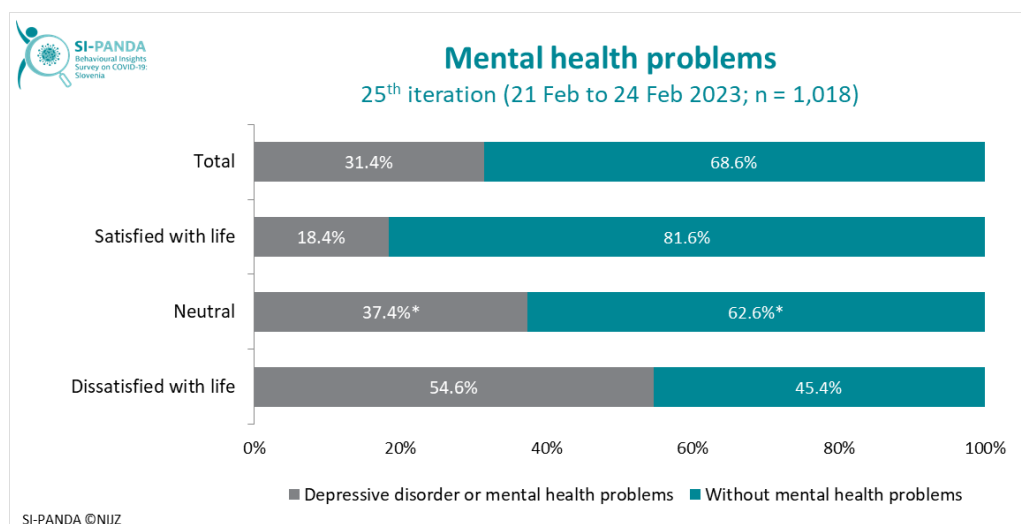


Figure 27: Mental health problems, total and by satisfaction with life.

¹⁴ Lombardo, P., Jones, W., Wang, L., Shen, X., & Goldner, E. M. (2018). The fundamental association between mental health and life satisfaction: Results from successive waves of Canadian national survey. *BMC Public Health*, 18 (1), 342. <https://doi.org/10.1186/s12889-018-5235-x>

The highest proportion (78.5%) of people without mental health problems are those whose financial situation has improved in the last 3 months. Individuals with better financial situation also have the lowest percentage of increased likelihood of having depressive disorders (4.3%). Conversely, individuals whose financial situation has worsened in the last 3 months have the are most likely to have depressive disorders and mental health problems (Figure 28). The link between poor financial status and greater mental health problems has also been demonstrated in foreign research. People with a lower financial status have more existential worries, which increases their internal distress and can lead to mental health problems¹⁵.

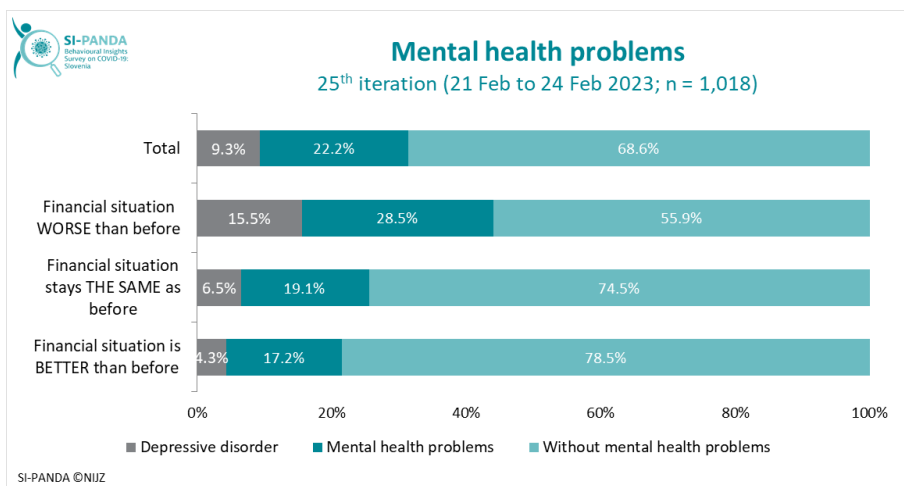


Figure 28: Mental health problems, total and by financial situation.

People who are still facing problems after recovering from COVID-19 have the highest proportion of mental health problems (49.2%) (of which 17.4% have an increased likelihood of having a depressive disorder). On the contrary, people who have no more problems after recovering from COVID-19 have fewer mental health problems (32.5%) (Figure 29).

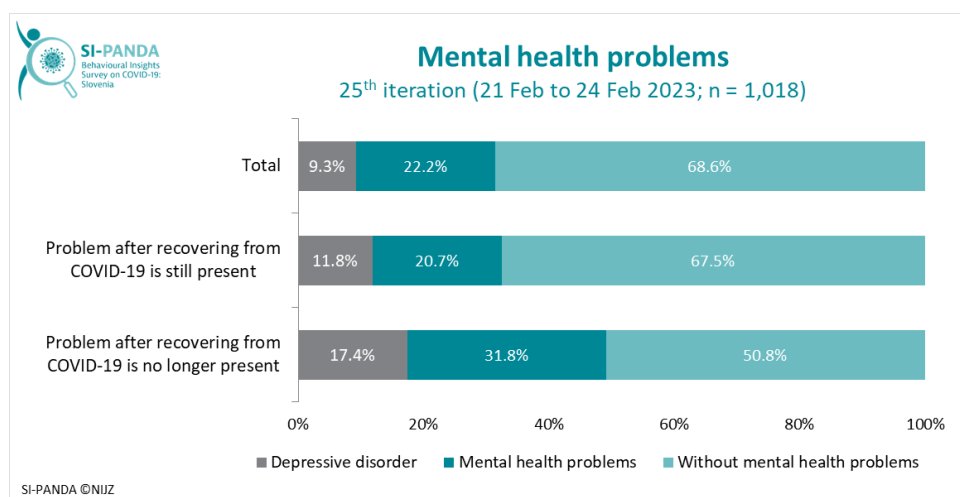


Figure 29: Mental health problems, among persons who were infected with COVID-19 at least once and had at least one problem after recovering from the disease, total and by presence of problems after recovering from COVID-19.

¹⁵ Ryu, S., & Fan, L. (2023). The Relationship between financial worries and Psychological Distress Among U.S. Adults. *Journal of Family and Economic Issues*, 44(1), 16-33. <https://doi.org/10.1007/s10834-022-09820-9>.

The overall average of mental health problems and the likelihood of having a depressive disorder increased by 4.0% compared to the 20th iteration. We find that young adults (aged 18–29) are the most likely to experience mental health problems, while the oldest age groups are the least likely to experience problems (Figure 30). Young adults are most vulnerable to mental health problems because they are in a period of life characterized by many life changes and trials (independent living, work, identity development, etc.). These can increase an individual’s level of known stress, which in the long term can lead to the development of mental health problem¹⁶.

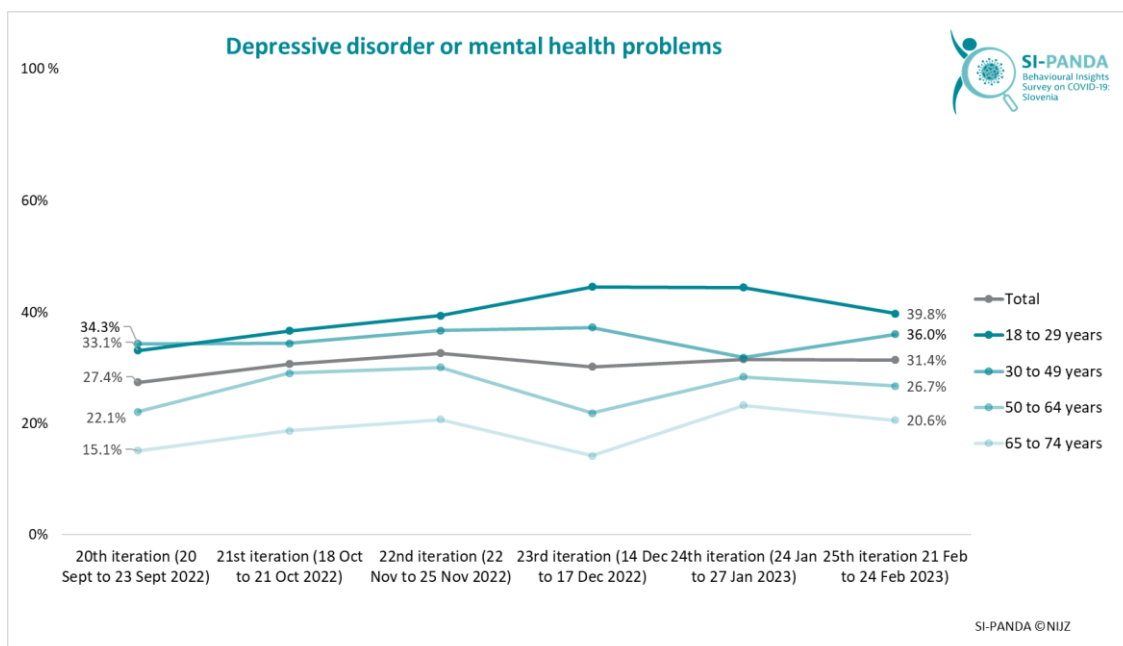


Figure 30: The likelihood of depression or mental health problems from 20th to 25th iteration, total and by age groups.

¹⁶ Cadigan, J. M., Lee, C. M., & Larimer, M.E. (2019). Young adult mental health: A prospective examination of service utilization, perceived unmet service, needs, attitudes, and barriers to service use. *Prevention science: the official journal of the Society for Prevention Research*. 20(3), 366-376. <https://doi.org/10.1007/s11211-018-0875-8>.



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