

## Literature screening report

# Impact of COVID-19 and related measures on disadvantaged populations

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## Abstract

- The comprehensive literature review on the impact of COVID-19 in Switzerland underscores the multifaceted consequences of the pandemic across diverse population sub-groups.
- The objective is to offer a comprehensive overview of existing articles pertaining to the impact of COVID-19 and associated measures on disadvantaged populations in the country, while also identifying research gaps for future exploration, in particular sub-groups of the population that have not been targeted for certain outcomes.
- Findings reveal that the pandemic has severe consequences on the general population, leading to increased medical consultations, hospitalizations, and deaths. Age and socioeconomic factors, including poverty and income disparities, play significant roles in determining COVID-19 outcomes. Individuals in socioeconomically disadvantaged neighbourhoods in Switzerland are less likely to be tested but more likely to test positive, be admitted to the hospital, or die.
- Vulnerable groups, including migrants, foreigners, and healthcare workers, face unique challenges and higher mortality rates.
- Moreover, the pandemic has a profound impact on mental health, with disruptions in daily routines and economic conditions contributing to deteriorated mental well-being. Challenges in adapting healthcare services, increased stress, and varied coping mechanisms are observed,

especially among young adults, those with lower education and income levels, and other vulnerable groups. Pregnant and breastfeeding women, parents, and caregivers, including healthcare workers, experience increased stress, and gender disparities are notably present.

- Physical health is affected directly through symptoms and indirectly through disruptions, with variations across age, socioeconomic status, and other factors.
- Well-being is negatively affected across income categories, exacerbating socio-economic inequalities with wealthier households increasing savings while lower-income individuals suffer more significant financial losses due to job reductions, impacting employment, and causing financial consequences.
- Barriers to healthcare access, disruptions in care, and variations in preventive measure adherence are observed, emphasizing the need for tailored support.
- Information access and responses vary, requiring customized communication strategies, particularly for vulnerable populations.
- Discrimination, socioeconomic, socio-cultural, and immigration-related factors contribute to disparities, especially in understanding health information among migrant groups.
- Global public health infrastructure needs sustained investment, with priorities including strengthening capacities, international cooperation, addressing health inequities, and improving health literacy.
- Marginalized populations, such as forced migrants, incarcerated individuals, and the homeless, are vulnerable to healthcare disparities, requiring interdisciplinary and innovative approaches.
- Existing societal inequalities are exacerbated by the pandemic, necessitating focused policies to mitigate both health and economic risks.

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## Preamble

*A large number of scientific publications become available on a daily basis, reflecting the rapid development of knowledge and progress of science on COVID-19 related issues. Leading authorities should base decisions or policies on this knowledge; hence they need to master the actual state of this knowledge. Due to the large number of publications shared daily, decision makers heavily depend on accurate summaries of these publications, in the different public health domains. Therefore, the authors of this report were mandated by the Swiss School of Public Health plus (SSPH+), on request of the Federal Office of Public Health (FOPH), to inform the FOPH on recent findings from the literature.*

## Background

Although COVID-19 has affected the entire population, the existing literature indicates that the effects of the pandemic have not been of the same magnitude for all sub-groups of the population, highlighting inequalities in the impact of the crisis. Beyond differences in direct impacts such as infection rates, hospitalizations, ICU admissions, or mortality, a growing body of literature points to measurable consequences of the pandemic and related containment measures on a range of outcomes, including physical and mental health, as well as on other dimensions of wellbeing, such as living conditions, financial and work conditions but also mobility choices or social capital.

In this literature screening report, we focus on Switzerland and collect evidence on direct and indirect impacts of COVID-19 on physical and mental health and on well-being more generally, and how they differed by population groups. Our aim is to provide an overview of articles published to date on the impact of COVID-19 and related measures on disadvantaged population in Switzerland, and to highlight gaps in the literature for future research.

The main questions addressed are detailed below and, for each of them, we have organised evidence by populations sub-groups (e.g., migrants and foreigners, older people, etc.). All sub-populations do not appear for all questions due to lack of evidence.

## Questions addressed

- What are the direct health impacts induced by the COVID-19 pandemic?
  - General population
  - Migrants and foreigners
  - Healthcare workers
  - Adult patients with pre-existing conditions
  - Children, adolescents, and parents
- What are the indirect impacts of COVID-19 on mental health?
  - General population
  - Sexual minority population
  - Students
  - Pregnant and breastfeeding women
  - Children, adolescents, and parents
  - Caregivers
  - Older people
  - Adult patients with pre-existing conditions
  - Prisoners
- What are the indirect impacts of COVID-19 on physical health?
  - General population
  - Older people
  - Children, adolescents, and parents
  - Adult patients with pre-existing conditions
- What are the indirect impacts of COVID-19 on other dimensions of well-being?
  - General population
  - Students
  - Children, adolescents, and parents
  - Health professionals
  - Older people
  - Adult patients with pre-existing conditions
  - Sex workers
- During the COVID crisis, were there barriers to the access to care and disruptions in care activities?
  - General population

- Students
- Adult patients with pre-existing conditions
- Health professionals
- Pregnant and breastfeeding women
- During the COVID crisis, were there barriers to the access to protective measures such as vaccination and testing?
  - General population
  - Migrants and foreigners
  - Children, adolescents, and parents
- During the COVID crisis, were there factors that limited adherence to measures such as vaccination and testing?
  - General population
  - Children, adolescents, and parents
  - Health professionals
  - Older people
- During the COVID crisis, were there barriers to the access to preventive and mitigation measures?
  - General population
  - Children, adolescents, and parents
  - Health professionals
  - Deaf people
  - Sex workers
  - Prisoners
- What implications does the COVID crisis have for access to information about the pandemic?
  - General population
  - Migrants and foreigners
  - Healthcare professionals
  - Older people
- What are the recommendations to manage future pandemics with regards to equity?
  - General population

## Methodology

The aim of this literature review is to assess how disadvantaged populations have been impacted by the COVID-19 pandemic in Switzerland. In particular, we focus on the impact of the crisis on different dimensions: their physical and mental, broader dimensions of well-being as well as access and adherence to measures. Information on lessons learned for future crises have also been extracted. This literature review covers publications from 2020 to 2023. To identify relevant scientific and grey literature, we accessed five databases: PubMed (biomedical literature), Embase (biomedical), LitCovid (curated repository of scientific research about the COVID-19), Rérodoc (digital library) and ArODES (HES-SO institutional archive).

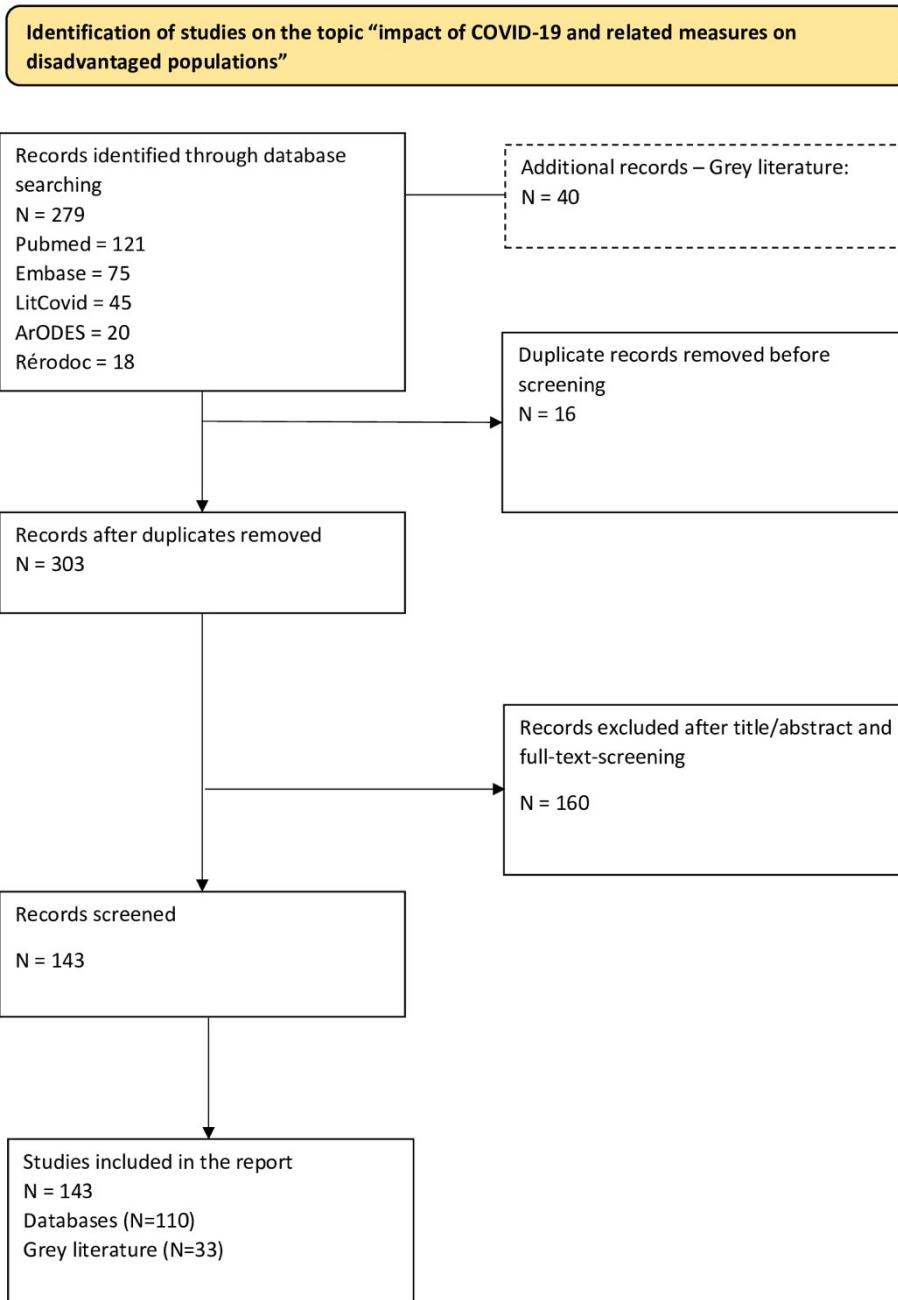
A detailed search strategy was defined with support from information specialists, tested and refined (see Appendix for details about the search string developed for PubMed database).

Research articles were searched between 23 May and 2 June 2023. We included all studies deemed relevant once the search equation was entered into the literature database search bar and we also included grey literature reports from official websites when they were deemed relevant to answer the research questions. At the beginning, we added all the studies, irrespective of design, that provided evidence for Switzerland on at least one outcome and population group of interest. Data collection protocols and conference abstracts were not included.

We extracted the following information from the selected papers: research questions, study design, characteristics of the sample, results, interpretation of the results and recommendations based on the results.

The figure below details the search stages. We began by broadly identifying the literature through the databases mentioned above. Secondly, we include all the official reports produced directly by Swiss organisations or associations, which make up the grey literature.

The first step was to eliminate duplicates between the various databases, and then some papers were excluded on the basis of title, abstract or based on full text assessment. In the end, the corpus contained 143 different papers and reports.





## Results and Findings

What are the direct health impacts induced by the COVID-19 pandemic?

### Summary:

**The COVID-19 pandemic has severe consequences on the general population, leading to a significant number of medical consultations, hospitalizations, and deaths, with age being a major factor influencing mortality. Socioeconomic factors, such as poverty and income disparities, also play a global role in affecting COVID-19 outcomes. In Switzerland, research shows that individuals in socioeconomically disadvantaged neighborhoods are less likely to be tested but more likely to test positive, be admitted to the hospital, or die. The timing of lockdown measures is associated with hospitalization and death rates, emphasizing the importance of early intervention. Additionally, factors like air pollution and smoking are found to influence COVID-19 severity. Migrants and foreigners face unique vulnerabilities, experiencing higher mortality rates and inequalities. Healthcare workers have occupational risks, and adult patients with pre-existing conditions face challenges, including delayed surgeries. Among children and adolescents, there are concerns about the potential long-term effects of COVID-19, especially for those with chronic health conditions.**

### Results:

#### General population:

The COVID pandemic has severe consequences on the health of the population. In particular, the virus has caused numerous medical consultations and hospitalizations, and in the most serious cases, death. Factors aggravating the probability of death are mainly age-related, meaning that an older person has a higher probability of dying from COVID than a younger person. (Mallapaty, 2020) Beyond demographic factors, socio-economic components globally influence the total number of COVID-19 victims, such as poverty and income. (Sannigrahi et al., 2020) Socioeconomic disparities in the direct impacts of COVID are documented for Switzerland. Analyzing the surveillance data reported to the Swiss Federal Office of Public Health between March 2020 and mid-April 2021, as well as 2018 population data, to build a Swiss neighborhood index of socioeconomic position (SEP), research shows that people living in neighborhoods of low socioeconomic position are less likely to be tested but more likely to test positive, be admitted to the hospital, or die, compared with those in areas of high socioeconomic position. (Riou et al., 2021) Investigating the association between socioeconomic deprivation and the persistence of COVID, a study finds that clusters persist significantly longer in socioeconomically disadvantaged neighborhoods. This finding illustrates the need for interventions mitigating inequalities in the risk of infection. (De Ridder et al., 2020) Performing an ecological study based on the COVID database of

Geneva, another study finds that low neighborhood socio-economic levels are associated with a lower number of tests per person, a higher incidence of COVID cases and of COVID deaths. Their result also highlights the inequalities in exposure to COVID consequences. (Mongin et al., 2022).

The direct health consequences of COVID-19 in Switzerland are compared to other countries. Through multidimensional scaling analyses, similarities among 50 countries are found. Switzerland is classified in a cluster with France, Austria, Germany, Canada, Italy, Czechia, Kuwait, Chile, and Sweden. Death rate, recovery rate, active rate, serious case rate, case rate per 1 million, death rate per 1 million, and test rate per 1 million are found to be similar in these countries. (Güre et al., 2021) Using data from 22 OECD countries, including Switzerland, a study finds a negative gradient between income and COVID-19 mortality and shows that the gradient is more pronounced in more unequal countries. (Sepulveda & Brooker, 2021)

By comparing standardized mortality rates among countries in the European Economic Area countries as well as the UK and Switzerland, another study finds that Switzerland is amongst the countries with the lowest standardized mortality rates when comparing it in relation to variables reflecting health and social well-being, health system capacity, and pandemic response. (Villani et al., 2021) A study involving 8 countries, including Switzerland, shows a connection between life expectancy and COVID-related deaths. When dividing the deaths based on whether they happen above or below the country's average life expectancy, the difference in the percentage of deaths above and below life expectancy is highest in Switzerland meaning that there is a greater proportion of COVID-19 related deaths above life expectancy. (Malik, 2021) Comparing Germany and Switzerland, a study assesses the impact of the timing of lockdown measures on COVID-19-related hospitalization and death rates. The analysis compares regions with earlier and later lockdown start dates relative to the outbreak of the epidemic. The study controls for regional characteristics and initial epidemic trends. The findings indicate that in both countries, a relatively later implementation of lockdown measures is associated with higher cumulative hospitalization and death rates. This suggests that earlier imposition of measures is more effective in reducing the mortality impact of the pandemic. Additionally, the study finds that curfews, introduced in some German states, do not have any additional effects beyond the federally imposed contact restrictions. (Huber & Langen, 2020)

Using a population-based serosurvey in Switzerland, a study analyzes the factors influencing a seropositive result. Retired participants and those living in suburban areas have lower odds of a

seropositive result when compared to employed participants and those living in urban areas, respectively. People facing financial hardship for less than a year have higher odds of a seropositive result compared to those who have never faced them. (Santa-Ramírez et al., 2022) From May until September 2021, a study finds comparable results; being aged above 65 years, with a high income, retired, overweight or obese or with other comorbidities, is associated with higher seropositivity. (Tancredi, Chiolero, et al., 2023)

Another study finds that anti-SARS-CoV-2 population seroprevalence remains low after the first wave in Geneva. Socioeconomic factors are not associated with seropositivity in this sample. Older adults, young children, and smokers are less frequently seropositive, although it is not clear how biology and behaviors shape these differences. (A. Richard et al., 2022) Another paper finds that smoking is negatively associated with testing positive for SARS-CoV-2 infection independently of comorbidities and socioeconomic and demographic factors in a population with a smoking prevalence similar to the national level. (Vallarta-Robledo et al., 2021) Focusing on mortality, rather than on seropositivity, one study examines the factors that increase the probability of dying from COVID. Exposure to elevated air pollutants could contribute to increased COVID-19 mortality. By performing individual-level analyses, they do find that long-term exposure to air pollution appears to influence the severity of the disease, but this effect is attenuated upon adjustment for health-system related factors such as capacities of the hospitals and the number of workers in the health sector. (Beloconi & Vounatsou, 2023)

Finally, a book chapter highlights that the COVID-19 pandemic has exposed and worsened social and health inequalities. Socioeconomically disadvantaged individuals, ethnic minorities, and refugees are disproportionately affected in terms of infection rates, severe disease, and mortality. These disparities result from a syndemic pandemic, where risk factors interact to amplify negative effects. Lower-income individuals in essential jobs face greater exposure risks due to living conditions and limited access to telecommuting. Vulnerable groups, including older adults and those with preexisting conditions, are at higher risk. These inequalities are also evident in Switzerland, with disadvantaged areas experiencing higher COVID-19 rates. Civil society and NGOs play a vital role in providing immediate assistance to those in need. (Ruckstuhl & Ryter, 2021)

### **Migrants and foreigners:**

Migrants and foreigners are considered a vulnerable sub-group of the population, as their status does not always allow them to access healthcare when necessary, which may impact their COVID-19 related outcomes. Using data from the Swiss Federal Statistical Office, a study finds a stronger

increase in mortality among people without Swiss citizenship than among Swiss citizens. (Plümecke et al., 2022) Another study conducted by researchers from the Universities of Freiburg, Frankfurt, and Berlin reveals that foreign-born and “racialized” individuals in Germany and Switzerland have been disproportionately affected by COVID-19. Although foreign nationals, on average, tend to be younger, the study finds a significant increase in their proportion among COVID-19 deaths in 2021. This contrasts with expectations, as the virus typically impacts older populations more severely. In Switzerland, foreign residents experience the pandemic's effects earlier than natives. Reasons include poorer living and working conditions, restricted access to health resources, and the prevalence of essential jobs with no remote work option. Discrimination may also play a role, as government responses inadequately address the higher infection and mortality rates among these groups. (Plümecke et al., 2021)

Furthermore, migrants, who are more prone to inequalities than the general population, exhibit a high prevalence of exposure to COVID-19, but also poor mental health along with frequent avoidance of health care. (Burton-Jeangros et al., 2020) To design targeted public health policies protecting vulnerable populations, a study analyzes the factors influencing COVID transmission in asylum seekers and refugees living in centers. Participants in this study report a high compliance with public health measures, especially hygiene rules and social distancing. Infection risk is lower among people with high health literacy levels and smokers. (Morisod, Grazioli, et al., 2023)

#### **Healthcare workers:**

During the COVID crisis, healthcare professionals are put in the spotlight for their vital role in caring for patients. Studying the non-occupational factors influencing seropositivity, a study finds that being in contact with a household that is positive for COVID-19, staying in a COVID hotspot, and male sex are associated with seropositivity. Blood group 0 vs. non-0, active smoking, living with children <12 years, and being a physician are associated with decreased risk. Other occupational risk factors are close contact with COVID-19 patients, exposure to COVID-19-positive co-workers, poor knowledge of standard hygiene precautions, and frequent visits to the hospital canteen. (Kahlert et al., 2021)

#### **Adult patients with pre-existing conditions:**

We focus here on the outcomes of some groups of patients hospitalized for other causes than COVID.

Focusing on patients with lower extremity peripheral arterial disease, a paper finds that fewer subjects are operated. Patients requiring surgery may experience more acute and advanced clinical

presentations due to less regular medical follow-up and more complicated hospital access. (Trunfio et al., 2021)

Among patients who are suffering from respiratory infection, patients tested positive for COVID are compared to patients tested negative. Antihypertensive medication, including inhibitors of the renin-angiotensin system, is analyzed in terms of outcomes in COVID patients. No adverse events are associated with antihypertensive medications after accounting for comorbidities and risk factors. (Blum et al., 2021)

Patients suffering from acute kidney injury exhibit a higher probability of in-hospital mortality. This is likely attributable to the fact that when they display symptoms of COVID, those symptoms tend to be more severe. (Diebold et al., 2021)

Patients with lung cancer face also higher risks for hospitalization and mortality from COVID. Thanks to a virtual meeting between lung cancer experts from several European countries, guidelines have been defined giving priority to the management of lung cancer. These have been implemented in Switzerland in line with the country's health system capacity and socio-economic factors. (Agbarya et al., 2020)

In a cross-sectional study among patients on opioid agonist treatment in Zurich, high COVID seroprevalence is observed. However, no severe cases of COVID disease are identified. (Bruggmann et al., 2022)

#### **Children, adolescents and parents:**

Although the entire population faces a risk of long COVID with probably the adult population being even more at risk, adolescents display a substantial risk of having post-COVID symptoms, with possibly major consequences on daily life. The definition of long COVID in young people is defined by the scientific community as the persistence of a physical symptom for 12 weeks after initial testing that impacts everyday functioning and cannot be explained by an alternative diagnosis. Risk factors aggravating the effects include older age, lower socioeconomic status, and the presence of chronic health conditions, especially asthma and being seropositive. (Dumont et al., 2022)

## What are the indirect impacts of the COVID-19 pandemic response on mental health?

### **Summary:**

**The COVID-19 pandemic significantly affected the general population by causing disruptions in daily routines and economic conditions, leading to deterioration of mental health. Studies reveal challenges in adapting healthcare services to a heterogeneous group of infected**

patients. Reports show declines in well-being and mental health, particularly among young adults, those with lower education and income levels, and various vulnerable groups. While some positive coping mechanisms emerge, there is also an increase in suicidal thoughts and attempts among young people. Students, especially those pursuing healthcare professions, experience varying degrees of stress and anxiety due to pandemic-related disruptions. Pregnant and breastfeeding women face unique mental health challenges during the pandemic. Parents and caregivers undergo increased stress and burden, with notable gender disparities. Older adults, particularly women, report mental health challenges during home confinement. Hospitalized patients with pre-existing conditions faced increased stress and loneliness, though overall mental health remained stable. COVID-19 patients and their relatives experienced psychological distress, with factors like resilience and stress playing a role. In a study of substance users, most reported minimal impact on their habits, but some groups were more affected. In prison settings, COVID-19 control measures are associated with increased suicide attempts and self-harm events.

#### Results:

##### General population:

Interventions and policies aimed at reducing the spread of the virus lead to fundamental changes in daily routines and economic conditions that have important impacts on the mental health of the population.

A report, covering the period from March 2020 to June 2021, discusses the impact of the COVID-19 pandemic on the well-being, mental health, and adherence to protective measures among the Swiss population. Data from the COVID-19 Social Monitor project, which monitors social and health changes during the pandemic, forms the basis of this report. The findings reveal that the general well-being declines slightly during lockdowns and phases of heightened measures, with some recovery in between. Mental health worsens during the fall of 2020, and feelings of loneliness increase during lockdowns. Young adults experience higher psychological distress and loneliness. Educational and income disparities persist, with those with lower education levels and incomes reporting lower quality of life and higher psychological distress. (Heiniger et al., 2021)

Going in that direction as well, a report, commissioned by the Federal Office of Public Health (FOPH), examines the consequences of the COVID-19 pandemic on mental health and psychiatric and psychotherapeutic care in Switzerland. The pandemic and measures to protect public health



significantly changed daily life and social interactions, which can have specific implications for mental health. While most of the population copes relatively well, signs of fatigue emerge, and experts anticipate potential long-term effects on mental health. Specific vulnerable groups are more affected by the pandemic's psychological consequences. These groups include older adults, children, adolescents, young adults, COVID-19 patients, at-risk groups, economically disadvantaged individuals, those with pre-existing mental health conditions or addiction issues, healthcare workers, and informal caregivers. Younger generations experience more psychological effects than older individuals. Moreover, it highlights that while outpatient psychiatric and psychotherapeutic treatments continue, the pandemic strains mental health services, especially for children and young adults. Telehealth and low-threshold counseling and information services see increased demand during the crisis. Regarding suicide, preliminary data do not show a significant increase in suicides during the pandemic. However, there is an uptick in demand for suicide prevention services and mental health treatment related to suicidal thoughts, particularly among young people. (Stocker et al., 2021)

An update of this report covers the period from spring 2020 to summer 2022. (Jäggi et al., 2022) The COVID-19 pandemic has complex effects on mental health. It can both exacerbate stressors (e.g., financial worries, job loss, isolation) and strengthen protective factors (e.g., gratitude, reduced work-related stress, closer social relationships). Stress and distress symptoms like anxiety, fatigue, low mood, sleep disturbances, and aggression are normal reactions to a crisis. However, prolonged stress can increase the risk of developing mental health disorders.

Young people, especially girls and young women, from lower-income households, and those with a migration background, experience significant mental health challenges during the pandemic. There is evidence of an increased risk of neuropsychiatric sequelae associated with SARS-CoV-2, including depression and anxiety, in individuals with long COVID. While suicide rates do not increase across the entire population, there is a higher suicide rate among children (1-14 years) in 2020 compared to previous years. Suicidal crises, especially among girls and young women, increase during the pandemic. Low-threshold counseling and information services, supported by the Federal Office of Public Health, experience a significant increase in usage during the pandemic, indicating the importance of such services. (Jäggi et al., 2022)

Another study, conducted through before-and-after survey-based assessments at the early stages of the pandemic, finds that it has a considerable psychological impact, especially among individuals with lower socioeconomic status and those who experience worsened work situations. Outcomes

measured are depression, perceived stress and sleep quality, as well as the fear, isolation, and psychological trauma induced by the pandemic. (Marmet, Wicki, Gmel, Gachoud, Daeppen, et al., 2021)

Focusing on stress and using the longitudinal structure of the Swiss Household Panel, a study shows a continuous increase in stress levels between 2016 and 2019 and a stress reduction right after the first semi-lockdown followed by a return to pre-pandemic levels. Privileged groups with higher levels of stress before the pandemic are most likely to reduce perceived stress. Characteristics related to more favorable trajectories include stable or improved financial situations and high levels of education (short-term effects), and high-pressure jobs and working hours (short- and medium-term effects). (Klaas et al., 2023) Examining the prevalence and predictors of psychological distress, a study finds that after the first pandemic wave, the prevalence of psychological distress in June 2021 is comparable to pre-pandemic levels. In line with previous mentioned studies stating that COVID-19 worsened mental health, at the start of the wave in February 2021, anxiety and depression are highest in February and subsequently decrease in parallel with the easing of measures until June. Factors associated with worse mental health outcomes are being younger, female, a single parent, unemployed, having experienced a change in working hours or job loss in the past 6 months, greater perceived severity and contagiousness of COVID, and long-term symptoms of COVID-19. (Schrepft et al., 2023) Another study focusing on a range of mental health outcomes finds scores above thresholds for normal levels for 16% of participants for depression, 8% for anxiety, and 10% for stress during the period May-July 2021. Factors influencing those results are financial comfort, type of working contract, and perceptions of the Swiss economic situation. (Tancredi, Ulyté, et al., 2023) Based on an ongoing cohort study and focusing on fear, a study finds that participants report higher levels of fear regarding the health risk to others and economic fear, compared to their own personal fears. Those being alone and those who report having COVID symptoms themselves or knowing someone with symptoms have a higher psychological impact. In addition, they compare variation in outcomes among regions and find higher levels of depression and fear in the French-speaking regions and higher levels of perceived stress and isolation in the German-speaking ones. (Marmet, Wicki, Gmel, Gachoud, Daeppen, et al., 2021)

A study examines how the COVID-19 crisis affects the work and private life of German and Swiss employees and its impact on mental well-being and self-rated health. Around 30% report worsened work and private life, while about 10-13% report improvements. Factors like short-time work and



working from home influence perceived impacts. Younger age, living alone, and changes in leisure time and caring duties relate to a negative impact on private life. Living with a partner or family, short-time work, and increased leisure time have positive effects. Negative impact on work and private life, along with mandatory short-time work, links to lower mental well-being and health. Positive impact on private life and increased leisure time correlates with higher mental well-being. (Tušl et al., 2021)

Focusing on general population outcomes, though measured in a hospital setting, another study aims to investigate the early impact of the COVID-19 pandemic on suicidality by comparing in-patient admissions for individuals with suicidal thoughts or suicide attempts in the first 6 months following the pandemic's onset with corresponding data from 2019. Surprisingly, the study finds fewer admissions of patients with suicidal thoughts during the initial 6-month period after the COVID-19 outbreak. However, the proportion of involuntary admissions is higher, and more patients are admitted after a first suicide attempt compared to the corresponding control period from 2019. The researchers suggest that the decrease in in-patient admissions for suicidality may be influenced by factors such as fear of contagion and uncertainty about seeking mental healthcare during the pandemic. Nevertheless, the increase in patients admitted after a first suicide attempt is seen as an early indicator of potential future burdens on public mental health and care. (Hörmann et al., 2022)

A study conducted in Zurich, Switzerland, investigates the impact of isolation measures on the mental health of 1547 adults diagnosed with COVID-19. The study finds that the proportion of individuals reporting depression and anxiety symptoms increases during isolation. Taking care of children makes isolation more challenging, especially for younger participants. However, receiving support during isolation is a positive factor. (Domenghino et al., 2022) In a survey of a representative sample of the Swiss population, the authors find that a third of respondents report impaired mental well-being, with almost half reporting specific mental health concerns. Several factors are associated with impaired mental well-being, including pre-existing health problems, being at risk for severe COVID-19, smoking, urban living, workplace closure, younger age (18-29 years old), and living alone. The most significant contributors to impaired mental well-being are specific mental health concerns such as depression, reduced pleasure in activities, anxiety, and loneliness. (Diaz Hernandez et al., 2021)

The deterioration in mental health linked to COVID-19 raises questions about the relevance of treating these symptoms in healthcare facilities. For example, in Geneva, the department of psychiatry decided to open a new ward for its infected patients. They mainly face challenges in adapting their services to a heterogenous group of patients. (Maiorano et al., 2020)

### **Sexual minority population:**

In the general population, specific characteristics are considered to aggravate the consequences of COVID on mental health. Swiss researchers explored whether sexual minority men from an ongoing cohort study of young men experience different psychological impacts, levels of substance use, and addictive behaviors. Compared to heterosexual men, sexual minority men show higher levels of psychological trauma and isolation due to the COVID-19 pandemic as well as higher levels of depression and lower sleep quality during the crisis. These differences are, to a large degree, explained by higher pre-crisis levels of mental health problems and the personality dimension of neuroticism-anxiety. Sexual minority men show higher overall levels of substance use and addictive behaviors, but these differences are already present before the crisis. (Marmet, Wicki, Gmel, Gachoud, Bertholet, et al., 2021)

### **Students:**

A study examined the impact of the COVID-19 pandemic on the social networks and mental health of Swiss undergraduate students. The researchers use longitudinal data collected since 2018 to compare changes in social networks and mental health indicators before and during the pandemic. Students' levels of stress, anxiety, loneliness, and depressive symptoms worsen compared to their mental health measures before the crisis. Identifying the mechanisms behind these results, authors explain that, initially, the stressors are more related to the fear of missing out on social life, but during the pandemic, the worries shift to concerns about health, family, friends, and future uncertainties. (Elmer et al., 2020) Students trying to shape their future may feel more anxious in the face of a crisis similar to COVID. Specifically, their sensitivity to complexity may be different than other sub-groups of the population. This is a potential aggravating factor of the consequences of the pandemic. Based on critical health literacy concepts and public health expert knowledge, a study developed four survey items, which are answered by 3616 Swiss university students online. Results show that 49.6% of the students demonstrate limited complexity awareness, while 50.4% demonstrate high complexity awareness. Female students, those with highly educated parents, and students at practically oriented universities are more likely to exhibit high complexity awareness. However, Covid-19-related complexity awareness varies significantly among university students,

indicating difficulties in dealing with complex information and processes during the pandemic. (Nigg et al., 2022) A report originates from the observation that the COVID-19 pandemic has varying effects on the financial situation and mental health of students in Switzerland in 2020. While most students do not report significant financial difficulties due to the pandemic, certain vulnerable groups, such as those aged 26-35, students from migrant backgrounds, those engaged in non-qualified paid work, and students in fields like Music, Performing Arts, and other Arts, experience worsened financial situations. (Suisse. Office fédéral de la statistique (OFS), 2022)

Further illustrating the worsening of students' mental health, a voluntary longitudinal health survey was conducted among all students of Zurich University of Applied Sciences. Three subgroups are identified based on perceived COVID-19 impact: low, moderate, and strong impact. Multivariable regression analyses reveal significantly higher odds of moderate to severe anxiety in the moderate and strong perceived impact groups compared to the low impact group. The findings suggest that the containment measures during the lockdown have a selective effect on students' anxiety levels. (Dratva et al., 2020)

Assessing the prevalence of depressive symptoms in Swiss university students and comparing it with a matched sample of the Swiss national population, adjusted prevalence of depressive symptoms in both female (30.8%) and male students (24.8%) is significantly higher than in the matched pre-pandemic national population for females (10.9%) and males (8.5%). (Volken, Zysset, Amendola, Klein Swormink, et al., 2021)

In a cross-sectional study aimed at investigating the psychological health and academic satisfaction of university students in the context of COVID-19 and academic year-end stress, authors find that being a female is strongly associated with anxiety and stress, but not with depression or psychological well-being. Younger age is associated with stress. Academic satisfaction is a stronger predictor of mental health than COVID-19-related stress on the learning experience. Lower academic satisfaction scores are associated with higher levels of stress, depression, and anxiety, while higher satisfaction scores are linked to better psychological well-being. (Tran et al., 2022)

Going further than just reporting on the state of students' mental health, one study focuses on coping strategies to deal with the disruptions in daily life. Through a cross-sectional study comparing students in Portugal and Switzerland during the COVID-19 pandemic, the authors use a mixed-methods sequential explanatory design, involving an online survey and focus group discussions. Hope is identified as a significant factor influencing mental health symptoms in both countries. As for this paper, the results point to a mild to moderate impact on most evaluated mental

health variables, but students demonstrate positive short-term coping strategies. (Schwander-Maire et al., 2022)

An entire body of literature has focused on the difference in the impact of COVID on the mental health of medical students compared to other students, hypothesizing that they could be impacted differently if they were involved in pandemic management. A cross-sectional study aims to compare the physical and psychological health of Swiss medical students involved in the COVID-19 response with their non-involved peers. Medical students report significantly lower levels of anxiety, depression, and burnout (except for the depersonalization item) compared to their non-involved peers. Frontline medical students have lower levels of burnout compared to frontline residents, but other health outcomes do not significantly differ between the two groups. (Aebischer et al., 2020) Comparing health professions (HP) students and non-HP students, a study finds that the latter consistently show a higher prevalence of GAD symptoms compared to their HP counterparts, with absolute differences ranging from 6.2% to 14.9%. (Volken, Zysset, Amendola, von Wyl, et al., 2021) Due to higher pressure in healthcare facilities induced by the sudden increase in hospitalized patients, bachelor's degree programs in nursing, physiotherapy, and occupational therapy are disrupted. The results and discussion indicate that the main source of moral distress among the students is "poor teamwork." The most common moral issues they encounter are related to the appropriateness of care and working conditions, with a focus on their safety and that of their loved ones. Other concerns include the loss of learning opportunities and perceived deficiencies in technical knowledge and skills. (Sala Defilippis et al., 2023)

#### **Pregnant and breastfeeding women:**

During the COVID-19 crisis, pregnant and breastfeeding women are considered vulnerable due to their unique physiological changes and potential risks. The pandemic's social and economic impacts may exacerbate stress and mental health issues for this group. Understanding their mental health status and determinants is crucial to address their specific needs and safeguard maternal and infant well-being during this challenging time.

A multinational study aims to assess the mental health of pregnant and breastfeeding women during the COVID-19 pandemic and explore potential associations between depressive symptoms, anxiety, and stress with women's sociodemographic, health, and reproductive characteristics. The cross-sectional web-based study included 9041 women from Ireland, Norway, Switzerland, the Netherlands, and the UK. The study finds that 15% of pregnant women and 13% of breastfeeding women have major depressive symptoms, while 11% and 10%, respectively, experience moderate

to severe generalized anxiety symptoms. However, when comparing women from the different countries included in the analyses, those in Switzerland are better off. For example, only 10.5% of Swiss women have major depressive symptoms compared to 42.1% of women from the UK. The mean perceived stress scores are  $14.1 \pm 6.6$  and  $13.7 \pm 6.6$  for pregnant and breastfeeding women, respectively. Factors associated with poor mental health include having a chronic mental illness, chronic somatic illness in the postpartum period, smoking, unplanned pregnancy, professional status, and living in the UK or Ireland compared to living in Switzerland or the Netherlands. (Ceulemans et al., 2021)

### **Children, adolescents, and parents:**

How COVID-19 disrupts the daily life of families may impair the mental health of children and adolescents as well as their parents.

Further investigating whether background characteristics (gender, immigrant status, socio-economic status) and reported COVID-19 burden predict the impact of the pandemic on mental health, a study examines mental health outcomes among Swiss adolescents from before the first COVID-19 wave (autumn 2019) to the later stages of the same wave (autumn 2020). Their results indicate that the expected impact of the pandemic on mental health is not significant during the later stages of the first COVID-19 wave. Only two effects are observed in terms of intra-individual changes: gender has an effect on depression and anxiety symptoms, and reported COVID-19 burden affects school stress symptoms. Few associations are found for predictors and students' mean level scores averaged across both time points. (Ertanir et al., 2021)

From parents' perspectives, a study examines the impact of homeschooling on parents' wellbeing during the Covid-19 pandemic. Using data from a large representative survey, the researchers identify parents who face challenges in managing homeschooling responsibilities and assess how it affects different dimensions of their wellbeing. Nearly one fifth of parents report feeling overwhelmed by homeschooling obligations, particularly women, mid-aged individuals, lower-educated individuals, those with young children, and lower income. Although being overwhelmed by homeschooling does not cause changes in life satisfaction, stress, and negative affect, it does lead to a decrease in positive affect. (Heers & Lipps, 2022)

Another study explores adolescents' perspectives on mental health challenges, risk and protective factors, and coping strategies. Adolescents highlight various factors driving mental health

challenges, including family adversity, community violence, unsupportive school environments, poverty, social media culture, and restrictive gender norms. They also discuss barriers to seeking help, such as stigma, lack of social support, and fear of invalidation, leading to coping without support and using maladaptive strategies. Importantly, adolescents describe mental health in terms of distress rather than disorder. (Fine et al., 2023)

An article reveals that younger age groups have experienced increased psychological stress during the pandemic. Factors contributing to this stress include limited physical activity, disrupted routines due to changes in schooling, reduced peer interactions, uncertainty about the future, concerns for the health of loved ones, family conflicts, and domestic violence. Empirical studies show diverse reactions among young people to the pandemic, with some experiencing improved well-being during lockdowns, while others face deteriorating mental health, including increased stress, anger, depressive feelings, anxiety symptoms, and clinical issues like depression and anxiety disorders. The article also highlights a concerning rise in suicidal thoughts and attempts among young people, particularly girls and young women. Data from 2021 indicates a 70% increase in suicide-related poisonings among children and young people compared to pre-pandemic years. Factors contributing to these mental health challenges include socioeconomic vulnerabilities, pre-existing mental health issues, family circumstances, and coping strategies. While some positive coping mechanisms include outdoor activity and longer sleep duration, negative strategies like excessive media use and alcohol consumption have been associated with increased psychological pressure. (Stocker et al., 2023)

A paper focuses on the impact of COVID-19 lockdowns on families, specifically those with children with autism spectrum disorder (ASD). It explores how parental distress affects children's emotional responses and adaptive behaviors during lockdown. The study included 120 parents of children aged 5–10 (53 with ASD). The findings indicate that children's emotional responses mediate the link between parental distress and their play activities. Children with ASD show more positive emotions but engage in fewer play activities compared to typically developing children. Families with children on the spectrum experience more behavioral problems and parental distress during lockdown. This research suggests the need for interventions to help parents reduce distress and enhance coping strategies in managing caregiver-child relationships. (Levante et al., 2021)

Given the abundance of papers around this theme, literature reviews have been established. One is about mental health outcomes in children and youth aged 0-25, aiming to establish causality and



changes over the pandemic period. It encompasses a broad spectrum of mental well-being to psychiatric conditions, emphasizing direct effects of confinement measures or pandemic periods on mental health. The report also provides insights into expected evidence and publications by Swiss researchers on mental health and health behaviors, indicating potential knowledge gaps for Switzerland. (Dratva et al., 2022)

### **Caregivers:**

Caregivers face increased workloads, long hours, exposure to the virus, and the emotional toll of witnessing the suffering and loss of relatives.

During the first wave of the COVID-19 pandemic, caregivers of people with dementia in Italy and southern Switzerland experienced significant burden and mental well-being challenges. A cross-sectional online survey conducted between May and June 2020 revealed that caregivers reported moderate to severe care-related burden, moderate anxiety symptoms, mild depressive symptoms, and mild stress. Additionally, a considerable proportion of caregivers reported feeling lonely. These issues were more pronounced among Swiss caregivers compared to Italian caregivers. The study highlights the need for targeted and contextualized support for caregivers of people with dementia during prolonged pandemics to address their unique challenges and well-being. (Messina et al., 2022)

### **Older people:**

Older individuals are more impacted by COVID-19 due to several factors that make them vulnerable to the virus. Firstly, older adults often have weakened immune systems, making them more susceptible to infections and severe outcomes from COVID-19. Additionally, many older individuals may have pre-existing health conditions, such as heart disease, diabetes, or respiratory issues, which can exacerbate the effects of the virus. Moreover, aging is associated with a decline in physiological reserves and resilience, making it challenging for older adults to recover from illnesses like COVID-19. Social factors also play a role, as older individuals may experience increased isolation and limited access to healthcare resources impacting their mental health, further impacting their ability to cope with the virus.

A study utilizes data from the SHARE Corona Survey (2020) to investigate the impact of home confinement during the Covid-19 pandemic on the mental health of individuals aged 50 and over in Europe and Israel. While older adults are considered a vulnerable group in terms of mental health, the relationship between home confinement and mental well-being is not clear. The findings indicate

that, during the pandemic, women report increased depression and sadness more frequently than men among individuals aged 50 and over. However, interestingly, it is men who experience the most significant increase in depression. Differences between countries are also found. In particular, individuals from Switzerland present a higher odd of increased depression/sadness than those in Portugal (reference country). The study highlights the importance of considering gender differences when examining the effects of home confinement on mental health in older adults. (Silva et al., 2022)

#### **Adult patients with pre-existing conditions:**

During COVID-19, hospitalized patients experience increased stress, anxiety, and loneliness due to uncertainty and visitor restrictions. Disrupted mental health services, fear of infection, and trauma also affect their mental health. A study investigates the impact of COVID-19 restrictions on the distress and mental health of non-COVID-19 patients hospitalized in Swiss general hospitals. The researchers analyzed data from 873 inpatients from various medical wards. The results show that during the period of strong COVID-19 restrictions, there is an increase in distress related to leisure time and loneliness among these non-COVID-19 patients. However, there is no significant evidence of changes in overall mental health or social support during the same period. (Aebi et al., 2022)

Considering patients suffering from chronic respiratory failure, a paper analyzes whether they are affected by the lockdown or not. The prevalence of anxiety and depressive disorders is remarkably low. Symptom scores are slightly higher during lockdown, although this difference is not clinically relevant. Technical data regarding ventilation, including compliance, does not change. Patients complain of isolation and lack of social contact. They feel supported by their relatives and caregivers but complain of the lack of regular contact and information by health-care professionals. (Cantero et al., 2021)

A prospective observational cohort study aims to assess psychological distress in COVID-19 patients and their relatives 30 days after hospital discharge. The researchers include adult patients hospitalized for COVID-19 and their relatives from two Swiss tertiary-care hospitals. Psychological distress was measured using the Hospital Anxiety and Depression Scale (HADS) for symptoms of anxiety and depression and the Impact of Event Scale-Revised (IES-R) for post-traumatic stress disorder (PTSD) symptoms. Among 126 patients, 19.1% have psychological distress, and 8.7% have symptoms of PTSD after discharge. Three factors independently associated with psychological distress in patients are resilience, high levels of perceived stress, and low frequency of contact with relatives. For 153 relatives, 22.9% show psychological distress, and 2% exhibit



symptoms of PTSD. Resilience is negatively associated, while perceived overall burden caused by COVID-19 is positively associated with psychological distress in relatives. (Beck et al., 2021)

Focusing on a Swiss treatment center, a study aims to investigate the impact of the COVID-19 pandemic on the supply of illegal drugs and the health and social situation of substance users. It utilized mixed methods, including quantitative data from a brief questionnaire administered to opioid agonist treatment recipients and qualitative data from semi-structured phone interviews with a subgroup of participants. The findings consistently indicate that the COVID-19 outbreak has a limited impact on the illegal substance market. Most participants report no significant change in substance use or even a slight decrease. The pandemic's impact on participants' social situation and health is generally assessed as low to medium, but a minority report higher impact. Multivariable analyses show that female, younger, and single-substance users experience a more significant impact. Overall, the study provides insight into the short-term effects of the pandemic on drug markets and substance users. (Gaume et al., 2021)

#### **Prisoners:**

Prisoners are strongly affected by COVID-19 due to the unique challenges of living in correctional facilities, where promiscuity and limited resources make it difficult to implement effective infection control measures. Overcrowding, limited access to healthcare, and inadequate sanitation increase the risk of virus transmission within prisons. In particular, restrictions on family visits and reduced access to programs and support during lockdowns can exacerbate feelings of isolation and distress among inmates.

A paper investigates the impact of the Covid-19 pandemic on mental health, focusing on suicide attempts and self-harm events in people living in detention in a Swiss prison. Data from the Champ-Dollon prison in Geneva were analyzed for two periods: the pre-pandemic period (2016-2019) and the pandemic period (2020). The study finds a significant increase in suicide attempts and other self-harm events during the pandemic period, despite reduced overcrowding rates. The findings suggest that the increase in such incidents may be related to Covid-19 control measures. The study highlights the importance of suicide prevention efforts and mental health support for vulnerable populations, including those in detention, during the pandemic. However, the study acknowledges some limitations, such as the use of annual data and the lack of individual-level reasons for suicide attempts. (Gétaz et al., 2021)

## What are the indirect impacts of COVID-19 on physical health?

### Summary:

**The COVID-19 pandemic affects the physical health of individuals both directly, through the virus's symptoms, and indirectly, through disruptions in daily life. Studies show that body mass index (BMI) among young Swiss men remains relatively stable during lockdowns, but socio-economic factors and age play a role in BMI variations. Lockdown measures significantly reduce physical activity and training intensity among bodybuilders and fitness athletes. For individuals with chronic pain, lockdowns lead to worsened pain for over half of the respondents, with various factors influencing the pain's severity. Among older adults living alone, there are disparities in receiving assistance with daily living activities during the pandemic, with wealth-related inequalities shifting in some countries. Adolescents' vitamin D levels do not significantly change during lockdowns. Overall, the pandemic's effects on physical health are complex and vary across different demographic groups.**

### Results:

#### General Population:

The COVID-19 virus has an impact on the physical health of the population through symptoms intrinsic to the disease, such as respiratory symptoms, fever, fatigue, loss of taste and smell, body aches, and gastrointestinal issues, but also on physical health more generally with all the disruptions that COVID has caused in people's daily lives.

A paper analyzed young Swiss men's BMI data, which are collected during the mandatory recruitment process for the Swiss Armed forces. The authors find that BMIs of the conscripts examined in the 15 weeks after the two shutdowns in spring and autumn 2020 are only slightly different from their baseline values. The generalized additive model they used further shows the significant effects of individuals and area-based measures of socioeconomic position and age on BMI. (Falvo et al., 2021) Another study investigated differences in the training patterns of bodybuilders and fitness athletes and finds that during lockdown, physical activity drops significantly, along with subjective assessments of training intensity and performance. (Diebold et al., 2021)

COVID also impacts people with existing physical health issues. This is notably observed among individuals experiencing chronic pain, as 53.5% of the respondents of the survey report a worsening

of their pain during the first COVID related lockdown. The pain remains unchanged for 16.7% of individuals and improves for 29.8%. Factors found to exacerbate the pain are: prescription of on-demand medication, prescription of co-analgesics for the biological factors, resilience, and pain catastrophizing for psychological factors and the relationship with children, suffering from social isolation, problems with getting prescriptions for social factors. (Volken, Zysset, Amendola, Klein Swormink, et al., 2021)

### **Older people:**

Since the health of older people is declining due to their advancing age, a study examines international patterns and changes in the provision of activities of daily living (ADL) assistance. The study explores wealth-related inequality and need-related inequity in ADL assistance using Erreygers' corrected concentration index (ECI), and correlates these measures with national health-related indicators. The sex gap in receiving ADL assistance increases during the pandemic, with females being more likely to receive assistance in most countries. Before the pandemic, many countries exhibit socioeconomic equality in ADL assistance. However, during the pandemic, there is a shift in several countries, with a greater emphasis on providing assistance to individuals with lower wealth. Additionally, equity in providing assistance based on need decreases during the pandemic. The study's hypotheses regarding the association between ADL provision measures and health system factors are confirmed before the pandemic but surprisingly not during the pandemic. This indicates an unequal and, in some cases, needs-mismatched response from countries to older adults living alone during the COVID-19 pandemic. (Chen et al., 2022)

### **Children, adolescents and parents:**

A cross-sectional study aims to investigate the association between lockdown measures due to the COVID-19 pandemic and vitamin D levels in adolescents. A total of 298 adolescents aged 18 to 19 years are compared with a previous group of 437 adolescents from a study conducted between 2014 and 2016. The study finds that there is no significant difference in vitamin D levels between the two groups during the pandemic and the earlier period. The results do not support the hypothesis that lockdown measures and fear of COVID-19 significantly affect vitamin D levels in late adolescents. (Meoli et al., 2021)

### **Adult patients with pre-existing conditions:**

Beyond reporting the indirect impact of COVID-19 on a group of the population considered to be vulnerable, a paper describes the solutions implemented rapidly, implicitly suggesting problems in

this specific group. To address adverse COVID consequences and support vulnerable patients under psychiatric care, an ambulatory mental health center in Geneva has quickly established therapeutic groups. These groups offered adapted physical activities, emotional management, and nutrition support to patients via online video conferences for nine weeks. The study finds that 92.5% of patients report a sense of well-being after participating in a group session supervised by a professional. (Chiara et al., 2021)

## What are the indirect impacts of COVID-19 on other dimensions of well-being?

### Summary:

**The COVID-19 pandemic has extensive effects on the well-being of the general population in Switzerland. A study examines these impacts, focusing on income categories, revealing that the pandemic negatively affects all income groups financially, with the lowest income category experiencing more significant consequences. Employment is significantly impacted, with variations based on income, age, and employment status. Another report highlights that the pandemic exacerbates socio-economic inequalities, with lower-income individuals suffering more significant financial losses due to job reductions, while wealthier households increase savings. Vulnerable populations, including those with uncertain residency status, face increased stress and anxiety. Loneliness and feelings of unfair treatment increase among low-income older individuals. Additionally, the pandemic impacts family life, with parents, especially women, facing increased childcare responsibilities, potentially leading to career setbacks. Other studies examine various dimensions of well-being, including relationships, sleep, mobility choices, and cyberchondria, revealing complex and interconnected effects of the pandemic on different aspects of people's lives. Students, for instance, face increased alcohol consumption and binge drinking, as well as challenges in securing part-time jobs. Disruptions in daily routines due to remote learning and social distancing measures lead to reduced physical activity, prolonged sitting, suboptimal sleep quality, and other lifestyle changes among students. While school closures have minimal long-term effects on secondary school pupils, primary school pupils experience a slowdown in learning progress. Parents report school absences due to COVID-19 but no significant impact on their children's health-related quality of life. Adolescents with better mental and physical health since the pandemic tend to hold more optimistic views of their future. The experiences of older individuals vary, with some facing social isolation,**

**while others adapt to digital tools to maintain social connections. Health professionals, including healthcare workers and mental health professionals, have increased workloads and experience stress, with support from hospital management playing a crucial role in their well-being. Lastly, adult patients with pre-existing conditions, such as congenital heart disease and dementia, face unique challenges during the pandemic, affecting their health-related concerns and quality of life. Sex workers also experience vulnerabilities, with various factors such as gender and immigration status influencing their well-being.**

#### Results:

##### General Population

Not only COVID has an impact on the physical and mental health but on various other dimensions of well-being. A study conducted by the Swiss Foundation for Research in Social Sciences (FORS) and the Haute école de travail social et de la santé Lausanne (HETSL/HES-SO) examines the effects of the COVID-19 pandemic and related measures on national living conditions in Switzerland, with a focus on income categories. The study analyzes data from the "COVID-19" survey conducted by the Swiss Household Panel (SHP) in May and June 2020, combined with data from a previous standard survey wave. The study considers multiple themes including financial situation, employment, health, family, and support. Findings reveal that while the pandemic negatively affects all income categories financially, those in the lowest income group are more likely to undergo negative consequences and experience a decline in the financial situation. Employment situations are significantly impacted, with differences based on income category, age, and employment status. Health effects vary among income groups, particularly related to mental health and well-being. Family dynamics are affected by school closures, and differences emerge in the ability to manage remote schooling based on income. (Tillmann et al., s. d.)

Another report provides a summary of research on the impact of the COVID-19 pandemic on poverty and socio-economic inequalities in Switzerland as of July 2021. The report aims to offer scientific data to inform policy decisions and to facilitate collaboration among researchers. They find that the pandemic exacerbates immediate socio-economic inequalities. Those with lower incomes suffer more significant financial losses due to job reductions, reduced working hours, and limited remote work opportunities. Wealthier households increase savings due to reduced spending opportunities during lockdowns. While remote learning is assumed to worsen educational inequalities, existing studies do not confirm this; however, differences in individual performance increase. Vulnerable populations, such as those with uncertain residency status, face increased

stress and anxiety due to concerns about health, safety, and access to social services. Loneliness and feelings of being treated unfairly increase among low-income older individuals. The pandemic impacts family life, with parents, particularly women, experiencing increased childcare responsibilities, leading to potential career setbacks. (Beyeler et al., 2021)

Another study examines how the COVID-19 pandemic impacts income distribution in Switzerland. It finds that the pandemic exacerbates existing inequalities. Lower-income households are hit harder in terms of income loss, with some reporting a 20% decrease, while wealthier households see an 8% decrease. Employment changes play a significant role, with job losses leading to substantial income declines, especially for the lowest-income households. While both low and high-income households reduce spending, wealthier households cut expenses due to fewer opportunities, while lower-income households do so because of financial constraints. A year into the pandemic, savings decreased for lower-income households but increase for many wealthier ones, likely increasing wealth inequality. Lower-income individuals not only suffer financially but also report worsening well-being, while wealthier individuals experience some improvement. Home office arrangements favor wealthier households. Regarding COVID-19 infections, there are no significant differences between income groups. Trust in political leadership declines over time, more so among lower-income respondents. Differences in media trust are minimal. (Martínez et al., 2021)

During the COVID-19 pandemic, the Survey on Income and Living Conditions (SILC) in Switzerland reveals several key findings. Overall, general satisfaction among Swiss residents aged 16 and above remains high. However, the percentage of people consistently feeling happy and very satisfied with their current life decreases since March 2020. Trust in the Swiss political system increases initially but shows a slight decrease in 2021. Subjective assessments of household financial situations improve in 2021, with more people finding it easier to make ends meet. Household incomes were impacted, with 20% experiencing reduced incomes in 2021, particularly in the accommodation and food services sector. Job security fluctuates but remains below pre-pandemic levels, with variations based on nationality, education, and income. The pandemic also affects leisure activities, with more people unable to meet friends or family for social gatherings in 2021. (Suisse. Office fédéral de la statistique (OFS), 2021)

Examining perceived changes in relationship satisfaction at the beginning of the pandemic through a survey, a decline in time shared with one's partner is found and associated with perceived decreases in relationship satisfaction. Factors moderating this finding are anxious and avoidant



attachment. (Vigl et al., 2022) During lockdown, the importance of neighbors is highlighted. Improving their neighborly relations leads to a less pronounced negative impact of the pandemic on people's subjective well-being and trust. Having more resources prior to the pandemic is a factor influencing neighborly relations. Therefore, the most vulnerable groups in terms of health and socio-economic status have seen their subjective well-being and trust negatively impacted directly by the pandemic as well as indirectly through a relative deterioration of neighborly relation. (Trunfio et al., 2021)

Analyzing a different dimension of well-being through a web-based survey that includes qualitative and quantitative information on sleep, degree of abidance in lockdown measures, and data about illness or close contact with active confirmed cases, a study finds that the total sleep time increased during lockdown week compared to normal weeks. Specifically, 15% of participants report their sleep quality as bad, and 37.9% on average. Almost 1 in 3 individuals reports worse quality of sleep during lockdown, even if for 47.1% of respondents, their sleep is characterized as good during the same period. (Marti, 2021)

This cross-sectional study investigates the impact of perceived privacy on cognitive irritation and sleep problems among employees who work from home during the COVID-19 pandemic in German-speaking Switzerland. A total of 293 employees who perform home-based telework completed a questionnaire. The results show that perceived privacy has a significant indirect effect on sleep problems, mediated by cognitive irritation. This suggests that higher perceived privacy at home is associated with lower cognitive irritation, which in turn leads to fewer sleep problems among employees working from home. The findings highlight the importance of perceived privacy as a job resource that may contribute to better mental well-being and sleep quality for remote workers. The study suggests the need for further research on home-based telework and the development of effective recovery strategies to prevent sleep problems and support employee well-being in remote work settings. (Wütschert et al., 2021)

Still exploring another dimension of well-being, a study investigates the impact of COVID on mobility choices. Finding an overall 60% reduction of travel distances, followed by a gradual recovery during the re-opening of the economy, the public transports remain under-used. The introduction of a requirement to wear face masks in public transport has no measurable impact on ridership. The mobility choices vary along socio-economic dimensions such as education, household size, with mobility tool ownership, and with personal values and lifestyles as well. Furthermore, they find no

evidence for a significant substitution of leisure travel to compensate for the reduction in work-related travel. (Riou et al., 2021)

The crisis has also potentially impacted people who are cyberchondriac. Defined as repeated and compulsive online searches for health information, it results in increased health anxiety and distress. Through a survey, cyberchondriac-related distress and compulsion increase, whereas the reassurance facet of cyberchondria decreases. Predictors explaining those results are COVID-related fears and health anxiety. (Genovese et al., 2023)

A working paper states that while most of the Swiss population copes well with the pandemic's effects on their general health until autumn 2020, there are significant variations among different population groups. Vulnerable groups, including those with pre-existing mental health issues, financial problems, and caregivers, experience more pronounced negative effects on their well-being. Young adults and teenagers report higher stress levels than those over 65. People living alone, single parents, socially isolated individuals, and those with socioeconomic disadvantages face significant challenges, especially during lockdowns. The pandemic acts as a magnifier of existing trends and inequalities. Specific living conditions and financial situations play a more crucial role than sociodemographic factors. (Kessler & Guggenbühl, 2021)

#### **Students:**

As regards to the effects of the pandemic on well-being, students are once again considered a vulnerable sub-group of the population.

A prospective study aims to investigate the impact of COVID-19 containment measures on alcohol consumption and binge drinking among young adult students. Data is collected through nine survey time points between April 2020 and June 2021, focusing on students from all faculties of the Zurich University of Applied Sciences. Through Generalized Estimating Equations (GEE), the results show that during the pandemic, 20% of Swiss university students report increased alcohol consumption, and 26% engage in binge drinking. Baseline alcohol consumption is associated with a higher probability of increased alcohol consumption and single and multiple binge drinking. Higher anxiety scores are also linked to increased alcohol consumption and engaging in binge drinking. Additional factors associated with binge drinking are male gender, younger age, and not living with parents. However, higher perceived social support is only associated with engaging in heavy binge drinking. (Zysset et al., 2022)



Beyond the disruptions in their daily work, students are impacted on their long-term vision, regarding equal career opportunities, for example. A study aims to assess the sociodemographic status and perceptions of Swiss medical students regarding equal career opportunities amid impaired part-time job opportunities caused by the COVID-19 pandemic. An anonymous online survey was conducted among Swiss medical students from Bern and Geneva over four months between December 2020 and April 2021. Out of 968 participants, representing approximately 13.8% of all medical students in Switzerland, 81.3% have part-time jobs. Among those employed, 54.8% work to afford living expenses, and 28.9% report a negative financial impact due to reduced part-time job opportunities during the pandemic. The loss of part-time jobs is perceived to create a privilege for medical students with higher socioeconomic status, whose ability to study is not dependent on regular income. Respondents consider a governmental backup plan essential to support affected students. (Wohlfarth et al., 2023)

As universities and educational institutions had to adapt to the pandemic context by shifting to remote learning and implementing social distancing measures, students experience significant disruptions in their daily routines, making them a vulnerable population. Assessing students' lifestyle habits, a survey focuses on physical activity (PA), sitting time, nutritional, alcohol consumption, and sleeping behavior during a 2-month period of COVID-19 confinement and social distancing among students and employees of Bern University of Applied Sciences in Switzerland. The results show that a significant proportion of participants engage in non-health-enhancing physical activity and have prolonged sitting time. Alcohol consumption exceeds Swiss recommendations for a small percentage of participants. Sleep quality is found to be suboptimal in nearly half of the respondents. (Taeymans et al., 2021)

#### **Children, adolescents and parents:**

Although less impacted by the disease itself, children and adolescents nevertheless experienced impacts on multiple dimensions of well-being.

A study explores the evolution of 10 well-being indicators before and after the lockdown and compares changes between adolescents and their parents. Data was collected through the Swiss Household Panel, and regression models were used to explain the evolution of well-being indicators. The findings suggest that both adolescents and parents experience a decline in well-being during the partial lockdown, but adolescents are more severely affected. However, the changes observed in adolescents' well-being are not significantly correlated with changes in their parents' well-being, indicating that external factors related to the pandemic may influence individual

well-being. The study emphasizes the importance of understanding and supporting the well-being of adolescents during challenging events like the COVID-19 pandemic, as they play a crucial role in the future social fabric and intergenerational solidarity of society. (Berchtold, 2022)

Using mixed models, a study aims to examine the relationship between parents' working conditions during the lockdown period (March-May 2020) and the health-related quality of life (HRQOL) of children over the first year of the COVID-19 pandemic in Zurich, Switzerland. The results show that children from families in which at least one parent experienced changes in their working conditions during the lockdown have lower HRQOL in June-July 2020 compared to children from families with no such changes. Furthermore, children from families in which at least one parent has to work remotely continue to exhibit lower HRQOL in January and March 2021. In conclusion, changes in parents' working conditions during the lockdown are negatively correlated with children's HRQOL. (Muralitharan et al., 2022)

Beyond the health-related quality of life of children, their activities in school change in adaptation to the situation. A study analyzes learning outcomes during the 8-week period of school closures related to the COVID-19 pandemic in Switzerland and compares them with the 8 weeks before the closures. The research focuses on the school performance in mathematics and language of 28,685 pupils using data from a computer-based formative feedback system. Second-order piecewise latent growth models with strict measurement invariance are employed to model the learning gains during both periods. The findings indicate that secondary school pupils are largely unaffected by the school closures in terms of learning gains. However, primary school pupils experience a slowdown in learning progress during the closure period, and simultaneously, there is an increase in interindividual variance in learning gains among them. (Tomasik et al., 2021)

From the parents' perspective, a study investigates the impact of COVID-19-related school disruptions on the well-being of children and adolescents in Geneva. A survey was conducted in June/July 2021, involving a representative sample of 538 participants aged 4 to 18 years. Parents report on COVID-19-related school absences and their child's health-related quality of life. The study finds that around 40% of pupils miss school at least once due to COVID-19, with most absences lasting over a week. However, there is no significant relationship between the frequency of COVID-19-related absences and the health-related quality of life of the children and adolescents. The study suggests that short-term school disruptions due to COVID-19 may be comparable to regular school absenteeism in terms of impact on well-being. (V. Richard et al., 2022)

A qualitative study aims to explore the experiences of adolescents during the COVID-19 pandemic. Individual interviews were conducted with twenty parents (14 mothers) between October 2020 and January 2021, who have at least one adolescent aged 14-19 years. The results reveal that almost all parents acknowledge that the pandemic and its restrictive measures are particularly challenging for their adolescents. Parents express concerns about the impact of the pandemic on their child's future, especially in terms of education, professional opportunities, and the developmental, social, and relational aspects specific to adolescence. The stigmatization of adolescents regarding their responsibility in spreading infections is also discussed by parents. However, most parents observe that adolescents around them respect the sanitary measures, demonstrating solidarity and putting in collective efforts. Nonetheless, parents highlight that some adults do not set a good example, trivializing the pandemic and not following the recommended measures, which could influence adolescents' behavior. In conclusion, parents express concerns and difficulties related to their child's development and future during the pandemic. (Barrense-Dias et al., 2022)

An online survey was conducted among adolescents (N=1197; mean age: 16.5) in Switzerland and Liechtenstein during the spring/summer of 2021 on children's future perspectives. At the bivariate level, adolescents with a better future outlook report higher socioeconomic status, better perceived physical and mental health since the pandemic began, better emotional well-being, and higher self-esteem. They are also less likely to report having a chronic condition or experiencing feelings of anxiety or depression. In the multivariable analysis, the factors that remain significant are better mental and physical health since the beginning of the pandemic, above-average socioeconomic status, and lower likelihood of being depressed. Notably, these optimistic characteristics are independent of age, gender, family structure, or substance use. The research finds that a minority of adolescents hold an optimistic view of their future during the pandemic. These adolescents also report better physical and mental health and are less likely to experience depression. Additionally, they have above-average socioeconomic status. The findings suggest that this optimism might be related to their privileged socioeconomic status. (Suris et al., 2022)

Not only children in general, but also children suffering from illnesses suffer from COVID-19 indirect consequences. During the initial phase of the COVID-19 pandemic in Geneva, autism intervention programs had to adapt to state-mandated home confinement measures by shifting their early intensive intervention sessions to an online video-conferencing format. One study assesses the experiences of 45 families with young children on the autism spectrum who receive telehealth

intervention services for the first time. The results show that parents, regardless of their socio-economic status or cultural background, are highly motivated and engaged in learning the intervention strategies. Most families report being satisfied with the intensive remote coaching sessions, and they perceive greater progress in their interaction skills with their child compared to services received before the pandemic. The study also finds that parents have a positive experience with the high frequency of coaching sessions provided via telehealth. Monitoring of the children's developmental progress reveals continued significant improvement across domains, with no stagnation of progress during the telehealth period. (de Wilde et al., 2022)

Beyond children suffering from illnesses, a text discusses the impact of the COVID-19 crisis on young people living in institutional care. It mentions that the restrictions imposed during the pandemic, including limited physical contact with family and friends and economic and psychological stress within their families, are challenging for these young individuals. Surprisingly, the results from surveys of these young people do not significantly differ from those of surveys conducted among the general youth population. This suggests that the extraordinary commitment of institutions and their staff helps mitigate the negative effects of the crisis. The article identifies ten key elements that contribute to effectively managing crises like the COVID-19 pandemic within institutional care settings. These elements highlight the importance of a relationship-centered approach and youth participation in crisis management within institutional care settings. (Jenkel et al., 2020)

#### **Health professionals:**

A cross-sectional study focuses on the experience of health care workers (HCWs) on the impact of not having the choice to be reassigned during the first wave of the COVID-19 pandemic. The results show that hospital management responsiveness plays a moderating role in the association between lack of choice and reassignment experience. When HCWs perceive higher responsiveness from hospital management, the lack of choice has a lesser impact on their experience of reassignment, workplace well-being, and intent to stay at the hospital. The findings indicate that not having a choice in reassignments could negatively affect HCWs' intent to stay at the hospital and their well-being at the workplace, particularly if hospital management is perceived as unresponsive during the crisis. However, the study also highlights that hospital management efforts, such as providing flexibility in working hours or extraordinary leaves, can alleviate the perceived constraints of reassignment and be seen as signs of responsiveness, potentially improving HCWs' experience and well-being during the pandemic. (Gilles et al., 2021)

Concerns about the future of their personal and professional roles amidst the COVID-19 were also explored through a hermeneutic phenomenological study. The results reveal that participants experience grief due to the loss of established personal and professional structures, relationships, and future plans. However, these experiences of grief are often conflicting. Some participants also find moments of relief, viewing certain losses as opportunities to slow down and focus on their well-being. These shifts in perspective lead many to reflect on reimagining the nature of their work. The discussion highlights that participants' experiences with grief, relief, and opportunity align with the concept of grief as a process of relearning the world after significant loss. The pandemic's impact dismantled prior life structures and possibilities, prompting critical reflection on the medical education community's professional practices. Participants express a desire for more flexibility and autonomy in the workplace, as well as a re-evaluation of the values and expectations within their profession. (Luong et al., 2022)

The PsyGipo2C project explores how the COVID-19 pandemic affects mental health professionals in terms of their work conditions and well-being. Conducted in 10 European countries, the survey results show that 70.2% of respondents experience an increase in their workload due to diversified tasks and greater complexity in care provision. Additionally, 48.9% find it harder to balance work and personal life, and 59.5% report that their health has been impacted by the crisis. The effects vary among professions, with different roles adapting differently to the new constraints. The pandemic's impact is influenced by the profession and access to remote work, sometimes leading to conflicts within teams. Professionals' distress stems from the combination of work-related constraints and personal pressures, affecting their well-being and ability to manage multiple demands. Notably, professionals tend to underutilize available psychological support services, possibly due to a reluctance to acknowledge their own mental health challenges. The research underscores the nuanced effects of the pandemic on mental health professionals and highlights the need for tailored support and interventions. (Kane et al., 2022)

A paper focuses on the practices of health promotion professionals. Using literature reviews and an expert panel, the study finds that the pandemic worsens mental health issues, social isolation, and socioeconomic problems. It also affects behaviors like diet and exercise, albeit differently across groups. To adapt, health promotion professionals should focus on the entire population but give more attention to at-risk groups. Addressing social and economic factors is crucial. Communication should use digital tools and community influencers, with training for professionals. Coordination

among health promotion professionals' activities is essential. In the long run, these adaptations will strengthen health promotion professionals' role in addressing social determinants of health and cross-sector public health policies, especially improving living conditions. (Lutz et al., 2021)

#### **Older people:**

On other dimensions of well-being, a qualitative study aims to explore the lived experiences of individuals aged 64 or older during the first COVID-19 lockdown in the Italian-speaking region of Switzerland. The researchers conducted semi-structured phone interviews with a convenience sample of 19 older adults living at home between April and May 2020. The findings reveal that the COVID-19 epidemic and the public health response generate a range of resentments and a high degree of ambivalence at individual, micro-, meso-, and macro-social levels among older adults. The study also highlights how labeling older adults as an at-risk sub-population contributes to both public and self-stigmatization. The in-depth qualitative investigation provides valuable insights into the complex and unintended detrimental consequences of outbreak responses on older adults. The study's findings have important implications for adapting public health measures locally and suggest the need for public health authorities to engage with vulnerable sub-populations and promote bi-directional communication to better inform and support communities. (Falvo et al., 2021)

Going a step further by analyzing the heterogeneity of results between different sub-groups of the older population, a study used data from the TransAge survey, which includes over 3000 older persons (65+) living in Switzerland and Italy, to investigate worry levels about the COVID-19 pandemic among different groups. The findings indicate that worry levels about the pandemic are significantly higher among Italian international migrants living in Switzerland compared to Swiss natives. The study attempts to explain this difference using sociodemographic variables, the COVID-19 situation at the time of the interview, and international migrants' transnationalism behavior. While these factors contribute to the variation in worry, they do not fully account for the difference. However, the study highlights that transnationalism, particularly two specific aspects - having Swiss nationality and voting behavior - play a significant role in explaining the elevated levels of worry among international migrants. This sheds light on the importance of considering transnational factors in understanding and addressing the concerns of migrant populations during the COVID-19 pandemic. (Ludwig-Dehm et al., 2023)

Another study focuses on understanding the experiences of individuals aged 65 and older during the socio-sanitary crisis related to COVID-19. It finds that the crisis has a negative impact on the



well-being and daily functioning of those aged 65+. Individuals aged 65+ are not only recipients of aid but also providers and active participants. The crisis reveals a negative perception of individuals aged 65+ and exacerbates intergenerational tensions. Lastly, further analysis indicates that the crisis has varying impacts on different individuals aged 65+, with older age not necessarily correlating with greater vulnerability. Additionally, it appears to exacerbate already precarious or at-risk situations. (Maggiori & Dif-Pradalier, 2020) A report discusses interviews conducted as part of a mandate aimed at questioning the concepts of "good life," "healthy aging," and "caring communities" among individuals aged 65 and older in Canton de Vaud. The interviews were conducted between August and October 2020, amidst the COVID-19 pandemic, and they reveal that many respondents do not identify with the category of 65+ and find it arbitrary and discriminatory to link old age automatically to vulnerabilities and frailties solely based on chronological age. They emphasize the need to distinguish chronological age from biological age and social age. Health is seen as both a barrier and a condition for independence, social relationships, and engagement in various activities. The pandemic disrupts intergenerational relationships and social participation. The importance of informal support networks, such as help from family members or neighbors, is highlighted, particularly for tasks like grocery shopping. However, there are difficulties and limitations in asking for help, including financial reasons.

The role of the living environment, including the neighborhood and geographic location, emerges as important factors affecting social participation and well-being. The attachment to one's place of residence contributes significantly to a sense of community. The report suggests that public policies and services should consider more than just chronological age when addressing the needs and preferences of individuals aged 65 and older. Recommendations for action in urban planning and territorial development are proposed to enhance well-being and social participation among this age group. (Dif-Pradalier & Geiser, 2021)

A survey, conducted in the Canton du Valais, reveals that older individuals in precarious situations have experienced the pandemic in a unique way. It also highlights the presence of digital poverty among this population, characterized by difficulties in accessing and using digital tools. In this context, providing support and training in digital literacy could prove to be essential in maintaining social connections for these individuals. Based on these findings, the Institute of Social Work, in collaboration with Pro Senectute Valais and Bénévoles Valais, is developing a pilot project aimed at combating digital poverty among older individuals in precarious situations to strengthen their social ties. (Fellay-Favre et al., 2020)

### **Adult patients with pre-existing conditions:**

A study aims to investigate health-related concerns, health-related quality of life, and psychological adjustment in young adults with congenital heart disease compared to healthy peers during the COVID-19 pandemic. The findings reveal that young adults with congenital heart disease consider COVID-19 to be a more serious issue and express more concerns about becoming infected and leaving their homes compared to healthy peers. However, there is no significant difference in general anxiety symptoms between the two groups. Patients with congenital heart disease rely more on family and friends for support and report better compliance with protective measures. In terms of health-related quality of life, physical health-related quality of life is lower in patients with congenital heart disease compared to healthy controls. However, there is no significant difference in mental health-related quality of life and overall psychological adjustment between the two groups. (Wehrle et al., 2020)

Another study aims to investigate the challenges experienced by dementia patients, their caregivers, and clinicians during the COVID-19 pandemic in Switzerland. An online survey was conducted among memory clinics in the German-speaking part of Switzerland. Participants diagnosed with dementia and their caregivers were recruited for semi-structured telephone interviews at the memory clinic of the University Hospital Zurich. According to clinicians, all aspects of clinical work are affected by the pandemic. Carers do not perceive a significant role of the pandemic in the disease progression of the patients, despite facing many challenges. However, patients describe a high level of conscientiousness during the pandemic. (Neumann et al., 2023)

A retrospective study aims to investigate the impact of COVID-19 and its related restrictions on fears of patients admitted to a psychiatric Emergency Department (ED) during and post-lockdown. The study included 1477 consultations at the psychiatric ED of the University Hospital of Geneva (HUG) and uses mixed-methods analysis. Fears about "work status" (deteriorating, losing work) prevail during lockdown, while "hopelessness" (powerless feeling, inability to find solutions) is more common in the post-lockdown period. The study also finds that "self around COVID-19" fears (dying, getting sick) are relatively more frequent in youth, while "hopelessness" is more prevalent in older adults. The findings suggest that lockdown and post-lockdown periods generate distinct COVID-19 related fear patterns, with specific implications for vulnerable populations such as youth and older people. The psychiatric ED serves as a valuable observatory to gain novel insights into the psychological effects of the pandemic. (Costanza et al., 2021)



### **Sex workers:**

A research project, titled "Sexwork and Corona," examines the impact of political measures implemented in the Canton of Zurich to contain the COVID-19 pandemic on the lives, coping strategies, and well-being of sex workers in the city of Zurich. The study investigates whether these measures are aligned with the unique circumstances of sex workers and whether they are effective in addressing the pandemic. The methodology involved interviews with 14 professionals from organizations that support sex workers during the pandemic, providing insights into the challenges faced by sex workers and adaptations made by support organizations. Subsequently, 11 sex workers were interviewed, representing various genders, immigration statuses, nationalities, and types of sex work. These interviews helped reveal the multidimensional vulnerabilities of sex workers during the pandemic. The findings indicate that the vulnerability of sex workers during the COVID-19 crisis is influenced by multiple factors, including gender, immigration status, and work environment. (Brüesch et al., 2021)

During the COVID crisis, were there barriers to the access to care and disruptions in care activities?

### **Summary:**

**Regarding barriers to access care and disruptions in care activities, studies reveal that some in the general population forgo healthcare due to appointment cancellations, fear of infection, and organizational issues, especially among vulnerable individuals. Medical students play a crucial role in healthcare delivery. Lockdowns affect melanoma diagnoses, with a rise in thickness in older females, while healthcare professionals face changes in patient volume and treatment procedures. Migrant women face more challenges in maternal care, but overall care quality perception does not differ significantly from non migrants. These findings underscore the importance of tailored healthcare support and equitable access for diverse population groups during the pandemic.**

### **Results:**

#### **General population:**

A study in Geneva explores the prevalence and reasons for forgoing healthcare during the COVID-19 pandemic. The research involved a randomly selected population-based sample completing an online questionnaire. Among 5,397 participants, 8.0% reported forgoing healthcare during the

pandemic. Those with disadvantaged financial situations and those in average or poor health are more likely to forgo healthcare. The primary reasons for forgoing healthcare include appointment cancellations by healthcare providers, fear of infection, and personal organizational issues. These findings emphasize the importance of addressing healthcare access and equity during the ongoing COVID-19 pandemic. (Menon et al., 2022)

Another study in Geneva focuses on patients' self-reports of forgoing health care during the first wave of the COVID-19 pandemic. The sample included vulnerable outpatients, such as clinically vulnerable patients with chronic diseases, geriatric patients aged 60 or older, and socially vulnerable patients in migrant health or mobile outpatient community care centers. Data were collected in June 2020, and 38.5% of the patients report forgoing health care during the pandemic. Forgoing health care is more common among younger patients, women, individuals with lower education levels, and those with chronic diseases. The presence of anti-SARS-CoV-2 antibodies is not associated with forgoing health care. (Baggio, Vernaz, et al., 2021)

#### **Students:**

An article discusses the role of medical students during the COVID-19 pandemic and how they are contributing to emergency efforts around the world. A group of individuals, including a medical student from Austria, clinicians and educators from Switzerland, and a PhD scientist involved in Medical Education from Canada, came together to highlight the innovative ways in which medical students are actively participating in healthcare delivery during this global crisis. By engaging in these efforts, the authors argue that medical students are not only adapting to the disruption caused by the pandemic but are also becoming active stakeholders in expanding and delivering healthcare services. The article emphasizes the importance of recognizing and supporting the valuable contributions of medical students in the fight against COVID-19. (Klasen et al., 2020)

#### **Adult patients with pre-existing conditions:**

A retrospective, exploratory cohort study aims to investigate the effects of the COVID-19 lockdown on the diagnosis of melanomas and the stage of melanomas at diagnosis in Switzerland. The study analyzed data from 1240 patients with newly diagnosed melanoma at five tertiary care hospitals in German-speaking Switzerland over a period of two years and three months. The findings show a short-term rise in melanoma diagnoses two weeks after the major lift of social lockdown restrictions. During the lockdown, there is a significant increase in mean Breslow thickness (a measure of tumor thickness) in older females compared to both the pre-lockdown and post-lockdown periods. This

thickness increase is mainly driven by nodular melanomas, a subtype known for its aggressive behavior. Additionally, the study observed a proportional rise of advanced melanomas (stage IV) during the lockdown period. However, in the post-lockdown period, the rise in new melanomas is lower than expected. The study highlights the gender- and age-dependent effects of the lockdown on melanoma diagnosis, with older females experiencing a greater thickness increase in their melanomas. The findings emphasize the importance of individualized cancer care during pandemic management strategies to address the potential impact of lockdown measures on timely cancer diagnosis and treatment. (Kostner et al., 2022)

### **Health professionals:**

As the pandemic has added to the workload of healthcare professionals, the question of whether treatments for other diseases have always been administered effectively to patients is central. The purpose of a study is to investigate the impact of COVID-19 on radiation oncology institutions (ROIs) and the delivery of cancer treatment to high-risk patients during the pandemic. The study included Germany, Austria, and Switzerland. The results of the questionnaire reveal that a significant number of ROIs are able to complete cancer treatment in patients who test positive for SARS-CoV-2 with only a short interruption. However, there is a noteworthy decrease in patient volume across ROIs, which is not influenced by the disease incidence in the surrounding areas or the type of ROI. About half of the ROIs adopted a screening program for patients, while only 23.3% screened their HCWs. The study finds that curative procedures are generally performed with either unchanged or moderately decreased schedules, while palliative or benign radiotherapy procedures are more often shortened. Most ROIs postponed or canceled radiation treatment for benign indications. Interestingly, the occurrence of SARS-CoV-2 infections did not significantly affect the treatment options for curative procedures. (Matuschek et al., 2020)

### **Pregnant and breastfeeding women:**

A study aims to assess the perception of maternal and newborn care quality (QMNC) during childbirth among migrant and nonmigrant women in Europe. Data were collected from women who give birth in 11 European countries between March 2020 and July 2021. The findings show that migrant women who experience labor face slightly more difficulties attending routine antenatal visits, more barriers in accessing facilities, lack of timely care, inadequate room comfort and equipment, inadequate room occupancy, restricted access to their baby, and abuse compared to nonmigrant women. Among women who have a prelabor cesarean, migrant women are less likely to receive post-birth pain relief and less likely to make informal payments compared to nonmigrant

women. Overall, the perception of QMNC is not significantly different between migrant and nonmigrant women. (Costa et al., 2022)

## During the COVID-19 crisis, were there factors that limited adherence to measures such as vaccination and testing?

### Summary:

**Swiss studies are examining COVID-19 preventive measure adherence, revealing higher compliance with hygiene rules and increased mask-wearing over time. Reports indicate widespread adherence among the population. Research is also exploring public views on vaccination certificates and vaccine attitudes across demographics. Newspaper coverage uses "solidarity" and "personal responsibility" to frame pandemic policies. Customer satisfaction with pharmacist-administered vaccinations is high. Studies are assessing willingness for annual COVID-19 boosters and factors affecting parental willingness to vaccinate children. A global review is finding varying vaccine hesitancy rates among parents. Among healthcare professionals, confidence in vaccines varies by country. Decision-making regarding COVID-19 vaccination in institutions reveals complex factors influencing staff choices. For older individuals, social mixing with younger age groups poses infection risks, emphasizing the importance of broad containment efforts.**

### Results:

#### General population:

A study assesses adherence to COVID-19 preventive measures during the first and second waves of the pandemic in Switzerland. They examine self-reported adherence to hygiene rules, social distancing, and mask-wearing, analyzing factors associated with adherence. Adherence is highest for hygiene rules, followed by social distancing and mask-wearing. Men are less likely to adhere to hygiene rules and mask-wearing. Participants aged 65 and older and those with chronic diseases are more likely to adhere to social distancing and mask-wearing. Adherence to mask-wearing increases notably during the study period. (Butty et al., 2022)

Although the impact of COVID on multiple dimensions is different for certain categories of the population, a report stresses that the majority of the population consistently adheres to recommended protective measures throughout the pandemic. Notably, adherence is higher during

the first lockdown than in subsequent phases, and by spring 2021, there is a gradual return to normalcy in terms of mobility and social activities. (Heiniger et al., 2021)

A study aims to assess the public perception of COVID-19 vaccination certificates and identify potential differences among individuals. A self-administered online questionnaire was given to adults in Geneva, Switzerland, covering various aspects related to vaccination certificates. The results show that 61.0% of participants believe vaccination certificates are necessary in specific contexts, with agreement varying for different situations. The majority agreed with presenting certificates for work-related contexts, while fewer feel the need for them in social venues or large gatherings. Younger age, vaccine hesitancy, and beliefs about vaccination's importance in overcoming the pandemic are factors associated with certificate non-acceptance. Overall, the study highlights the importance of considering personal and sociodemographic variations in predicting acceptance of vaccination certificates. (Nehme et al., 2020)

Another study aims to understand young adults' attitudes toward COVID-19 vaccines in Fall 2020 in Zurich, Switzerland. Data from a longitudinal study's online supplement was used, involving 499 young adults aged 22. Approximately half of the respondents reported being unlikely to get vaccinated against COVID-19. Females are more likely to oppose vaccination compared to males. Factors associated with a higher likelihood of getting vaccinated include Sri Lankan maternal background, higher socioeconomic status, perceiving an effective government response, and considering their information sources to be objective. (Leos-Toro et al., 2021)

Another study analyzes COVID-19 vaccination uptake in Switzerland during the first year of vaccine availability. The analysis used self-reported vaccination data from a longitudinal online panel of Swiss adults aged 18 to 79. Higher uptake rates are observed among individuals with higher education levels, higher household incomes, those with chronic conditions, and those with better health literacy. Lower uptake rates are found among residents of rural regions, individuals showing less adherence to prevention measures, and those with less trust in government or science. The study concludes that vaccination uptake is influenced by various factors, including sociodemographic status, health literacy, trust in institutions, and perceived risk of severe COVID-19 illness. Fears of vaccine side effects and doubts about vaccine effectiveness play a role in hesitancy, highlighting the need for targeted vaccination campaigns to address these concerns. (Heiniger et al., 2022)

Another study aims to understand public opinion regarding COVID-19 immunity certificates through a population-based survey. The researchers conducted a nested survey within the SEROCov-POP study in Geneva, Switzerland, using a self-administered questionnaire. About 80% agree that knowing their serology status would affect their behavior. If antibodies are linked to immunity, 60% believe certificates should be offered to the general population. The utility of certificates varies depending on the context, with 73% agreeing on their use for travel, 72% for entering a country, and 32% for work rights. In case of an effective vaccine, 55% support mandatory vaccination, and 49% support mandatory vaccination certificates. Concerns about discrimination (68%) and deliberate infection (28%) are reported. There are differences in opinions based on age, gender, and education level. (Nehme et al., 2020)

Looking beyond an individual perspective, a study analyzes newspaper coverage in Germany and German-speaking Switzerland during the COVID-19 pandemic to quantify and contextualize the use of the terms "solidarity" and "personal responsibility." Out of 640 articles from six newspapers, "solidarity" was mentioned in 84.5% of the articles, particularly during phases with high death rates and strict policies. It was used to explain restrictive measures and motivate people to comply with them. German newspapers published more articles on solidarity than Swiss-German newspapers, likely due to Germany having stricter COVID-19 policies. On the other hand, "personal responsibility" was mentioned in 20.8% of the articles, less frequently than solidarity. Articles covering personal responsibility included more negative evaluations during phases of high infection rates. The study suggests that both terms are used in newspaper reporting to contextualize and justify COVID-19 policies during periods of high infection rates. However, the term solidarity was used in diverse contexts, and the limitations to solidarity were rarely mentioned. Policymakers and journalists should consider this when addressing future crises to preserve the positive effects of solidarity. (Zimmermann et al., 2023)

Taking another perspective, a study aims to assess customer satisfaction with COVID-19 vaccinations administered by community pharmacists in the canton of Zurich, Switzerland. High levels of satisfaction were reported for different aspects of the vaccination service, including pre-vaccination discussions, pharmacies' information on COVID-19 vaccines, general comfort with receiving the vaccination at the pharmacy, injection technique, and the premises used. Many respondents (57.3%) stated they had the option of getting vaccinated elsewhere, but they chose pharmacies due to their convenient opening hours, easy access, and perceived trustworthiness. Overall, the availability of pharmacist-administered services seems to have contributed positively to



the success of the COVID-19 vaccination program in Switzerland. The results indicate high levels of satisfaction and support for using pharmacies as vaccination providers. (Stämpfli et al., 2021)

A survey of 3,067 adults in the German-speaking D-A-CH region (Germany, Austria, Switzerland) finds that 82.4% of vaccinated or intending-to-be-vaccinated participants are willing to receive annual COVID-19 booster shots. Willingness is higher in Austria and Germany, increases with age, and is associated with political engagement (voting) and approval of COVID-19 mitigation measures. The study suggests that targeted promotion programs focused on political and religious engagement and mitigation measure approval could help increase willingness to receive regular COVID-19 boosters. (Weitzer et al., 2022)

Another study examines how the COVID-19 pandemic impacts income distribution in Switzerland with regards to adherence to vaccination. It finds that the pandemic exacerbates existing inequalities. Vaccine willingness varies by income, with lower-income individuals less willing to get vaccinated immediately compared to wealthier counterparts. (Martínez et al., 2021)

#### **Children, adolescents, and parents:**

A study aims to investigate factors associated with parental willingness to vaccinate their children against COVID-19. A survey was conducted among adults who had previously participated in SARS-CoV-2 serosurveys in Geneva. Parental willingness to vaccinate their children varies significantly with the child's age. Parents of adolescents aged 16–17 years show the highest willingness (84.0%), followed by parents of children aged 12–15 years (60.9%), and parents of children aged 5–12 years (21.2%). Unvaccinated parents are more likely to express reluctance to vaccinate their children compared to vaccinated parents. Factors associated with vaccine hesitancy in parents include having a secondary education, middle or low household income, and having younger children (aged 5–11 years or 12–15 years). (Baysson et al., 2022)

A systematic review assesses vaccine hesitancy among parents of young children regarding COVID-19 vaccination. The review included 108 studies from various countries, and the vaccine hesitancy rates differ globally. Factors associated with vaccine hesitancy include mothers' lower education level, financial instability, low confidence in new vaccines, and unmonitored social media platforms. These factors are significantly linked to vaccine refusal among parents. On the other hand, potential facilitators for vaccine uptake among parents who intend to vaccinate their children include a higher education level, information obtained through healthcare professionals, and

confidence in preventive measures taken by the government. The review highlights that parents worldwide are hesitant to vaccinate their children against COVID-19, and the factors influencing this hesitancy vary across different regions. (Khan et al., 2022)

### **Health professionals:**

Taking healthcare professionals' perspective (HCPs), a study aims to understand the factors influencing their confidence in vaccines and their vaccine uptake. A mixed-methods approach was used, including an online survey conducted in 15 countries. The survey reveals that nurses/midwives and HCPs from certain countries (Hungary, Italy, Romania, and Switzerland) have lower confidence in the safety, importance, or effectiveness of vaccines in general. These countries also report lower rates of HCPs highly likely to recommend MMR, HPV, and COVID-19 vaccines. Many HCPs express a lack of trust in health authorities and the information they provide. Thematic analysis of the interviews highlights several barriers to HCPs' vaccination, including concerns about vaccine side effects, preference for natural immunity, questions about the necessity of annual influenza vaccination, absence of chronic disease risk factors, and vaccine mandates. (Alasmari et al., 2022)

A study aims to understand the decision-making process about COVID-19 vaccination among staff working in retirement homes and institutes for people with disabilities in Southern Switzerland. Semi-structured phone interviews were conducted with 25 participants between February and May 2021, when they had to decide whether to adhere to the priority vaccination program. Among the participants, 21 either signed up for the vaccine or were partially or fully vaccinated at the time of the interview. The vaccination decision is found to be a complex process for most participants. Lack of clear and consistent information, conflicting moral principles, and organizational issues with the vaccination process are some of the factors influencing their decision. Fear of potential discrimination for not getting vaccinated also plays a role in the decision-making process. Participants base their decision on various factors, including principles, traditions, emotions, and a reflective assessment of the personal and collective benefits of vaccination, with the latter being the most common factor. The study highlights that the decision to get vaccinated against COVID-19 is not straightforward, and individuals cannot be easily categorized as either pro-vaccine or anti-vaccine based solely on their vaccination decision. (Fadda et al., 2022)

### Older people:

A study aims to understand the transmission dynamics of SARS-CoV-2 during the transitional phase between pandemic waves in Switzerland, with a focus on the impact of "social mixing" between different age groups. The research examined persons aged 65 and older, analyzing their adherence to preventive measures and potential exposure risks. The study identified four groups of older individuals with different patterns of adherence to preventive measures and social contacts. While many older persons continue to follow preventive measures, social mixing with younger individuals leads to infections across age groups. The findings emphasize the importance of pandemic containment among all age groups to protect vulnerable populations, including older adults. (Haag et al., 2020)

## During the COVID crisis, were there barriers to the access to preventive and mitigation measures?

### Summary:

**In Switzerland, studies indicate regional variations in adherence to COVID-19 mitigation measures among the general population, emphasizing the need for culturally sensitive communication strategies. Among children and adolescents in Zurich, mask usage perception varies, with some reporting discomfort. Senior physicians in Ticino have differing views on COVID-19 triage guidelines, highlighting the need for sensitization and clarification. Deaf individuals face communication barriers and limited healthcare access due to pandemic measures. Sex workers continue working out of necessity despite bans, which has negative health consequences. Swiss prisons effectively manage the pandemic, with lower infection rates and future implications for penal sanctions.**

### Results:

#### General population:

A study investigates the potential differences in health, social behavior, and adherence to COVID-19 mitigation measures across three culturally diverse language regions in Switzerland. The study finds evidence of an interaction effect between the implementation of mitigation measures and language regions regarding adherence to these measures. However, there are no significant differences in other study outcomes related to general health and quality of life, mental health, loneliness/isolation, physical activity, and healthcare use across the different language regions.

The findings suggest that as the pandemic unfolds in Switzerland, adherence to mitigation measures varies among the language regions, reflecting the COVID-19 incidence patterns in each area. The researchers emphasize the importance of regionally targeted communication strategies and policy-making that consider cultural, geographical, and socioeconomic aspects to address the potential long-term population health consequences caused by the pandemic. (Moser et al., 2021)

#### **Children, adolescents, and parents:**

A study aims to explore the perceptions of children and adolescents regarding the usefulness of masks in schools and public places in the canton of Zurich. The findings show that more than half of the school children perceive masks to be useful both at school and in public places. Girls perceive masks as more useful than boys, and children of parents with higher educational attainment perceive masks as more useful than those with lower educational attainment. However, around 20% of children provide individual statements about masks, and some of them report side effects and discomfort, such as skin irritations, headache, or difficulties breathing during physical education. Overall, approximately 60% of school children perceive masks as useful. The researchers highlight the importance of considering children's discomfort and side effects to ensure high adherence to mask-wearing among school children. (Ammann et al., 2022)

#### **Health professionals:**

A qualitative study explores the acceptance and implementation of COVID-19 triage guidelines among senior physicians in Ticino, Switzerland. The participants have different views on the guidelines' nature, some seeing them as a source of direction, while others think they should be adapted to individual cases. Collaborative decision-making is crucial for ICU admission, and age is not considered a criterion. However, logistical and emotional barriers can lead to a revival of a paternalistic model. Sensitizing healthcare professionals and the public about the guidelines' purpose and application is important, along with clarifications on authority and involving family members in decision-making. These insights can improve case management, resource allocation, and patient support. (Federica et al., 2021)

#### **Deaf people:**

Deaf individuals can be considered a vulnerable population when it comes to adhering to preventive and mitigation COVID-19 measures because of communication barriers and limited access to information. An article discusses the health inequalities faced by this subgroup of the population. In particular, authors highlight the challenges they encounter due to the widespread use of face

masks, social distancing measures, and limited access to healthcare. The article notes that wearing masks makes lip reading nearly impossible and hides facial expressions, which are crucial in sign language communication. People who are deaf or hard of hearing have historically experienced difficulties in accessing healthcare due to communication barriers with healthcare providers who may not be adequately trained in sign language. This can lead to mistrust of healthcare services and delayed care. The authors draw attention to the importance of recognizing sign languages, such as French, German, and Italian sign languages, constitutionally within national languages to ensure equal access to information and healthcare for the deaf and hard of hearing community. The article also explores the use of virtual technologies and involving representatives from the deaf community in the development of prevention messages as potential strategies to improve information dissemination and reduce social isolation during the pandemic. (Morisod et al., 2020)

#### **Sex workers:**

Sex workers may be considered as disadvantaged during the COVID crisis because of discrimination and stigmatisation or because of their economic vulnerability among other reasons. A report written by ProCoRe, a national network that defends the interests of sex workers in Switzerland, finds that some sex workers continue to work illegally out of necessity despite bans. Bans make it difficult for support organizations to access sex workers and implement health prevention programs. According to ProCoRe support organizations, rates of sexually transmitted diseases, unintended pregnancies, violence, and aggression have increased in certain cantons. There is no data or information to suggest that sex work is a driver of the pandemic. There is no apparent correlation between the spread of the coronavirus and the prohibition or non-prohibition of sex work in the cantons. The documented negative consequences of sex work bans for public health far outweigh any potential positive effects of banning sex work to contain the Covid-19 pandemic. Protective measures can also be implemented in the sex industry. When sex work is legal, support organizations can assist sex workers in implementing these measures. The enforcement of these measures can be better monitored by authorities. (ProCoRe (Prostitution Collective Reflexion), 2021)

#### **Prisoners:**

Access to the measures is challenged by the context of the prison. A report discusses the impact of COVID-19 measures, including isolation, on prisons and detainees. Swiss prisons, in comparison to those in other countries, notably the United States, manage the pandemic well due to lower prison populations and effective prevention measures. Researchers conducted interviews with staff and

detainees to understand their perspectives. Detainees express understanding of COVID-19 measures but report increased stress and more frequent disputes. Staff share concerns about being infected and unknowingly spreading the virus. Overall, the pandemic is well managed in prisons, with effective communication and trust between prison authorities and personnel playing a vital role. The pandemic has also influenced future practices in penal sanctions, raising questions about the effectiveness of short-term imprisonment and potential impacts on recidivism rates. (Wegel et al., 2021)

## Were there disparities in access to information about the pandemic and related measures?

### Summary:

**The COVID-19 pandemic has exposed disparities in information access and responses. A Swiss study identified three response profiles to official communications, suggesting tailored communication strategies are crucial. Vulnerable populations require customized digital communication, literacy training, and access to essential services. An evaluation of Swiss COVID-19 measures found general appropriateness but revealed inadequacies in crisis preparedness.**

**In terms of discrimination, a paper outlines areas of concern, highlighting socioeconomic, socio-cultural, and immigration-related factors contributing to disadvantage. Migrant groups with higher vulnerability face challenges in understanding COVID-19 health information. Healthcare professionals vary in their attitudes toward using social media in adolescent and young adult oncology, with a need for institutional guidelines. COVID-19 has only minimally impacted their attitudes toward professional use of social media.**

### Results:

#### General population:

Beyond all the disparities already mentioned, there are also inequalities in access to information about the pandemic and related measures. A study aims to investigate whether people's responses to official communications about COVID-19 can be categorized into different profiles based on socio-economic-demographic and behavioral characteristics. A web panel survey was conducted in Switzerland in February 2022 to assess the population's reactions to COVID-19 communications during the pandemic. Latent profile analysis was used to identify distinct profiles of responses and explore their relationship with conspiracy mentality and socio-economic-demographic measures.



The analysis revealed three latent profiles: "Compliant supporters," "defiant deniers," and "anxious sceptics." Respondents with high conspiracy mentality are more likely to belong to the latter two profiles. Each profile exhibits different socio-economic-demographic and behavioral features. The study highlights the importance of using profile-adapted communications for more effective crisis management, taking into account the diverse responses of the population to COVID-19 communications. (Hannawa & Stojanov, 2022)

Highlighting inequalities, a report stresses that the pandemic showed the importance of ensuring that hard-to-reach populations have access to information. Recommendations include tailored digital communication, digital literacy training, and leveraging local contacts as intermediaries. Access to essential services like food aid, healthcare, and housing is crucial, especially for undocumented individuals. Ensuring safe access and training for employees at all levels to apply these rules is essential. (Beyeler et al., 2021)

Moreover, the Swiss Federal Office of Public Health (FOPH) conducted an evaluation of the planning, appropriateness, and effectiveness of health measures during the COVID-19 pandemic. The evaluation began in October 2020 and concluded empirical work at the end of June 2021. It involved a representative population survey, online surveys of selected affected groups, literature analysis, and discussions with stakeholders. The evaluation delves into topics such as the division of competencies between the federal government and cantons, the availability and use of digital data, roles and responsibilities in communication with the public, leveraging stakeholders' expertise, and ensuring treatment capacity during the pandemic. The evaluation concludes that, for the most part, the federal government and cantons responded appropriately and, with few exceptions, in a timely manner to the COVID-19 threat. However, inadequate crisis preparedness and management significantly affected the effectiveness and efficiency of their actions. Therefore, the evaluation provides various recommendations at political, strategic, and operational levels. (Balthasar, 2022)

A paper, titled "Potential Discrimination Traps in Relation to COVID-19," compiles possible, suspected, and already identified problem areas related to the COVID-19 crisis and the measures taken to contain it in the context of (racial) discrimination and fundamental rights protection. The document aims to provide an overview of these issues, suggest courses of action, and helps identify responsible authorities both within and outside the government. The paper focuses on groups that were already in precarious situations before the COVID-19 crisis and are at risk of additional marginalization due to the crisis. It explores various factors contributing to societal

inequalities during an epidemic or pandemic and their specific impacts on certain individuals or groups. The document identifies three axes of discrimination to systematically capture potential moments of discrimination arising from the pandemic and its containment measures: Greater exposure to infection, negative impact of pandemic measures, and exacerbation of pre-existing racism and exclusion. The paper includes a list of socio-economic, socio-cultural, and immigration-related factors contributing to disadvantage, helping to identify particularly vulnerable groups. It also outlines who is most affected by the pandemic and its containment measures and suggests areas of action to monitor and investigate the situation of affected individuals. Preliminary insights indicate areas where authorities should act promptly to avoid exacerbating the crisis's negative consequences. These areas include information accessibility, education, immigration status and naturalization processes, precarious employment situations, as well as the risk of intensified racism and discrimination during crises. (Schweiz. Eidgenössisches Departement des Innern. Fachstelle für Rassismusbekämpfung, 2020)

#### **Migrants and foreigners:**

A study aims to understand the COVID-19-related health literacy among socioeconomically vulnerable migrant groups in Switzerland. Most migrants report feeling well informed about the pandemic. The study finds a moderate correlation between COVID-19-related health literacy and socioeconomic vulnerability, indicating that the most vulnerable migrants tend to have more difficulty finding and understanding health information about COVID-19. Additionally, this group shows a higher tendency to adhere to unscientific theses that are not part of the official communication. In conclusion, public health authorities' special communication efforts have reached most migrants, but socioeconomic vulnerability can still act as a barrier to taking necessary precautions during the pandemic. (Ruedin et al., 2022)

Another study aims to investigate the knowledge and attitudes of asylum seekers in the canton of Vaud, Switzerland, regarding COVID-19 recommendations. A cross-sectional survey was conducted, and 242 asylum seekers participate. The findings reveal that low knowledge about COVID-19 recommendations is associated with linguistic barriers and living in a community center. Additionally, rejected asylum seekers are more likely to believe COVID-19 rumors. (Morisod et al., 2022)

#### **Healthcare professionals:**

A study aims to investigate the attitudes of Swiss healthcare professionals regarding the use of social media in adolescent and young adult oncology, and whether the ongoing social restrictions

due to COVID-19 have affected these attitudes. The findings show that while healthcare professionals consider social media useful for various professional aspects, only a small proportion use it for professional reasons on a weekly basis. About half of the respondents consider themselves skillful in using social media platforms. Regression analysis revealed that self-assessed skillfulness, the impact of COVID-19 on attitudes, and the oncology setting are significantly associated with the perceived usefulness of social media. Many respondents express the need for institutional guidelines to improve social media use, but a considerable proportion seems unaware of their existence. Additionally, only a minority report that COVID-19 has impacted their attitudes toward professional implementation of social media. (Rost et al., 2022)

What are the recommendations to manage future pandemics with regards to equity?

**Summary:**

**The COVID-19 pandemic has highlighted disparities in how countries respond to and manage the crisis, underscoring the urgent need for sustained investment in strengthening global public health infrastructure. Key priorities include strengthening core public health capacities, enhancing international cooperation, addressing health inequities among vulnerable groups, and improving health literacy through communication campaigns. Additionally, the pandemic has revealed the vulnerability of marginalized populations, such as forced migrants, incarcerated individuals, and the homeless, to healthcare disparities. Interdisciplinary and innovative approaches are recommended to meet the unique needs of these groups. The pandemic has exacerbated existing societal inequalities, particularly impacting socioeconomically disadvantaged individuals, necessitating focused policies to mitigate both health and economic risks.**

**Results:**

The COVID-19 pandemic has revealed significant disparities among countries in their responses to the crisis and their abilities to implement effective public health measures to mitigate the spread of the disease. Given that public health systems play a crucial role in managing pandemics, it is evident that there is a pressing need for sustained investment in strengthening public health infrastructure across all countries, regardless of their income levels. Drawing from the successful experiences of Switzerland, Georgia, and New Zealand in handling COVID-19, the authors propose several key priorities:

- Prioritize core public health capacities in alignment with the International Health Regulations.

- Improve international cooperation, coordination, and multisectoral action to enhance global pandemic preparedness and response.
- Address health inequities by targeting vulnerable groups to ensure equitable access to healthcare and public health resources.
- Enhance health literacy through comprehensive and sustained communication campaigns to build resilience and empower individuals to make informed decisions. (Collins et al., 2020)

While the government has primarily focused on people over 65 and those with co-morbidities as at-risk groups, other highly vulnerable populations, such as forced migrants, incarcerated individuals, and the homeless, should not be overlooked. Authors stress that there is a risk of increasing inequities in care among these marginalized and disadvantaged groups during the pandemic. The authors discuss the implementation of innovative, inter-professional, and interdisciplinary procedures to address the needs of these vulnerable populations. They also provide information about the partners involved and the available resources for front-line caregivers. The aim of the article is to shed light on the importance of recognizing and addressing the healthcare disparities faced by various marginalized groups during the pandemic. (Bodenmann et al., 2020)

While the government has primarily focused on older people and those with comorbidities as at-risk groups, an article goes in the same direction and emphasizes that other vulnerable populations, such as forced migrants, incarcerated individuals, and the homeless, should not be overlooked. It highlights the potential for healthcare inequities in these populations during the pandemic. The vulnerable populations discussed included: Forced migrants, relocated Syrian families, victims of trafficking and exploitation, sex workers, undocumented individuals, incarcerated individuals, and homeless individuals. The article emphasizes the importance of addressing healthcare inequities among these vulnerable populations and promoting interdisciplinary collaboration to ensure their well-being during the COVID-19 pandemic. (FORCÉS, 2020)

Coming to the same conclusion, a paper discusses how the COVID-19 pandemic has exposed and worsened existing inequalities in health, income, and employment in societies. Socioeconomically disadvantaged individuals in Switzerland and globally are particularly vulnerable to the virus due to their work and living conditions. The study aims to describe the mechanisms that have led to a disproportionate impact on certain population groups. It focuses on the concentration of health and economic risks in specific households and the public policies implemented to combat the pandemic's health effects while addressing its economic consequences. (Marti & Ferro-Luzzi, 2021)

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## Appendix 1 – Literature search string

The following document search chain has been developed specifically for the PubMed library. The search equations for other libraries are similar and are therefore not presented here.

[\("COVID-19"\[Supplementary Concept\] OR "severe acute respiratory syndrome coronavirus 2"\[Supplementary Concept\] OR \("Coronavirus"\[MeSH Terms\] OR "Coronavirus Infections"\[Mesh:NoExp\] OR pneumonia virus\\*\[tiab\] OR cov\[tiab\]\) AND \(outbreak\[tiab\] OR wuhan\[tiab\] OR novel\[all\] OR 19\[tiab\] OR 2019\[tiab\] OR epidem\\*\[tiab\] OR epidemy\[all\] OR epidemic\\*\[all\] OR pandem\\*\[all\] OR new\[tiab\]\)\) OR coronavirus\\*\[tiab\] OR corona virus\\*\[tiab\] OR ncov\[tiab\] OR 2019ncov\[tiab\] OR "covid"\\*\[tiab\] OR "sars cov 2"\[tiab\] OR sarscov2\[tiab\] OR sarscov-2\[tiab\] OR sars2\[tiab\] OR "ncov 2019"\[tiab\] OR "sars coronavirus 2"\[tiab\] OR "sars corona virus 2"\[tiab\] OR "severe acute respiratory syndrome cov 2"\[tiab\] OR "severe acute respiratory syndrome cov2"\[tiab\] OR severe acute respiratory syndrome cov\\*\[tiab\] OR cov2\[tiab\]\) AND \("2019/12"\[Date - Entrez\] : "3000"\[Date - Entrez\] OR \("COVID-19"\[Mesh\] OR "SARS-CoV-2"\[Mesh\] OR "COVID-19 Testing"\[Mesh\] OR "COVID-19 Vaccines"\[Mesh\] OR "pediatric multisystem inflammatory disease, COVID-19 related" \[Supplementary Concept\] OR "COVID-19 serotherapy" \[Supplementary Concept\] OR "post-acute COVID-19 syndrome" \[Supplementary Concept\] OR "spike protein, SARS-CoV-2" \[Supplementary Concept\] OR "COVID-19 drug treatment" \[Supplementary Concept\] OR "nucleocapsid phosphoprotein, SARS-CoV-2" \[Supplementary Concept\] OR "mRNA-1273 vaccine" \[Supplementary Concept\] OR "Ad5-nCoV vaccine" \[Supplementary Concept\] OR "Covid-19 aAPC vaccine" \[Supplementary Concept\] OR "lentiviral minigene vaccine of COVID-19 coronavirus" \[Supplementary Concept\] OR "COVID-19 stress syndrome" \[Supplementary Concept\] OR "ChAdOx1 COVID-19 vaccine" \[Supplementary Concept\] OR "COVID-19 post-intensive care syndrome" \[Supplementary Concept\] OR "ORF1ab polyprotein, SARS-CoV-2" \[Supplementary Concept\]\) OR \( "ORF8 protein, SARS-CoV-2" \[Supplementary Concept\] OR "ORF7a protein, SARS-CoV-2" \[Supplementary Concept\] OR "ORF6 protein, SARS-CoV-2" \[Supplementary Concept\] OR "ORF7b protein, SARS-CoV-2" \[Supplementary Concept\] OR "ORF3a protein, SARS-CoV-2" \[Supplementary Concept\] OR "membrane protein, SARS-CoV-2" \[Supplementary Concept\] OR "envelope protein, SARS-CoV-2" \[Supplementary Concept\] \) AND \(2019/12\[dp\]:2023\[dp\]\) AND \(Switzerland\[tw\] OR swiss\[tiab\]\)](#)  
**AND**

[\(Vulnerable Populations\[Mesh\] OR "Socioeconomic Factors"\[Mesh\] OR "Ill-Housed Persons"\[Mesh\] OR "Sex Workers"\[Mesh\] OR "Drug Users"\[Mesh\] OR "Single-Parent Family"\[Mesh\] OR \*\*"Transients and Migrants"\[Mesh\] OR "Undocumented Immigrants"\[Mesh\] OR "Refugees"\[Mesh\] OR "Disabled Persons"\[Mesh\] OR "Students/psychology"\[Mesh\] OR deprived\[tiab\] OR disadvantaged\[tiab\] OR "left behind" \[tiab\] OR "sensitive population"\\*\[tiab\] OR "socioeconomically disadvantaged"\[tiab\] OR "socioeconomically vulnerable"\[tiab\] OR "underserved"\[tiab\] OR "vulnerable communit\\*\\*"\[tiab\] OR "vulnerable minorit\\*\\*"\[tiab\] OR "vulnerable person\\*\\*"\[tiab\] OR "vulnerable people"\[tiab\] OR "vulnerable population\\*\\*" OR "educational status"\[tiab\] OR "economic status"\[tiab\] OR "housing eviction"\[tiab\] OR "housing instability"\[tiab\] OR "income group\\*\\*"\[tiab\] OR poverty\[tiab\] OR "social class\\*\\*"\[tiab\] OR "social economic vulnerability"\[tiab\] OR "social inequalit\\*\\*"\[tiab\] OR "social status" OR "sociocultural class"\[tiab\] OR socioeconomic\\*\[tiab\] OR socio-economic\\*\[tiab\] OR homeless\\*\[tiab\] OR "ill-housed"\[tiab\] OR "people living on the street\\*\\*"\[tiab\] OR runaway\\*\[tiab\] OR shelterless\\*\[tiab\] OR "street child\\*\\*"\[tiab\] OR "street people"\[tiab\] OR unhoused\[tiab\] OR vagabond\\*\[tiab\] OR "vagrant people"\[tiab\] OR "vagrant person\\*\\*"\[tiab\] OR callgirl\\*\[tiab\] OR prostitute\\*\[tiab\] OR "sex worker\\*\\*"\[tiab\] OR "alcohol addict\\*\\*"\[tiab\] OR "drug addict\\*\\*"\[tiab\] OR "drug depend\\*\\*"\[tiab\] OR "drug user\\*\\*"\[tiab\] OR "people who inject drugs"\[tiab\] OR "drug consumption"\[tiab\]\*\*](#)

**OR "one-parent"[tiab] OR "single-parent"[tiab] OR migrant\*[tiab] OR squatter\*[tiab] OR undocumented[tiab] OR "asylum seeker"\*[tiab] OR "displaced person"\*[tiab] OR refugee\*[tiab] OR disabled[tiab] OR handicapped[tiab])**