



COVID-19 PANDEMIC IN SLOVENIA

**Results of a panel online survey on the impact
of the pandemic on life (SI-PANDA),
24th iteration**

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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. 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)² questionnaire as a basis, which we translated and adapted to the situation in our country according to the WHO guidelines. We also used the translated MHI-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 **24th iteration** of the online survey, that took place **from 24 January 2023 to 27 January 2023** on a sample of 1,020 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 June 2021 to 10 June 2021

14th iteration from 6 July 2021 to 9 July 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 2022

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

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 24TH ITERATION

➤ Supporting current recommendations

In the 24th survey iteration, the respondents gave the highest levels of support to the recommendation of effective ventilation of enclosed spaces (82.8%) and effective ventilation in educational institutions (80.7%), isolation for persons with confirmed SARS-CoV-2 infection (73.2%), and the use of masks in health care facilities, pharmacies, and homes for the elderly (67.3%). People in the 65 to 74 age group give the most support to current recommendations. All of the listed recommendations are more strongly supported by those vaccinated against COVID-19 than by those who have not been 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. Respondents who have not been vaccinated against COVID-19 are most concerned about the side effects of vaccination, long-term impact on their health and the safety of the vaccines. People who received the vaccine against COVID-19 cited the following reasons for vaccination: preventing a more severe course of the disease or its consequences and protecting their health and the health of their loved ones. 8.1% of the respondents have been vaccinated against seasonal influenza in 2022/2023 season, while 9.6% of those who have not been vaccinated say they are likely to be vaccinated. Respondents in the oldest age group (65–74 years) are the most likely to be vaccinated.

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

In case of cold symptoms or respiratory infection, the majority of people would react by self-testing for SARS-CoV-2 (69.2%), a third would wait to see how the symptoms develop 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, 67.1% of people would get tested.

➤ Long COVID-19

The majority of people who have been infected with SARS-CoV-2 at least once (52.5%) report that their infection was asymptomatic or with mild symptoms. About 60% of respondents reported that they had some problems three months after the first or only infection, or a second infection, which lasted for at least two months. After having had a COVID-19 infection, the most common problems reported by respondents were fatigue and lack of energy, both after the first and only infection and after the second infection. About 40% of people still have problems after having COVID-19. People who still have problems after having had COVID-19 report a poorer quality of life compared to people who no longer have problems.

➤ Experiencing stress

Around one fifth (20.2%) of respondents feel tense, stressed or under a lot of pressure often or on a daily basis. This is more common among women and younger age groups. Feelings of tension, pressure and stress are also more likely to be reported by those who have had a worse financial situation than in the past, who are less physically active, who have at least one risky behaviour (such as smoking, obesity and excessive alcohol consumption) and who have mental health problems. The majority of respondents manage tensions, stress and pressures easily or with some effort, a minority report that they do not manage them or manage them with severe effort, and 15.7% (compared to 17.2% in 22nd iteration) report that they manage them with greater

effort. Risky stress behaviour (experiencing stress frequently and having severe problems coping with it) is more common in younger age groups, in those with at least one chronic illness, in smokers, in those who are less physically active and with at least one risky behaviour, in those who are in a worse financial situation than before, and in those who show a high likelihood of having a depressive disorder.

➤ **Satisfaction with life**

We find that satisfaction with life is significantly associated with symptoms of depressive disorder or mental health problems. People who do not have mental health problems are much more satisfied with their lives than those with problems or depressive disorder. The data also shows that people with better financial situation compared to previous period and no risky stress behaviour are more satisfied with their lives than those with a worse financial situation compared to the previous period and stress behaviour.

➤ **Health literacy**

The most frequently rated problems were deciding how to protect oneself from illness based on information in the mass media (20%), getting information about sources of professional help in case of illness (17%) and coping with mental health problems (15%). On average, respondents scored 73.4 out of 100, indicating a relatively high average level of general health literacy. The lower level of health literacy was most pronounced among individuals with mental health problems and those who rated their financial situation worse than three months ago.

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 24 January and 27 January 2023, we asked respondents how supportive they were of the current recommendations.

The highest proportion of people support effective ventilation of enclosed spaces (82.8%), effective ventilation in educational institutions (80.7%), and isolation for people with confirmed SARS-CoV-2 infection (73.2%). Two thirds of people support the use of masks in health care facilities, pharmacies and homes for the elderly (67.3%). Just under a half support the use of masks in public transport (46.0%) and in enclosed public spaces (44.1%). In this survey iteration, respondents again showed the least support for the use of the Ostani zdrav application in colleges and universities (37.2%). Most of the current recommendations are the most supported by the respondents in 65–74 age group, especially the use of masks in healthcare facilities, pharmacies and homes for the elderly, use of masks in public transport, in enclosed public spaces and the use of Ostani zdrav application in colleges and universities (Figure 1).

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

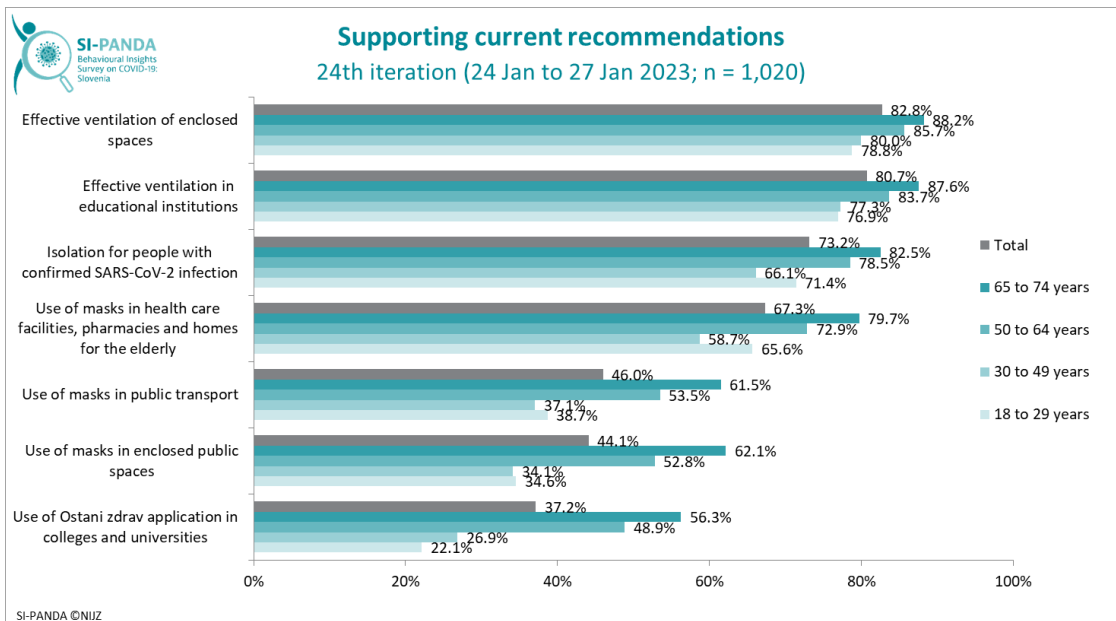


Figure 1: Supporting current recommendations, total and age groups.

Those with at least a higher education are statistically significantly more likely than those with a secondary education to support effective ventilation in educational institutions (83.1%), effective ventilation of enclosed spaces (85.5%), use of masks in enclosed public spaces (46.9%) and the use of masks in public transport (49.5%) (Figure 2). All recommendations are statistically significantly more strongly supported by people who have received at least one dose of COVID-19 vaccine compared to those who will not be vaccinated.

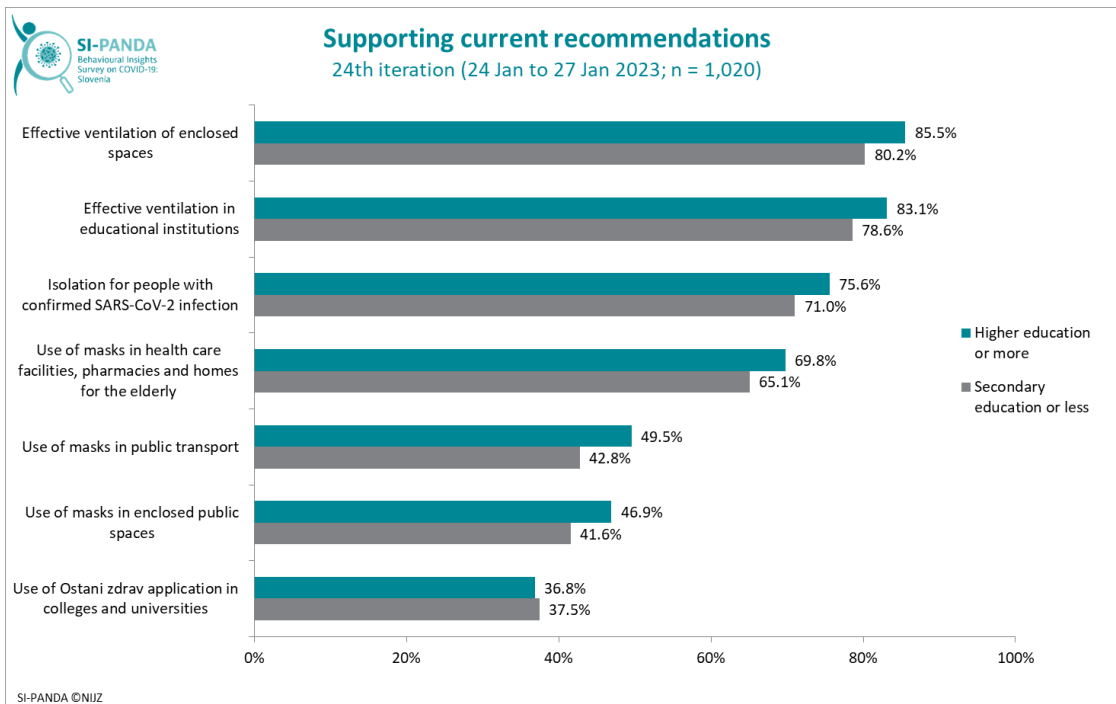


Figure 2: Supporting current recommendations, by educational attainment.

Vaccination against COVID-19

In the 24th SI-PANDA survey iteration, 74.3% 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 27 January 2023. In the 23th SI-PANDA survey iteration, 6.4% of persons responded that they had received one dose of vaccine, 25.8% of persons responded that they had received two doses of vaccine, 36.7% of persons responded that they had received the first booster dose, and 5.4% of persons responded that they had received the second booster dose. Statistically significantly more people do not intend to be vaccinated in the 18–49 age group (28.7%–30.5%), compared to the older age group (50–74 years) – 14.3%–17.1%. 23.7% of respondents do not intend to be vaccinated, and 1.9% of respondents were not vaccinated for health reasons (Figure 3). The proportion of people who do not intend to be vaccinated against COVID-19 has remained relatively stable in recent SI-PANDA survey iterations, hovering around a quarter of respondents. According to eRCO, by 27 January 2023, 38% of adults had been vaccinated with the first booster dose and 5% of Slovenian adults had been vaccinated with the second booster dose.

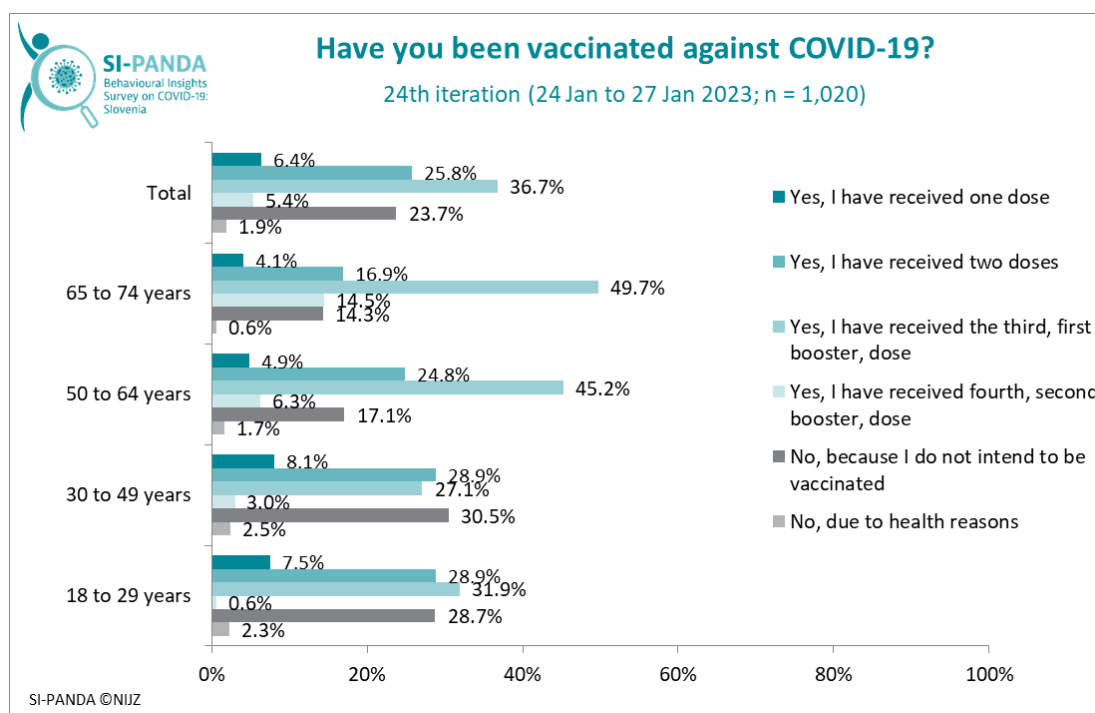


Figure 3: Vaccination against COVID-19, total and by age groups.

More than half (53.0%) of the respondents agreed that the COVID-19 vaccine can prevent the more severe course of COVID-19, 14.4% were undecided and a third of respondents disagreed. The proportion of people who believe that the vaccine can prevent a more severe course of the COVID-19 is the highest in the 65 to 74 age group (67.0%), and the lowest in the 30 to 49 age group, where less than a half (43.6%) of respondents agree with the statement (Figure 4).

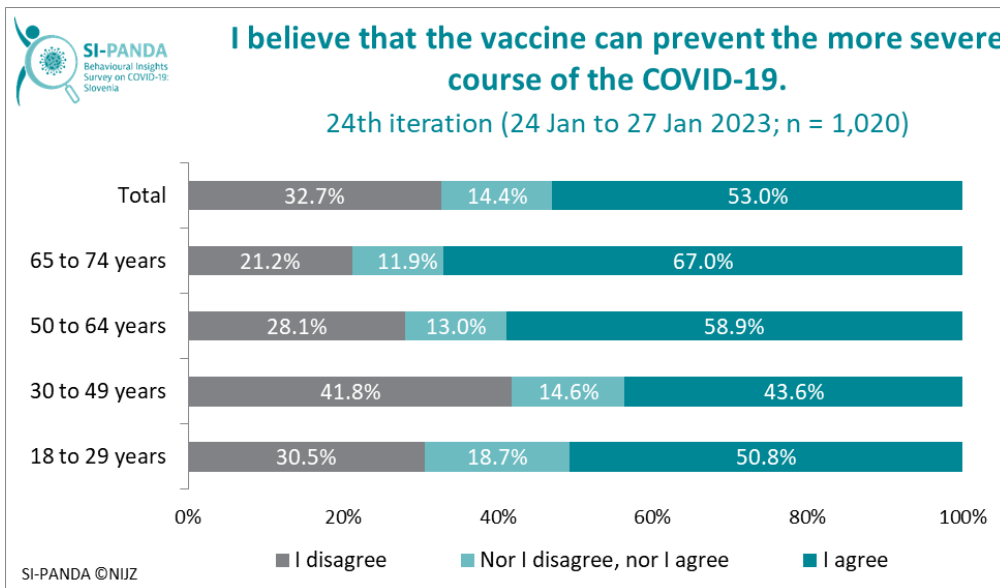


Figure 4: Opinion on whether vaccination can prevent a more severe course of the disease, total and by age groups.

33.2% of the respondents think that vaccination against COVID-19 is not necessary and that it is better to get over the disease naturally. The majority of people who will not be vaccinated against COVID-19 (74.4%) believe that vaccination against COVID-19 is unnecessary and that it is better to get over the diseases naturally. Among those who have been vaccinated, 19.0% believe that vaccination against COVID-19 is unnecessary (Figure 5).

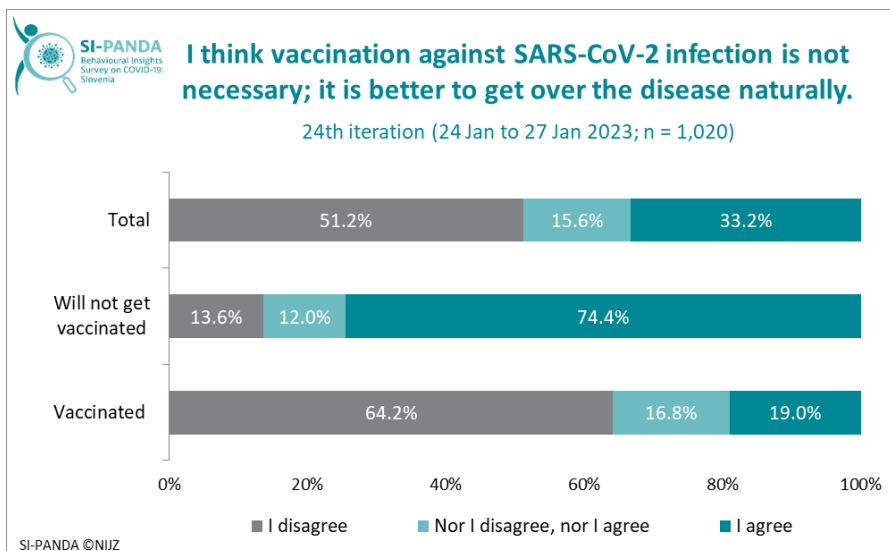


Figure 5: Opinion on whether it is better to get over the disease naturally, total and by vaccination status.

In the 24th survey iteration, 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 24th 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 that the vaccine is safe and effective (average score on the 7-point scale in 23rd iteration for safety is 4.5 and for effectiveness 4.4). The decision was / is also influenced by whether the vaccine has been in use for a long time (4.0) and the magnitude of the risk of SARS-CoV-2 infection at the time of vaccination (4.1). 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 (3.5), on accessibility of vaccination (3.5) (Figure 6).

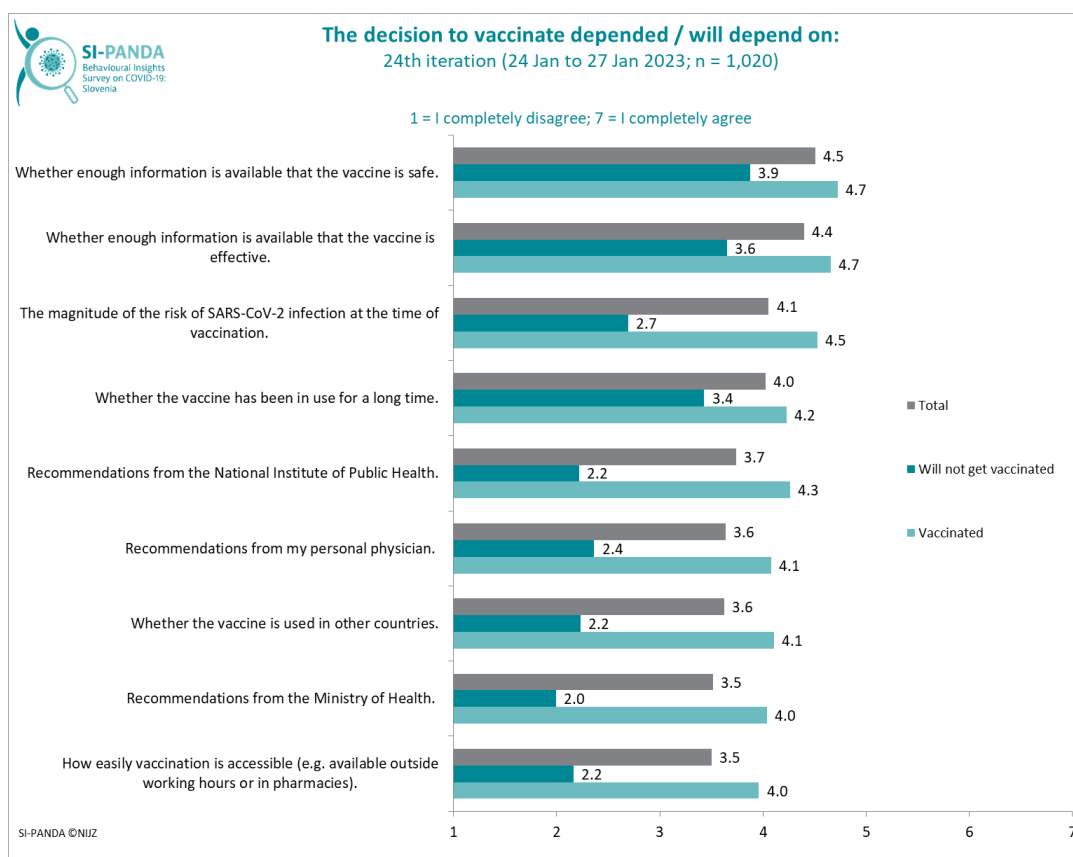


Figure 6: What the decision to vaccinated against COVID-19 depends on, total and by vaccination status.

39.0% of people surveyed believe that everyone should be vaccinated in general, according to the national vaccination programme, irrespective of the SARS-CoV-2 virus. The age group 30–49 years has the lowest percentage of people who think that, in general, everyone should be vaccinated according to the national vaccination programme (30.9%) (Figure 7).

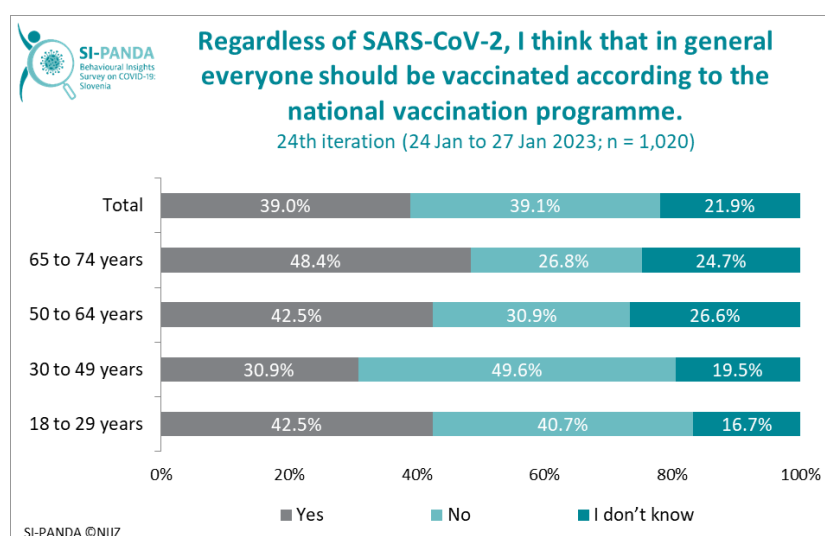


Figure 7: Opinion on vaccination in accordance with the national vaccination programme, total and by age groups.

People who had received primary doses of vaccine against COVID-19 (32.2%) were asked how likely they were to be vaccinated with the first booster dose against COVID-19: 15.3% reported they were likely to be vaccinated and 69.6% 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 over a half of respondents thought that the booster dose would not give them additional protection, 43.7% of persons were concerned about the long-term health effects, 32.2% of respondents were concerned about the side-effects after the booster dose, a poor quarter of respondents (23.6%) were not sure that the booster dose is even recommended for them, a fifth felt that the first two doses gave enough protection, and a poor fifth had side effects after the previous vaccinations against COVID-19. The least frequently cited reasons for not vaccinating with the first booster dose were meeting the RVT condition (15.5%), waiting for a vaccine adapted to the current variant of the disease (8.3%), and pregnancy or trying to conceive and associated care for the child (1.6%) (Figure 8). Respondents could give several reasons why they would not be vaccinated with the third dose (the first booster dose).

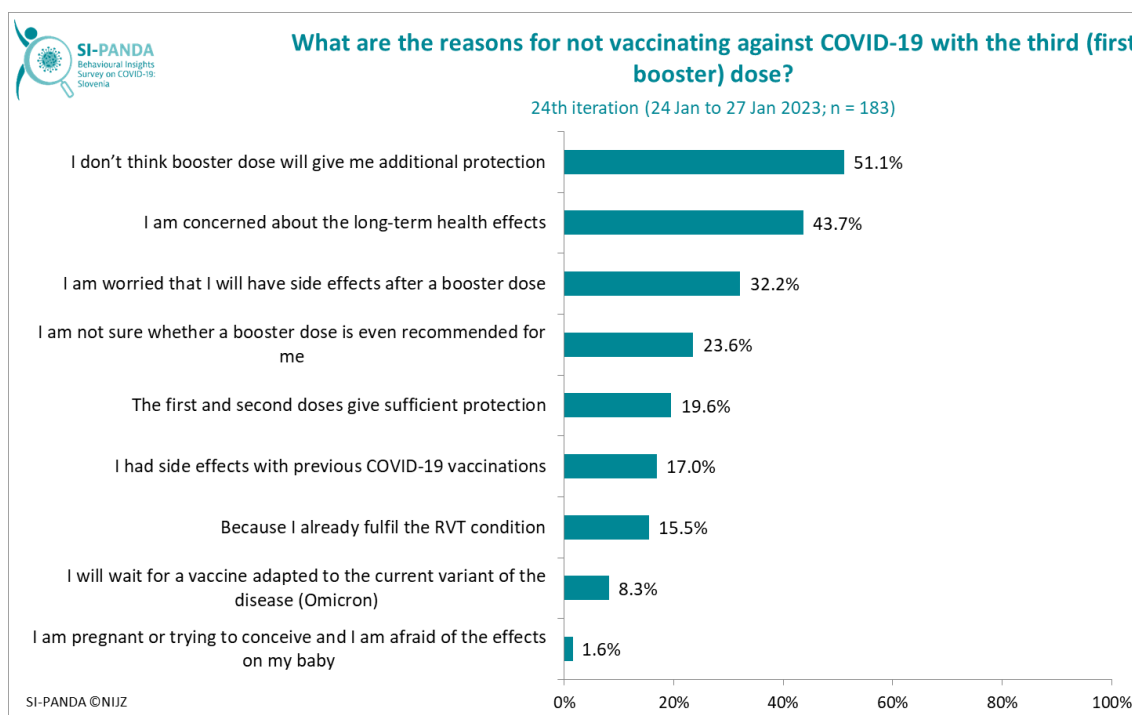


Figure 8: Reasons against vaccination with a third dose of COVID-19 vaccine among persons who received first two doses of COVID-19 vaccine and who are unlikely to be vaccinated with a third dose of COVID-19 vaccine, total.

Note: Several answers were possible.

Those who reported having received a third dose (first booster) of COVID-19 vaccine (36.7%) were asked how likely they were to be vaccinated with a second booster dose (fourth dose) of COVID-19 vaccine. 42.5% indicated that they were likely to be vaccinated, and 40.2% indicated that they were unlikely to be vaccinated with a second booster dose of COVID-19 vaccine; 17.3% of the respondents were undecided.

Persons who received the first booster dose were asked about their reasons for not receiving a fourth (second booster) dose of COVID-19 vaccine. Under a half of the respondents (44.2%) felt that a booster dose would not give them additional protection, 33.5% were concerned about long-term health effects, 28.8% thought that the doses they had already received gave them enough

protection. A fifth were worried that they would experience side effects after a second booster dose, 17.8% were not sure whether a booster dose is even recommended for them, 15.3% stated that they already fulfilled the RVT condition. The least frequently cited reason for not vaccinating with a second booster dose is waiting for the vaccine to be adapted to the current variant (12.5%) (Figure 9). Respondents could give several reasons why they would not be vaccinated with the fourth dose (the second booster dose).

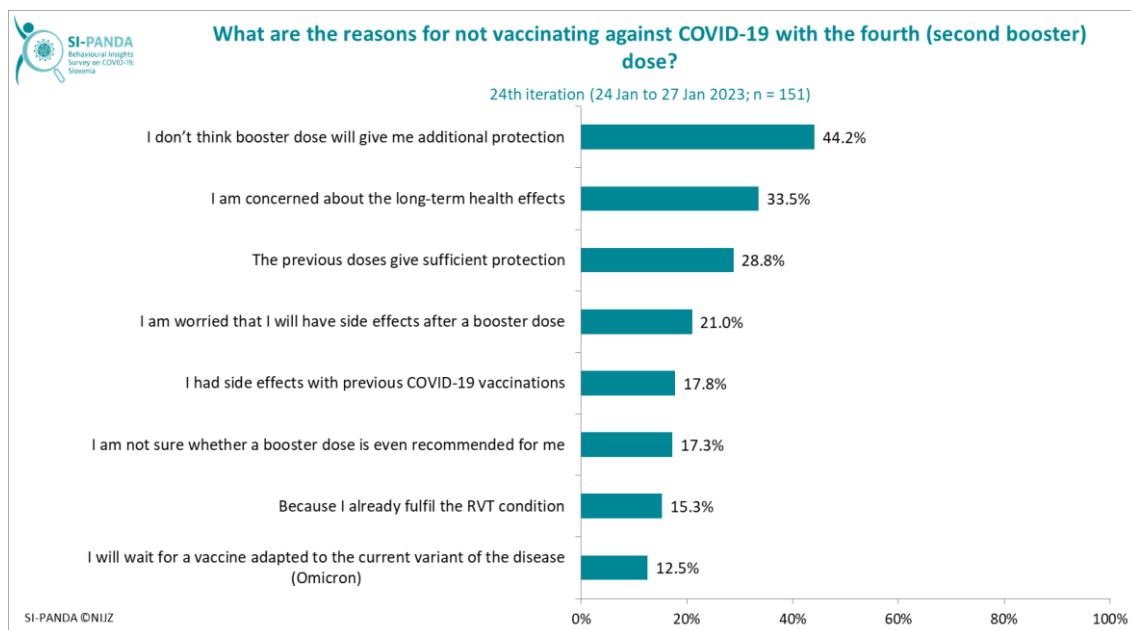


Figure 9: Reasons against vaccination with a fourth dose of COVID-19 vaccine among persons who received first two doses of COVID-19 vaccine and are not likely to be vaccinated with the fourth dose of COVID-19 vaccine, total.

Note: Several answers were possible.

Respondents who had already been vaccinated with at least one dose of the COVID-19 vaccine (74.3%) reported that their main reasons vaccinating were to prevent a more severe course of the disease or its consequences (55.0%), to protect their own health (53.1%), and to protect the health of their loved ones (52.0%), to fulfil the RVT condition (47.0%), and to contribute to curbing the epidemic as soon as possible and returning to normal life (47.0%) (Figure 10).

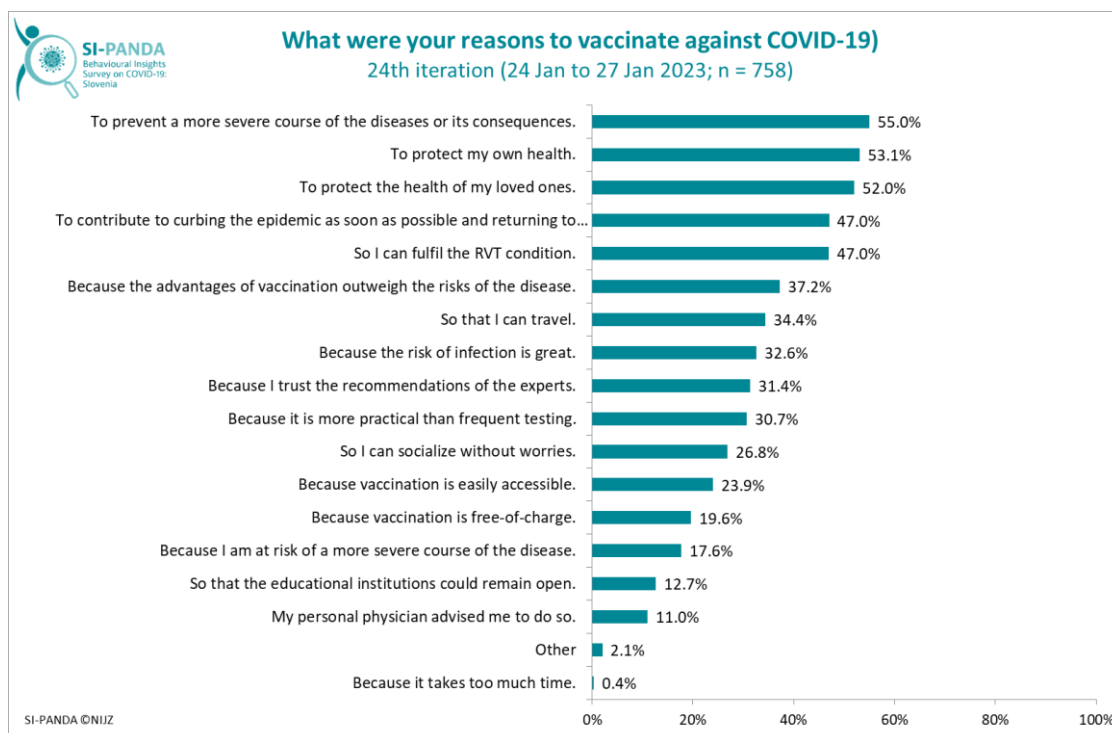


Figure 10: Reasons why vaccinated persons were vaccinated against COVID-19, total.
Note: Several answers were possible.

In the 24th survey iteration, non-vaccinated persons (25.7%) were also asked for more detailed reasons why they did not intend to be vaccinated. As in previous iterations, the main reasons were concerns about side effects after vaccination (67.3%), the perception that the vaccine is not safe (63.7%), concerns about the long-term impact on health (61.4%), and because there is still too much pressure regarding vaccination (51.3%). A third is concerned about the impact on their current health status, and a quarter of respondents believe that the vaccine will not work (26.9%) (Figure 11).

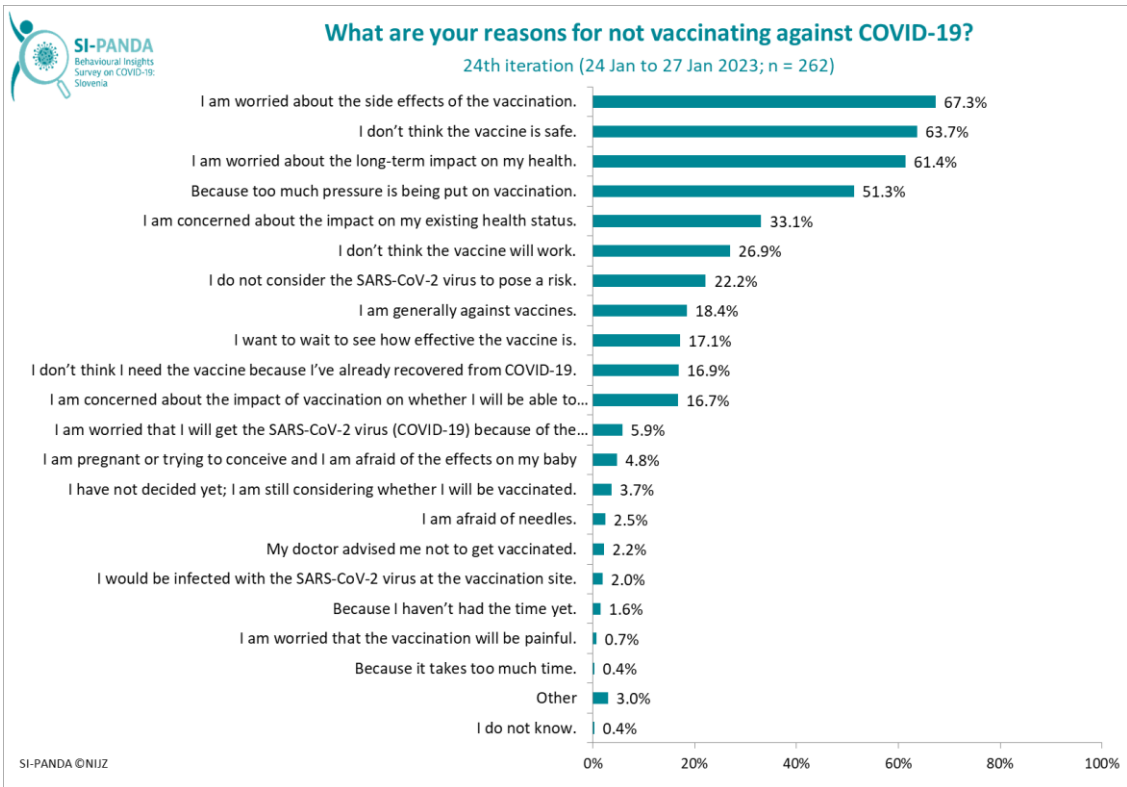


Figure 11: Reasons why unvaccinated persons are not vaccinated against COVID-19, total.
Note: Several answers were possible.

Vaccination against seasonal influenza

Given that seasonal influenza vaccination was still ongoing at the time of the 24th survey iteration, respondents were asked how likely it was that they would be vaccinated against seasonal influenza in 2022/23. 8.1% of respondents were already vaccinated against influenza in the 2022/23 season. Among those who have not yet been vaccinated against influenza in 2022/23, only 9.6% of respondents said they were likely to be vaccinated against influenza. The proportion of respondents likely to be vaccinated against seasonal influenza was highest among the oldest respondents (65–74 years), where 18.6% were likely to be vaccinated (Figure 12). More people with at least one chronic disease (13.1%) are also likely to be vaccinated against seasonal influenza compared to those without chronic diseases (7.9%). Interestingly, the 3.6% of people who will not be vaccinated against SARS-CoV-2 are also likely to be vaccinated against seasonal influenza.

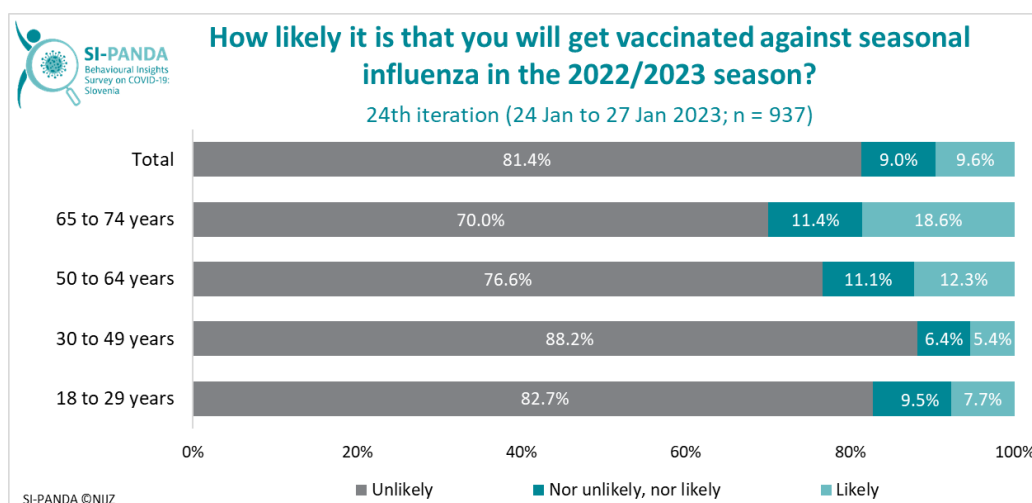


Figure 12: Vaccination against seasonal influenza in 2022/2023 season, total and by age groups.

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

In 24th survey iteration, 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 (69.2%) indicated that they would self-test for SARS-CoV-2. A third would wait to see how the symptoms develop and a poor quarter would self-isolate. A good fifth of people would call their personal physician, less than a fifth would inform their high-risk contacts about their symptoms or go for testing at an official testing site. 3.0% of people would not do anything with cold symptoms or respiratory infection (Figure 13). When asked whether they would get tested if they were in contact with someone who tested positive for SARS-CoV-2 and did not develop symptoms themselves, 67.1% of people answered yes, while a good fifth would not get tested.

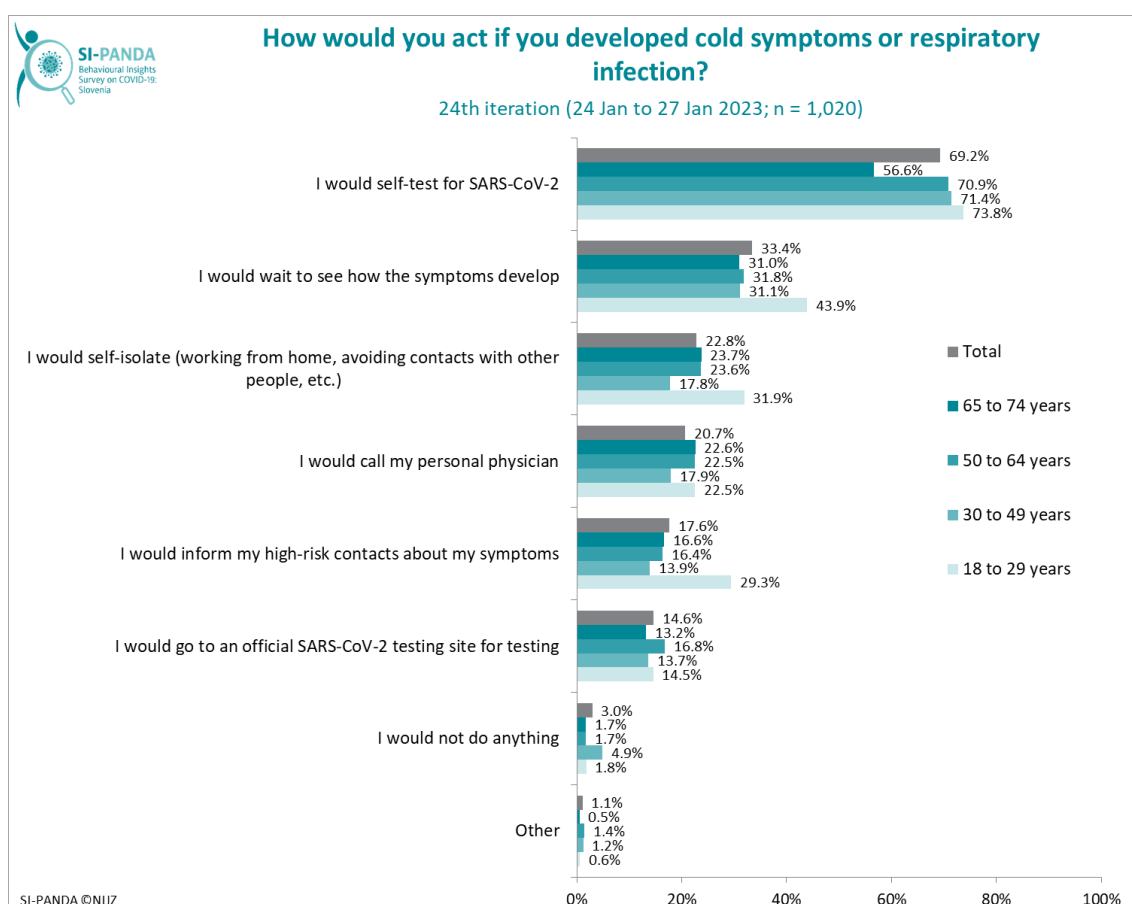


Figure 13: Acting in case of cold symptoms or respiratory infection, total.
Note: Several answers were possible.

The quarantine ordered in the 24th survey iteration was consistently complied with by the majority of the respondents (94.6%). The proportion of persons who consistently complied with the quarantine remained stable around 95% during the surveys carried out from September 2022 to December 2022.

Problems after recovering from infection with the SARSCoV-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 infection⁴. 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.⁵

In the 24th SI-PANDA survey iteration, 47.5% of respondents reported that they had not yet been infected with SARS-CoV-2, 36.6% had been infected once, 13.8% reported that they had been infected twice and 2.1% reported they had been infected three or more times. In the 65–74 age group, the proportion of people who reported never having been infected with SARS-CoV-2 was 63.4%, while in the youngest age group there was a good third (35.7%) of such persons. The proportion of respondents who have never been infected with SARS-CoV-2 is statistically significantly higher in people aged 50 years and older (54.9%–63.4%) compared to people younger than 50 years (35.7%–40.4%) (Figure 14). Among those who had been infected at least once, a poor third of respondents recovered from COVID-19 more than once. In the 18–29 age group, about 35% had been infected more than once, and in the 65–74 age group, 13.0% had been infected more than once.

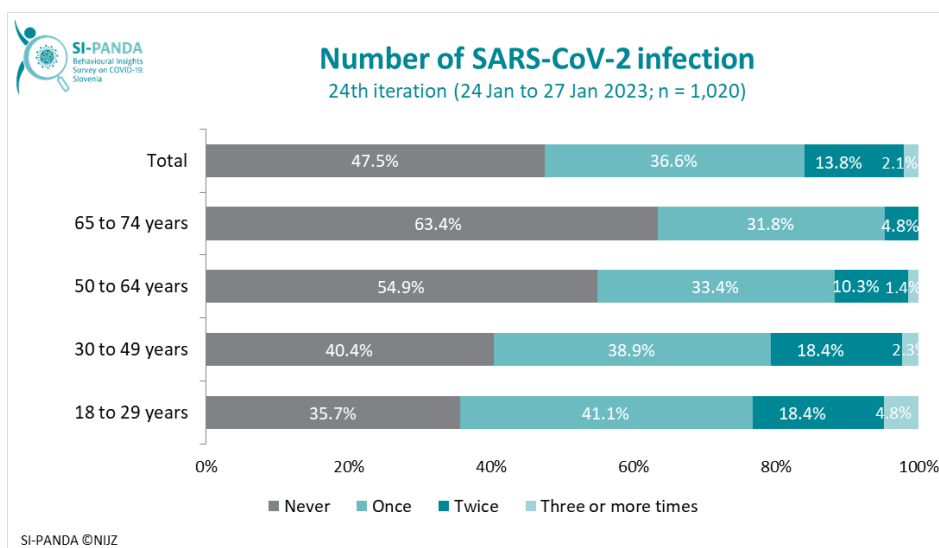


Figure 14: Number of SARS-CoV-2 infections, total and by age groups.

The first (or only) infection with the SARS-CoV-2 virus was asymptomatic or mild in the majority (76.0%), while 24.0% of persons reported a more severe course of the disease, which in some

⁴ 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>.

⁵ 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>.

cases also required hospital treatment. The course of the second infection was also described by the vast majority (87.7%) as asymptomatic or mild, and by 12.3% as more severe, some respondents even needed hospital treatment. The course of the third infection is less well defined, but we can see that the majority (75.9%) were asymptomatic or had mild symptoms (Figure 15).

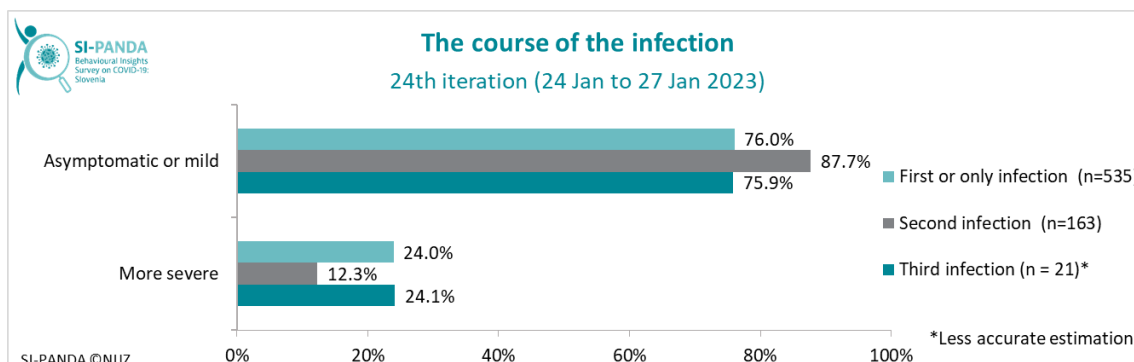


Figure 15: Course of SARS-CoV-2 infection among persons who have recovered from COVID-19 at least once, after consecutive infections.

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 periods⁶. 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. Since the 20th SI-PANDA survey iteration, we asked the respondents 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 since March 2020 to the present.

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

⁶ <https://www.nlzoh.si/objave/sledenje-razlicicam-sars-cov-2-61/>.

A good third of persons were infected for the first time or only once during the period when the B.258.17 or previous variants were prevalent, 12.1% when the Delta variant was prevalent, and just under a half of respondents were infected for the first or only time, when the Omicron variant was prevalent (47.0%). Only 3.5% of respondents were infected for the first time between April 2021 and June 2021, when the Alpha version was prevalent. In the case of a second consecutive infection, the vast majority (79.6%) of persons were infected from January 2022 onwards, when the omicron variant is prevalent; 11.3% were infected the second time when the delta variant prevailed, 2.1% when the Alpha variant prevailed, and 7.0% when the B.258.17 and previous variants were prevalent (Figure 16).

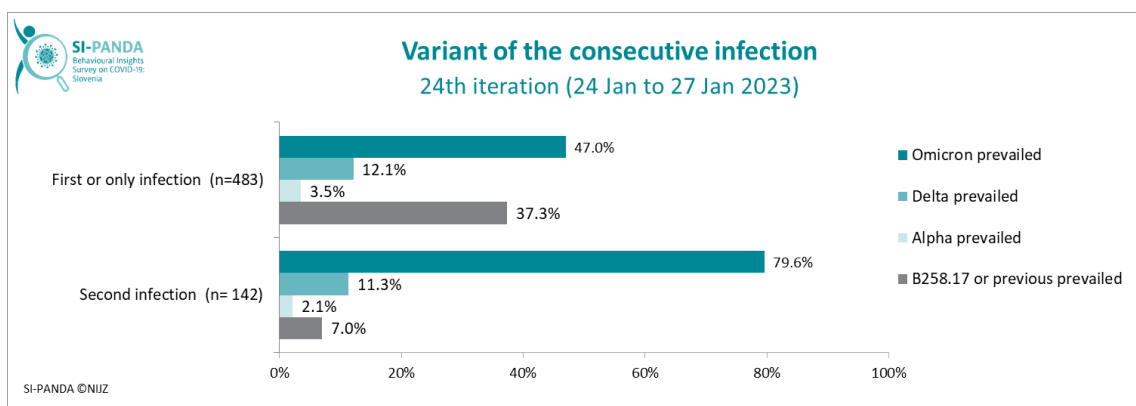


Figure 16: Prevalent SARS-CoV-2 virus variant, by consecutive infection.

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 weeks⁷. 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, after the second infection there were approximately 55% of such respondents. The most common long-term problem reported both after the first (or only) and after the second infection is fatigue and lack of energy (38.1% after the first infection, 33.6% after the second). The second most common problem after recovering from the first or only infection, was reduced physical capacity (27.4%) and headache after the second infection (24.6%) (Figure 17).

⁷ 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>.

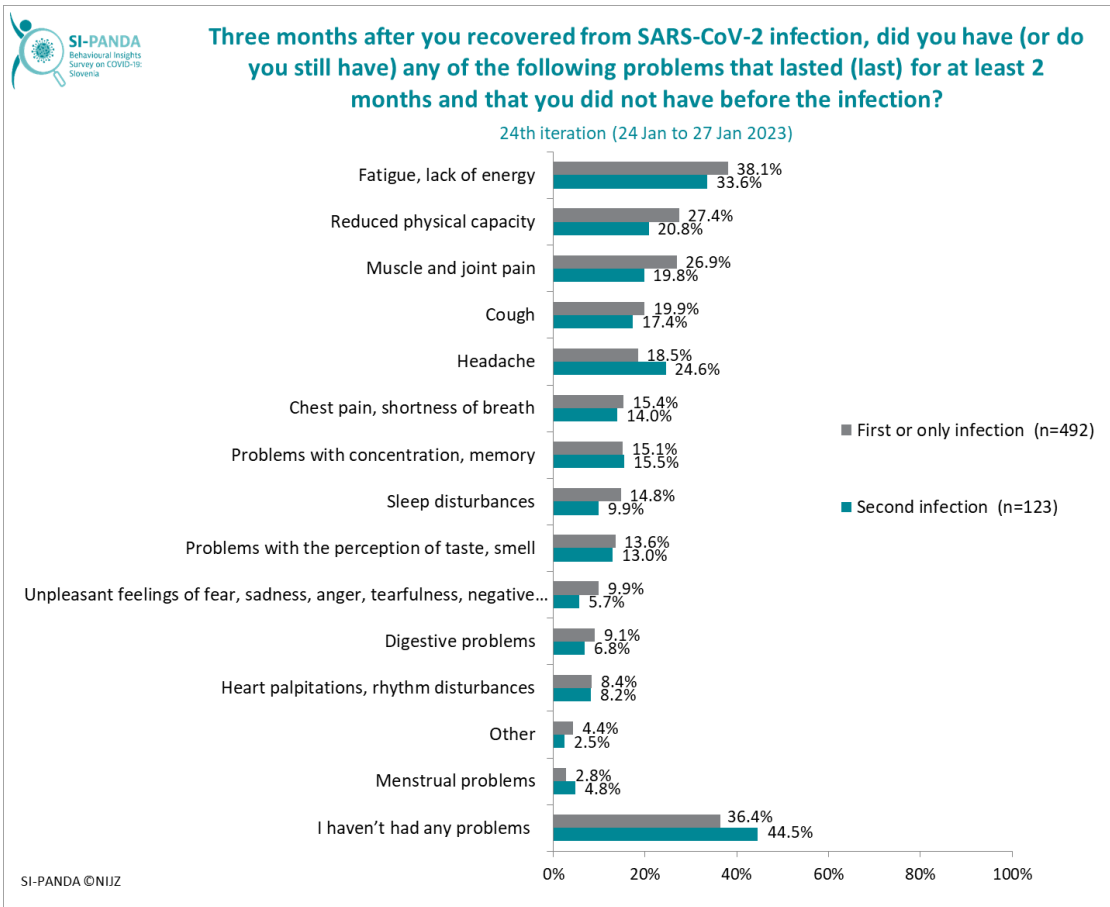


Figure 17: Health problems present three months after the infection, lasting at least two months among persons who have had an infection with the SARS-CoV-2 virus, total and by consecutive infection. Note: Several answers were possible.

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 the second infection, three out of ten people reported fatigue and lack of energy. Three out of ten reported reduced physical capacity after the first infection and two out of ten reported this problem after the second infection. After the first and only infection, three out of ten people reported muscle and joint pain, and after the second infection, two out of ten reported such problems. Two out of ten people both after the first and after the second infection had problems with coughing and headache, and problems with concentration and memory. Two out of ten people had chest pain after the first infection and one in ten people had such problems after the second infection. One in ten people both after the first and after the second infection had problems with sleep disturbances, problems with the perception of smell and taste, heart palpitations and rhythm disturbances, unpleasant feeling of fear, sadness, anger, tearfulness and negative thoughts, and digestive problems. Less than one in ten people had other problems and menstrual problems after both the first and second infection. Four out of ten had no problems after both the first and second infection (Figure 18).

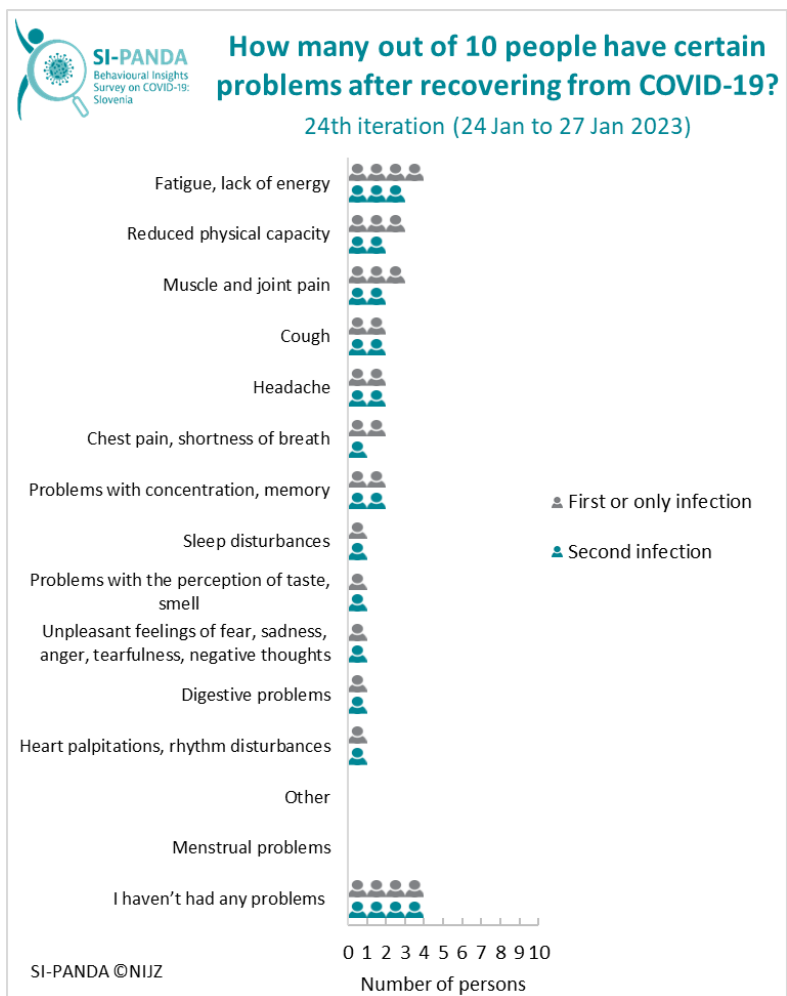


Figure 18: Health problems present three months after the infection, lasting at least two months among persons who have had an infection with the SARS-CoV-2 virus, incidence per 10 persons, by consecutive infection.

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 (52.9%), 22.7% had experienced such problems more than 6 months after the infection, and 24.3% from 3 to 6 months after the infection. 41.2% of people who said they had or had had problems after contracting SARS-CoV-2 consulted a doctor because of the problems they had experienced. A statistically significantly higher proportion of people with at least one chronic disease (51.6%) compared with those without chronic diseases (34.3%) had consulted a doctor for problems after having the infection.

People who had problems after their first or only and second SARS-CoV-2 infections also reported whether they still had problems after SARS-CoV-2 infection. 38.9% of people still have problems after the first infection and 43.9% of people still have problems after the second infection (Figure 19). Statistically significantly more people with at least one chronic disease reported that their problems persisted after the first and second infections (first or only infection: 53.2%, second infection: 54.5%*) compared to people without chronic diseases (first or only infection: 29.6%, second infection: 35.0%*).

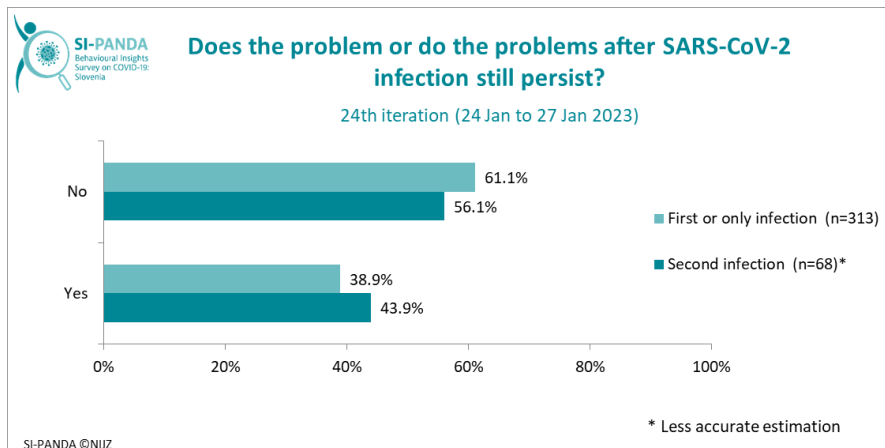


Figure 19: Problems after the first or only infection and the second infection that still persist, by consecutive infection.

The problems that people had after recovering from the infections had the greatest impact on the area of performing leisure activities and care for home, family, children and household chores, as approximately 80% of people report that the problems after recovering from infections had impacted their leisure activities and care for home, family, children and household chores slightly, very or extremely. Approximately 70% of people stated that the problems at least slightly impacted their well-being and interpersonal relationships and work and job (Figure 20). Statistically significantly more women report that the problems had very impacted their care for home, family, children and household chores, as well as their work and job compared to men. Statistically significantly more women than men also report that these problems have had a major impact on their well-being and relationships.

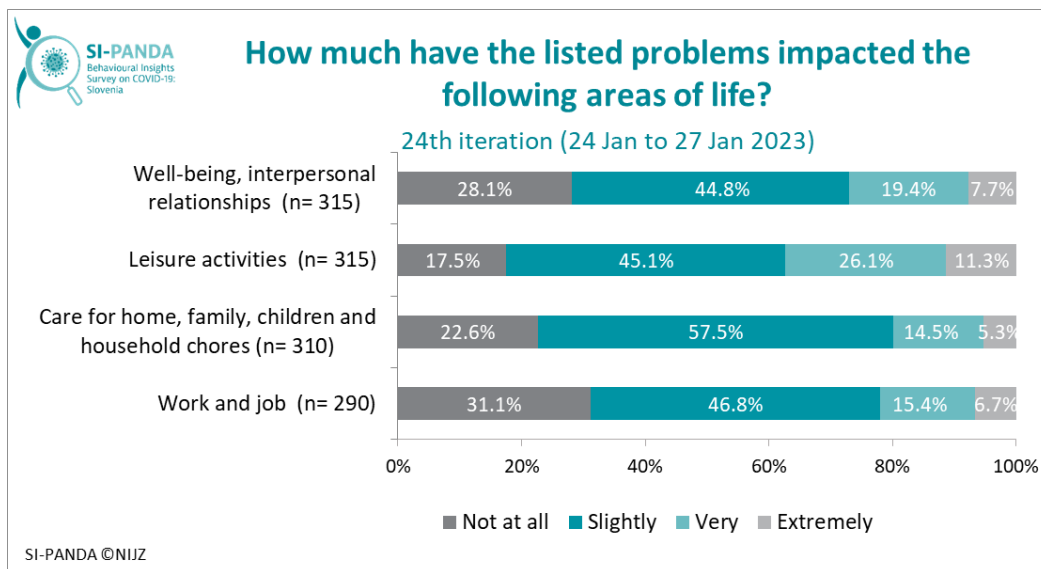


Figure 20: The impact of problems after recovering from SARS-CoV-2 infection on different areas of life among persons with at least one problem after recovering from the infection, total.

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. More campaigns are therefore needed to promote vaccination against COVID-19 and to make people aware of the positive effects of vaccination. 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

In the 24th iteration of the SI-PANDA survey, we measured the quality of life using the SF-36 questionnaire, which measures the physical and mental components of quality of life, and in total consists of eight quality of life⁸ indicators⁹, 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 91.9 points) compared to older people aged 65–74 years (average 77.9 points). Other components of quality of life that scored higher were social functioning (79.9 points), limitations in physical capacity (77.9 points), emotional problems (77.8 points), and body pain (75.1 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 and body pain components. General health (65.9 points), mental health (64.4 points) and vitality (53.5 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 21).

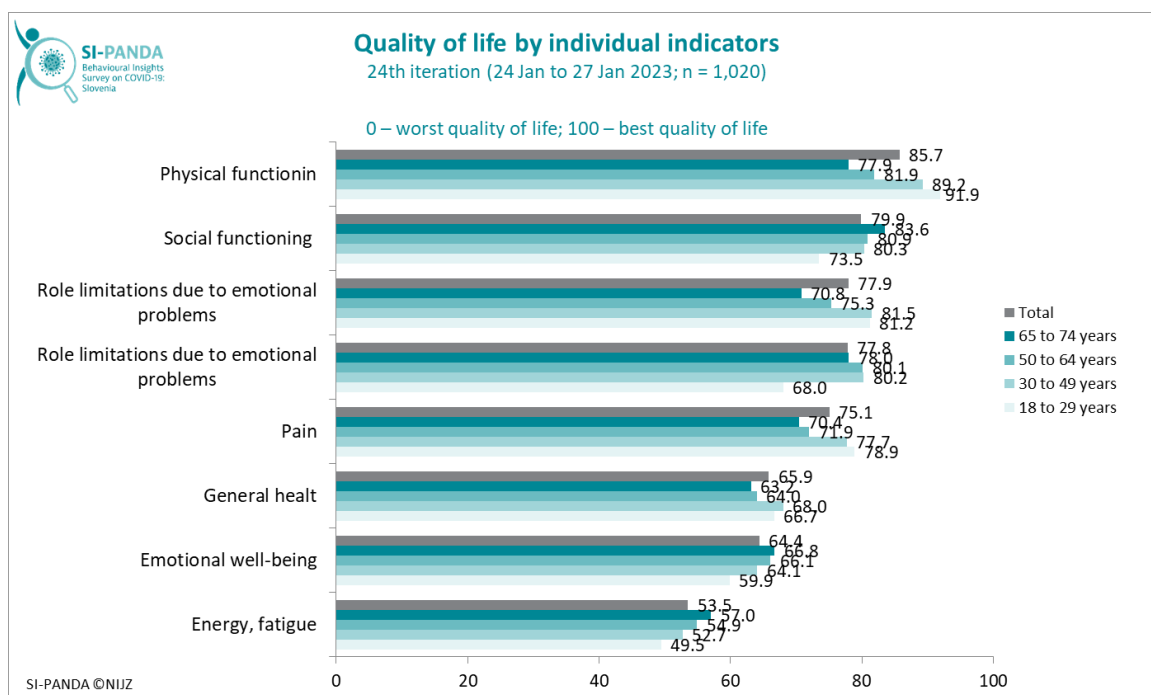


Figure 21: Quality of life shown in eight indicators, total and by age groups.

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 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, general health, emotional well-being and limitations in physical capacity the worst (Figure 22).

⁸ 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.

⁹ Translation of indicators summarized 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.

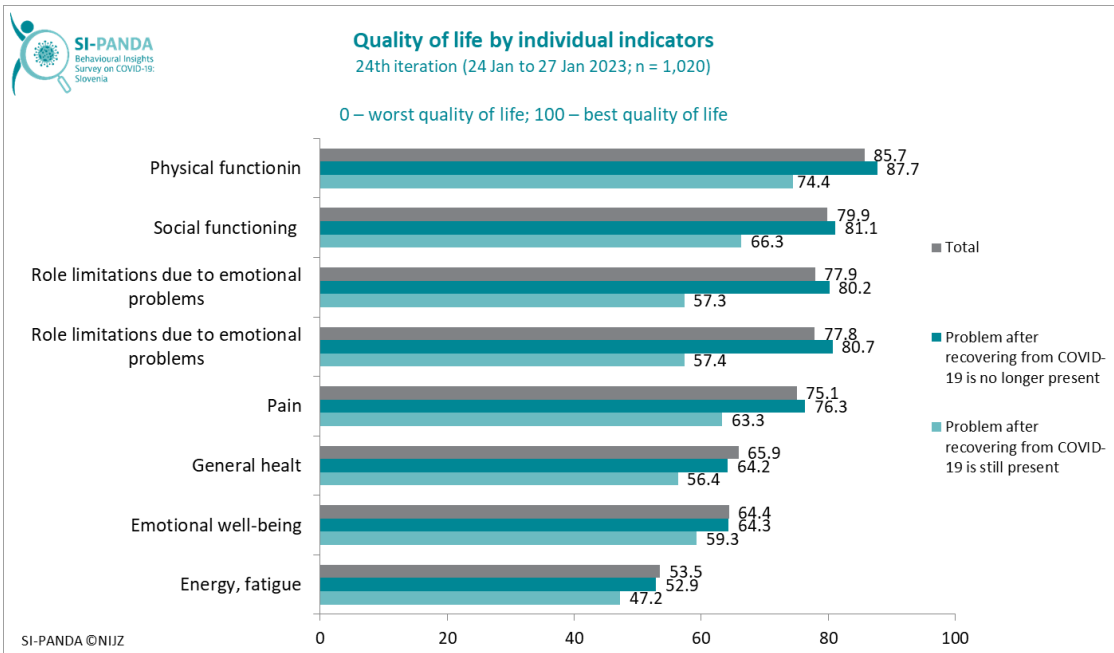


Figure 22: Quality of life by individual indicators, total and by current presence of problems after recovering from COVID-19, among respondents who have at least once recovered from COVID-19 and had at least one problem after recovering from COVID-19.

Experiencing stressful events and coping with them

We recognize and experience stress, tensions and pressures in our lives in different ways. Over time, the experience of stressors, the stress reaction and the intensity change, and the stress reaction can be present in the form of feelings of tension, vulnerability or fear. Most people cope easily with everyday stressful events. However, some people experience stress very often and at the same time they are unable to cope with it. This is when we talk about risk stress behaviour, which is associated with many negative consequences for health and quality of life^{10,11}. In recent years, we have seen the emergence of new challenges and significant changes in the prevalence of both known and new stressors. The COVID-19 pandemic has particularly highlighted the importance of stress management for maintaining mental health. Research shows that most people are successful in adapting to new stressors in our environment. However, this is not the case for everyone and we need to provide adequate support to those who are not able to do so, and design appropriate approaches to reduce and cope with stressors that change over time in terms of their prevalence or the intensity of their impact on the population¹².

In the 24th survey iteration, we asked how often adult respondents had felt tense, stressed or under a lot of pressure in the last 14 days, and how they coped with tension, stress and pressure. We find that 20.2% feel tense, stressed or under a lot of pressure often or on a daily basis, which is slightly lower than the 21.1% in 23rd survey iteration and slightly higher than the 18.9% in 20th survey iteration. This is a slight variation between the different iterations (Figure 23). More than a third of people (34.1%) feel tense or stressed occasionally and a little more than a third (33.6%) feel stressed very rarely in the 24th iteration.

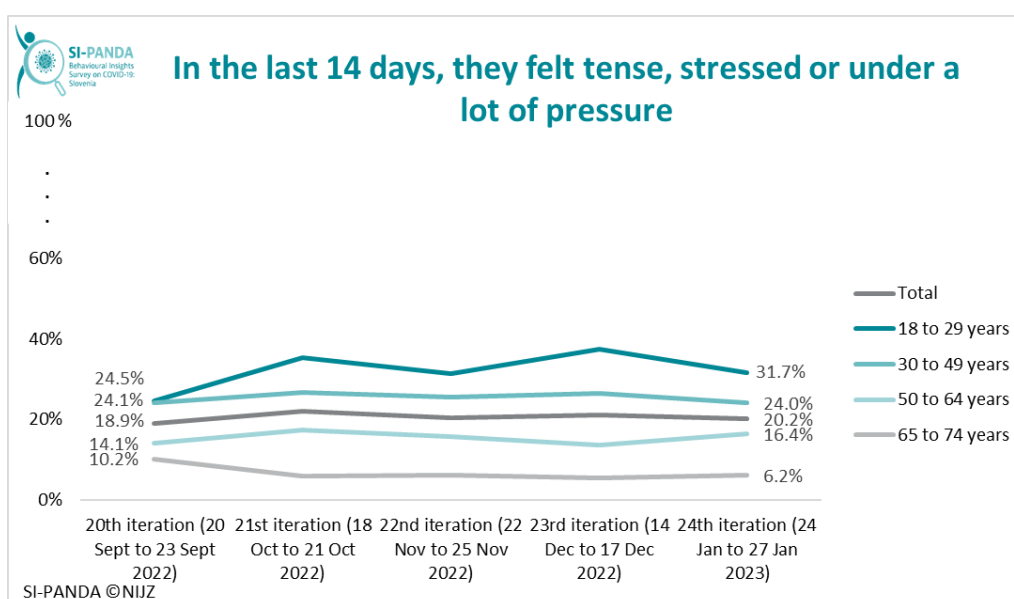


Figure 23: The frequency of experiencing stress in the last 14 days, total and by age group, from 20th to the 24th survey iteration.

¹⁰ Nishimi, K., Borsari, B., Marx, B. P., Rosen, R. C., Cohen, B. E., Woodward, E., Maven, D., Tripp, P., Jiha, A., Woolley, J. D., Neylan, T. C., & O'Donovan, A. (2021). Clusters of COVID-19 protective and risky behaviors and their associations with pandemic, socio-demographic, and mental health factors in the United States. *Preventive Medicine Reports*, 25, 101671. <https://doi.org/10.1016/j.pmedr.2021.101671>.

¹¹ Fu, S. (Qiang), Greco, L. M., Lennard, A. C., & Dimotakis, N. (2021). Anxiety responses to the unfolding COVID-19 crisis: Patterns of change in the experience of prolonged exposure to stressors. *Journal of Applied Psychology*, 106, 48–61. <https://doi.org/10.1037/apl0000855>.

¹² Manchia, M., Gathier, A. W., Yapici-Eser, H., Schmidt, M. V., de Quervain, D., van Amelsvoort, T., Bisson, J. I., Cryan, J. F., Howes, O. D., Pinto, L., van der Wee, N. J., Domschke, K., Branchi, I., & Vinkers, C. H. (2022). The impact of the prolonged COVID-19 pandemic on stress resilience and mental health: A critical review across waves. *European Neuropsychopharmacology*, 55, 22–83. <https://doi.org/10.1016/j.euroneuro.2021.10.864>.

The proportion of people who feel stressed or under a lot of pressure was the highest in all survey iterations in younger age groups compared to older ones (Figure 23), in the 24th survey iteration is significantly higher among women compared to men, in those who report having worse financial situation than three months ago compared to those who have better or the same financial situation than three months ago, for those who are less physically active, who have mental health problems and who have at least one risky behaviour (health-harming behaviours such as smoking, obesity and excessive alcohol consumption) compared to those who do not have any risky behaviours.

The proportion of people who feel stressed or under a lot of pressure frequently or daily was significantly higher among those who still have problems after recovering from COVID-19 (after the 1st, 2nd or 3rd infection) compared to those who no longer have problems (Figure 24). Causality cannot be inferred in this case due to the nature of the study (cross-sectional), and some studies suggest that the likelihood of prolonged post-COVID-19 problems is related to pre-existing or pre-infection mental health problems and experiencing stress.¹³

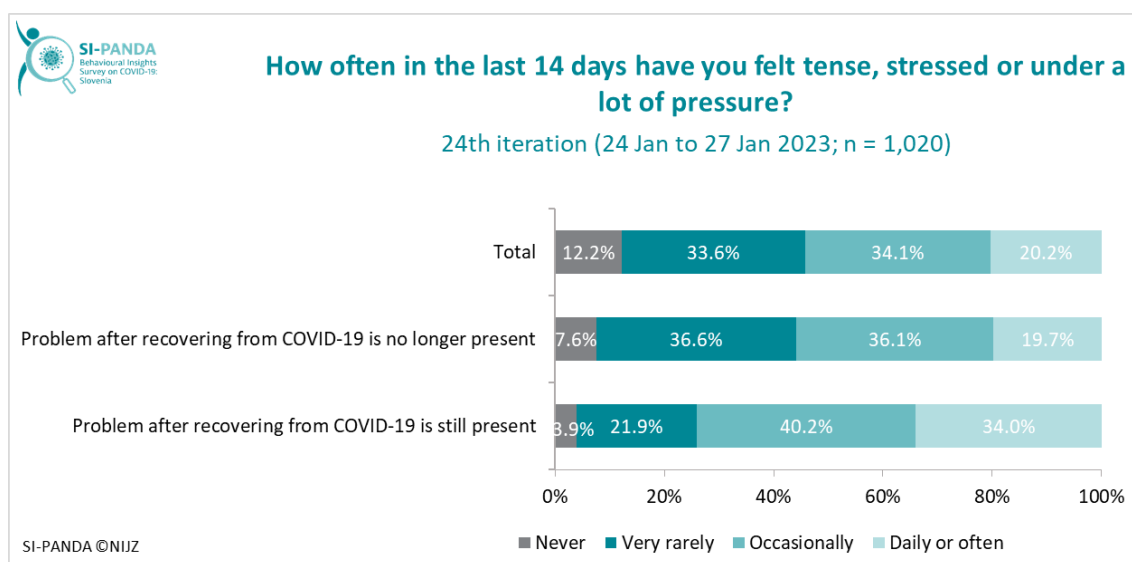


Figure 24: Frequency of experiencing stress in the last 14 days, total and by problems after recovering from COVID-19, among respondents who had at least one post-COVID-19 problem.

Most respondents (81%) manage tension, stress and pressure with some effort or easily, a minority (3.3%) reports that they do not manage them or manage them with a great effort, and 15.7% (in 22nd iteration 17.2%) report that they manage them with greater effort. Poorer stress management is more likely to be reported by women compared to men, younger age groups, those who have had a worse financial situation than in the past, those with at least one chronic disease, those who smoke, those who are less physically active, those with at least one risky behaviour, those with mental health problems, and those who still have problems after having recovering from COVID-19 (Figure 25).

¹³ Wang, S., Quan, L., Chavarro, J. E., Slopen, N., Kubzansky, L. D., Koenen, K. C., Kang, J. H., Weisskopf, M. G., Branch-Elliman, W., & Roberts, A. L. (2022). Associations of Depression, Anxiety, Worry, Perceived Stress, and Loneliness Prior to Infection With Risk of Post-COVID-19 Conditions. *JAMA Psychiatry*, 79(11), 1081–1091. <https://doi.org/10.1001/jamapsychiatry.2022.2640>.

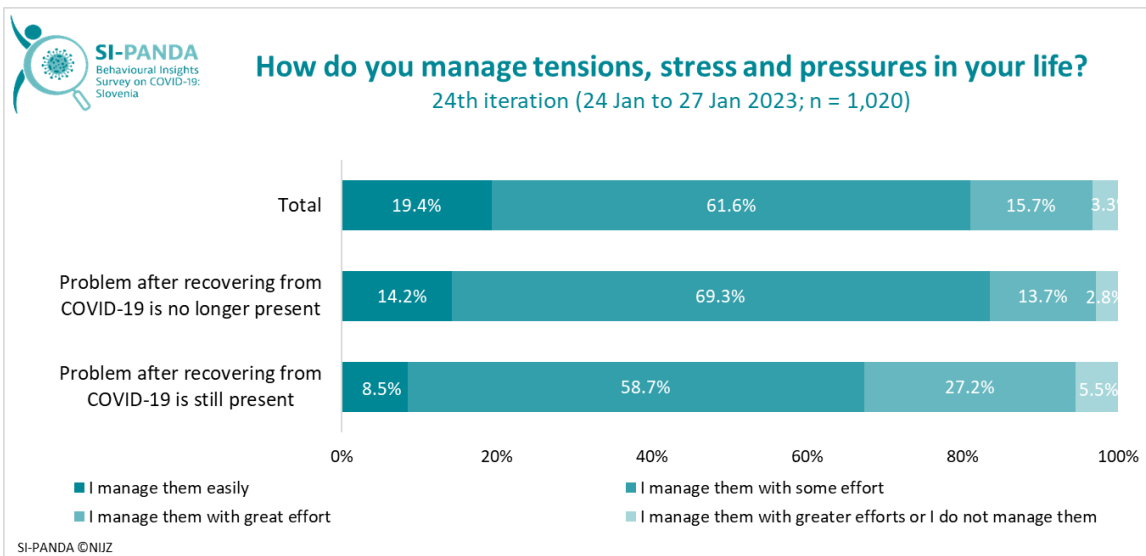


Figure 25: Managing tensions, stress and pressures, total and by problems after recovering from COVID-19, among respondents who had at least one post-COVID-19 problem.

The proportion of respondents with risky stress behaviour in 24th iteration was 2.7%, which is less than in 23rd iteration, when it was 3.9% (Figure 26). Risky stress behaviours are more common in younger age groups compared to older age groups, in people with at least one chronic disease, in smokers, in those who are less physically active and in those with at least one risky behaviour. Risky stress behaviour was also significantly higher among those with a worse financial situation than before (8.4%) compared to those whose financial situation is the same as before (2.0%) and those with a better financial situation than before (2.2%). Risky stress behaviours are more common in those who show a high likelihood of depressive disorder (20.3%), compared to those with minor mental health problems (2.5%) and those with no mental health problems (0.9%) (Figure 26). Research shows that people with poorer mental health are more susceptible to stress and less able to manage it¹⁴.

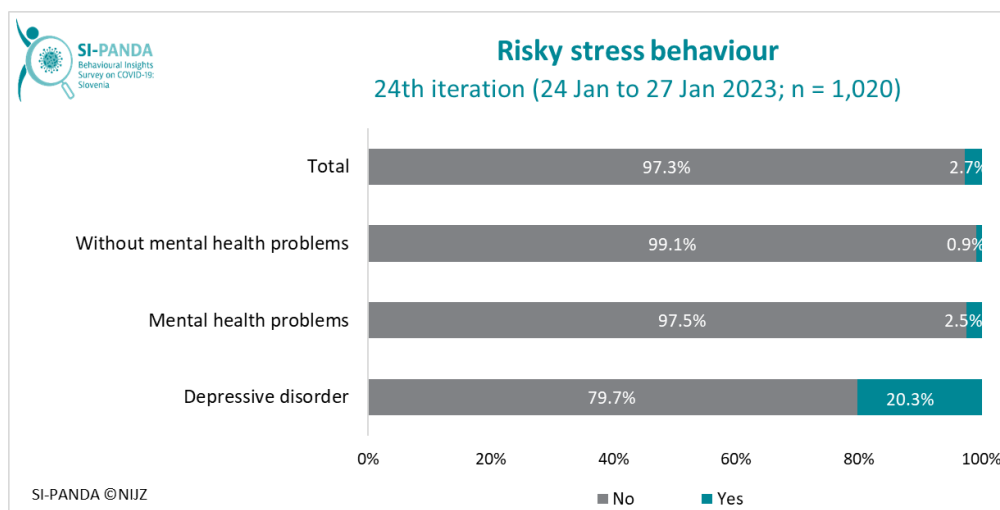


Figure 26: Risky stress behaviour, total and by mental health problems.

¹⁴ Yao, H., Chen, J.-H., & Xu, Y.-F. (2020). Patients with mental health disorders in the COVID-19 epidemic. *The Lancet. Psychiatry*, 7(4), e21. [https://doi.org/10.1016/S2215-0366\(20\)30090-0](https://doi.org/10.1016/S2215-0366(20)30090-0).

Satisfaction with life

In the 24th survey iteration, we also measured satisfaction with life for the first time, using the Satisfaction with life scale (SWLS), a 5-question instrument that measures satisfaction with life. Participants were divided into 3 groups: those who are satisfied with life, those who are dissatisfied with life and those in between. We find that 60.3% of the respondents report that they are satisfied with life, 32.0% that they are dissatisfied with life and 7.7% that they are somewhere in between.

Satisfaction with life is significantly associated with symptoms of depressive disorder or mental health problems. Among those with no mental health problems, more than 70% are satisfied with life, while among those with major depressive symptoms, the majority - more than 80% - are dissatisfied with life (Figure 27). Similar results are also shown in foreign studies^{15,16}.

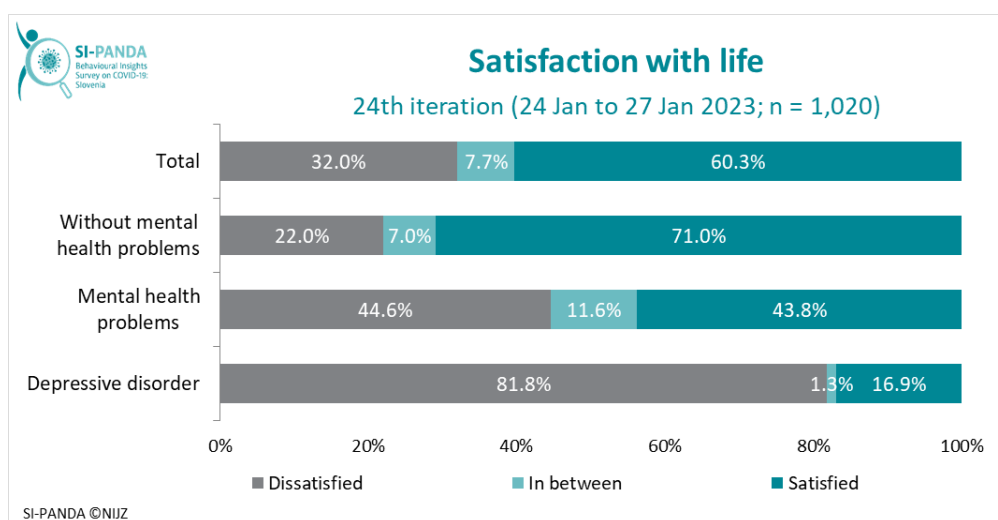


Figure 27: Satisfaction with life, total and by the presence of mental health problems or symptoms of depressive disorder.

More respondents who are dissatisfied with their life (46.2%) are those whose financial situation has worsened in the last 3 months compared to those whose situation has improved or stayed the same (about 25% of those who are dissatisfied) (Figure 28).

¹⁵ Joshanloo, M. (2022). Longitudinal Relations Between Depressive Symptoms and Life Satisfaction Over 15 Years. *Applied Research in Quality of Life*, 17(5), 3115–3130. <https://doi.org/10.1007/s11482-022-10055-x>.

¹⁶ Koivumaa-Honkanen, H., Kaprio, J., Honkanen, R. et al. Life satisfaction and depression in a 15-year follow-up of healthy adults. *Soc Psychiatry Psychiatr Epidemiol*, 39, 994–999 (2004). <https://doi.org/10.1007/s00127-004-0833-6>.

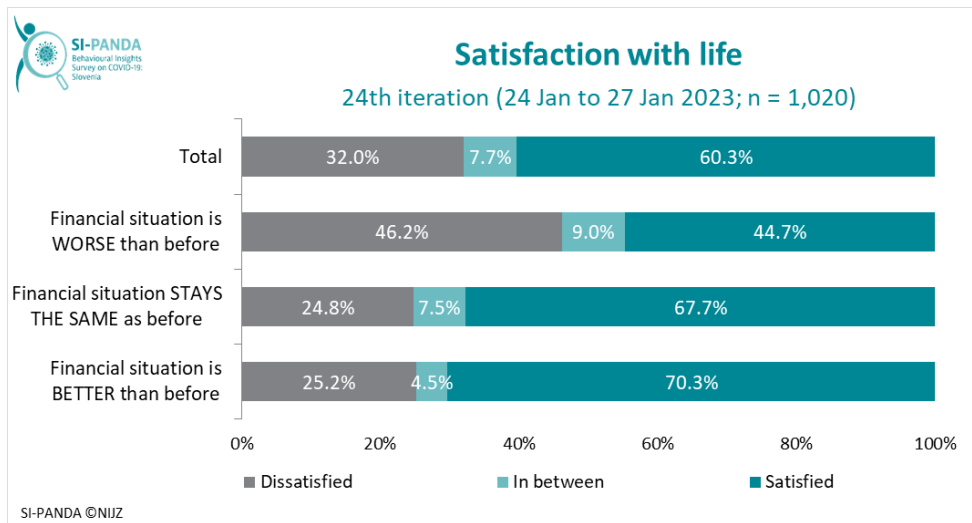


Figure 28: Satisfaction with life, total and by financial situation.

There are also more dissatisfied respondents (85.7%) among those who have been identified as having risky stress behaviours compared to those who do not have risky stress behaviours (30.4%) (Figure 29).

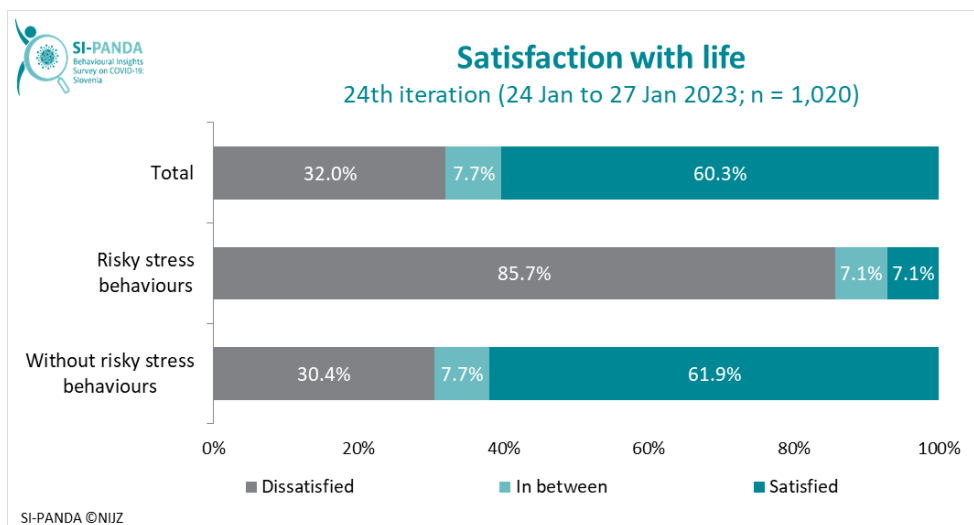


Figure 29: Satisfaction with life, total and by risky stress behaviours.

General health literacy

Health literacy covers the knowledge and skills to access, understand, evaluate and use health information in the areas of healthcare, prevention and health promotion. Research shows that higher levels of health literacy are associated with better health, better disease management and lower mortality. This underlines the important role of studying and addressing health literacy in Slovenia.

The HLS19-Q12, a measurement instrument developed by the WHO Action Network on Measuring Population and Organizational Health Literacy (M-POHL)¹⁷, was used to assess general health literacy in the PANDA survey. Respondents were asked to rate the difficulty of performing 12 different tasks related to finding, understanding, assessing and using health information on a four-point scale (Figure 30).

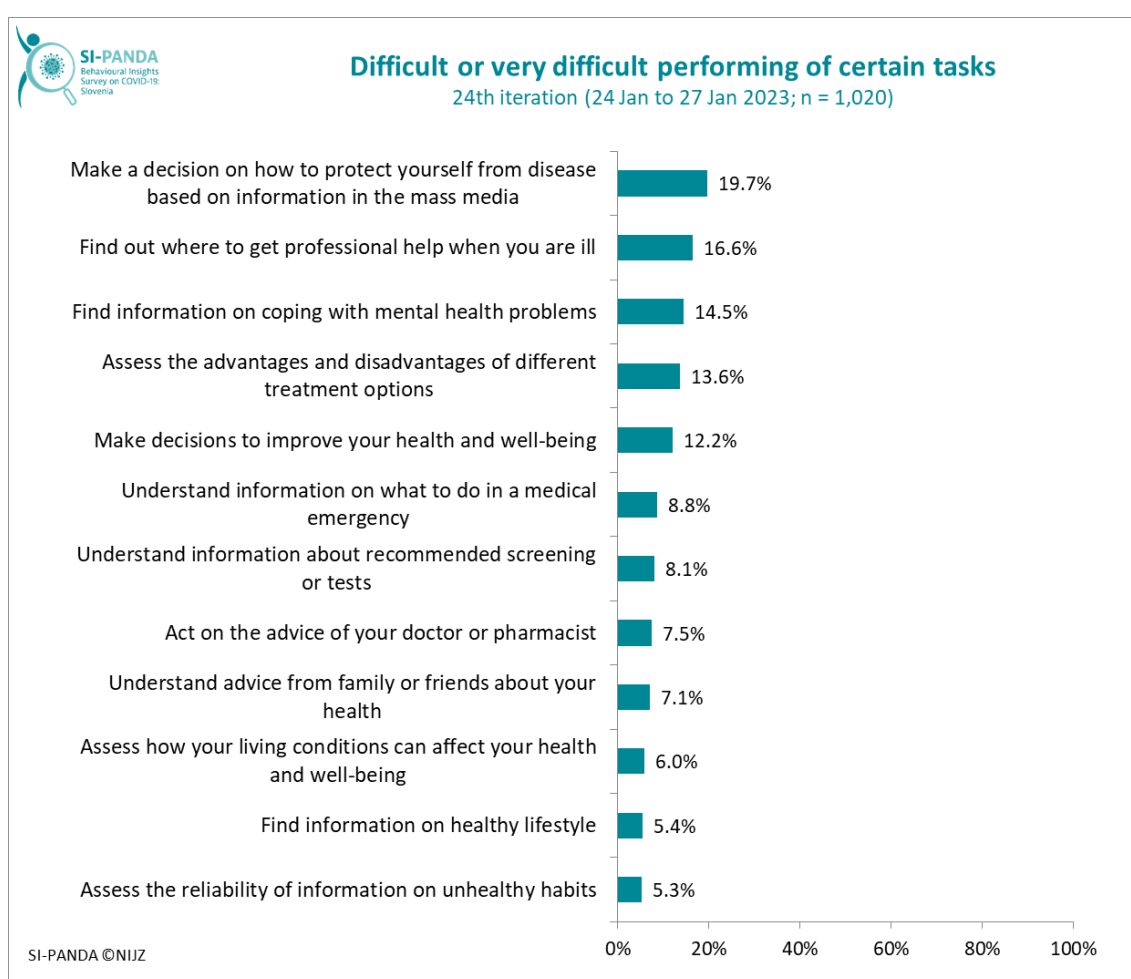


Figure 30: Proportion of respondents who rated each task as difficult or very difficult, total.

Respondents reported that it was most difficult to decide how to protect themselves from diseases based on information in the mass media. This task was rated as difficult or very difficult by a fifth of respondents. Other tasks rated as difficult or very difficult by more than a tenth of respondents were getting information about sources of professional help for illness (16.6%) and coping with

¹⁷ https://m-pohl.net/design_methods.

mental health problems (14.5%), assessing advantages and disadvantages of different treatment options (13.6%) and making decisions to improve health or well-being (12.2%) (Figure 30).

The overall level of general health literacy was calculated for each respondent as the sum of the difficulty scores of the individual tasks, converted to an interval from 0 to 100, so that a higher score indicates a higher level of health literacy. Respondents scored 73.4 out of 100 on average, indicating a relatively high average level of general health literacy.

There were no significant differences in the average level of general health literacy between most of the observed socio-demographic groups of respondents and the indicators of health or healthy lifestyle (presence of chronic disease, body mass index, physical activity, and smoking). Only the lower rate among individuals with mental health problems, in particular depressive disorders (6.4 points below the average), and those who rate their financial situation worse than three months ago (2.9 points below the average) was more remarkable.

Compared to the ratings in the 2020 National Health Literacy Survey, the results of which are presented in the report *Health Literacy of Adults in Slovenia*¹⁸, a smaller proportion of respondents in the SI-PANDA survey rated the same tasks as difficult or very difficult overall. The exception is the rating of the difficulty of obtaining information on where to get professional help in case of illness. The social gradient in health literacy is also less pronounced, with the results of the National Health Literacy Survey showing significantly lower levels of health literacy among the oldest, the least educated, the more financially disadvantaged and some other vulnerable groups. These differences in findings may also stem from methodological differences between the two surveys. The national survey, which was carried out on a probability sample of the general population using a combination of online, face-to-face and postal surveys, reached to a greater extent some population groups that are often under-represented in online panel surveys such as SI-PANDA. The lowest and highest educated people stand out in particular. The share of people with primary education in the 18–74 age group is significantly lower in the SI-PANDA survey than in the national survey (2.9% vs. 12.0%), while the share of people with at least higher education is significantly higher (47.7% vs. 30.2%). As health literacy is relatively strongly correlated with education according to many studies, the absence of a social gradient in health literacy in the SI-PANDA survey may to some extent be due to the specific educational structure of the sample. The sample of the online panel may also be specific to some other characteristics related to health literacy, such as internet use, digital or information literacy, frequency of searching for health information from different sources, etc.

¹⁸ <https://nijz.si/publikacije/zdravstvena-pismenost-odraslih-v-sloveniji/>.



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