# Has people's attitude towards Voluntary or Mandatory vaccination against COVID-19 affected their Quality of Life?

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Original Article

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## Abstract:

In early 2021, the first vaccines against the COVID-19 disease were approved by drug registration authorities. Other vaccines were also approved a short time afterwards. The urgent need for vaccines meant that their development and testing did not proceed in the usual, time-consuming way. The vaccinations had the expected positive impact on the course of the COVID-19 pandemic, but at the same time they were rejected by a significant part of the population. The pressure of the government and

health authorities to increase the number of vaccinated people caused backlash among opponents of vaccination, resulting in a strong social conflict. The rejection or acceptance of vaccination has several dimensions. The primary dimension is medical, and another is social. The result is escalated social conflict, which fortunately was short-lived in the case of the COVID-19 pandemic. The third dimension is the quality of life dimension, probably the most important dimension in the long term. The paper is focused on comparing supporters and opponents of vaccination in terms of their quality of life. It is based on the premise that a sharp but short-lived dispute between supporters and opponents of vaccination would not have lasting significant consequences in society if the quality of life of the members of the two groups was not significantly different and is influenced by the same predictors. If, on the other hand, the quality of life of supporters and opponents of vaccination was significantly different and influenced by different indicators, it suggests a significantly negative impact on their quality of life.

## Introduction

In December 2019, pneumonia caused by a novel coronavirus, namely, severe acute respiratory syndrome coronavirus (SARS-CoV-2), broke out in the Chinese city of Wuhan. The SARS-CoV-2 virus caused the infectious respiratory disease COVID-19 (hereinafter referred to as the pandemic). The pandemic spread very quickly, and as of February 17, 2020, the number of cases had reached more than 70,000 in 27 countries (1). Due to developments at the end of February 2020, including a 13-fold increase in the number of cases outside of China, a threefold rise in the number of countries, and projections of further growth in both categories, the World Health Organization (hereinafter referred to as WHO) declared the disease a pandemic on March 11, 2020 (2). The emergence and course of pandemics in various countries has been described many times (3-5). Although not the primary consequence—those being the high mortality rates, the strain on hospitals and medical personnel, and the extensive societal disruptions caused by lockdowns—a notable aspect of the pandemic's impact was the dual reaction of the population to the approval of vaccines against the pandemic and their mass deployment in early 2021. One part of the population supported vaccination, while another segment opposed it, believing the vaccine to be ineffective and perceiving its potential enforcement as a threat to individual freedom. The dynamic between the opponents of vaccination and its proponents, which were supported by medical and political authorities, gave rise to a significant social conflict. During the first half of 2022, the last wave of the pandemic, known as Omicron, subsided, and governments around the world gradually relaxed restrictive measures. On 14/09/2022, the head of WHO announced that the end of the COVID-19 pandemic was in sight (WHO, online). Healthcare is a critical component of public policy. The pandemic created an urgent and complicated situation in which implementing measures to curb the growth of confirmed cases and reduce transmission became the primary role of policymakers in both public policy and public health management. Political and public health authorities can only carry out their roles successfully if they have enough valid information to support the decision-making process. The task of scientists is to provide such information. The paper is therefore focused on the dispute between supporters and opponents of vaccination and its impact on the quality of life of both sides of the dispute. This will contribute to addressing the scientific question: Who are the opponents of vaccination and what are their characteristics? By the end of 2022, while the pandemic continued in the form of long COVID to some extent, the visible

presence of individuals requiring respirators in public had become sporadic. The pandemic had largely faded from public space. Similarly, the sharp social conflict between supporters and opponents of vaccination stopped during the end of the pandemic and eventually disappeared from the public sphere. It can therefore be concluded that the beginning and the end of the pandemic are now well defined. This allows scientists to formulate an initial preliminary assessment. An important part of it—although not the primary one, which was the deaths, the overload of hospitals and medical staff, and the lockdown with its massive effects—is the examination of the dispute between supporters and opponents of vaccination. This paper has two primary objectives. The first is to explore whether the visible public antagonism between between supporters and opponents of vaccination manifested itself in something personal, specifically in terms of quality of life. The second goal is to examine whether the factors influencing quality of life are the same of differ between these two groups. Quality of life is a contemporary concept. When we discuss quality of life, we refer to an individual's satisfaction with their own life based on their personal idea of what constitutes a good life. Subjective, self-reported assessments of quality of life, whether quantitative or qualitative, are widely used in public discourse and valued by scientists because they provide valid information about how people perceive their lives in the current period of late modernity (6).

## Methodology

Quality of life, health, vaccination status, and other variables, along with the classification into supporters or opponents of vaccination, were determined in a sample (N= 204) of university students in Slovakia. The research was conducted from January to June 2022, during the Omicron wave of the pandemic and its subsequent decline. The survey was conducted as an online questionnaire. After the end of restrictive measures, including the obligation to wear face masks, data were also obtained via face-to-face interviews. The variables health, disease course, pre-pandemic relationships, trust, post-pandemic relationships, quality of life, and happiness were measured on a 0-10 Cantril scale. The variable "vaccination" was measured in the form of yes/no. The questionnaire text is provided in the appendix. It was completed by students aged 18-32 who were enrolled in bachelor's, master's, and doctoral studies at Slovak universities. A total of 206 questionnaires were submitted, of which 2 were incomplete. The answers obtained were transcribed into Excel tables. Relationships between the measured variables were quantified using Spearman's correlation coefficient.

## Pandemic

The COVID-19 pandemic had a robust impact on quality of life that varied across its dimensions. As research from different countries shows (7-10), the pandemic affected the lives of people all over the globe in a significant and at the same time geographically differentiated way. OECD (2021) (11) analyzed the impact of the pandemic on six areas in member countries: income and wealth, work and job quality, physical and mental health, work-life balance, social connections, and social capital. The analysis shows a less severe economic impact of the pandemic at the end of its first year–unemployment rose by 1.7%, and the average household disposable income even increased by 2.9%. However, the health consequences were more severe, with excess mortality averaging 16% and a decrease in the average life expectancy by 0.6 years. One in five people reported feeling very lonely. By May 2021, most adults perceived society to be more polarized than before the pandemic. The pandemic was a continuation of viral diseases–Ebola, Dengue, Zika, and the respiratory diseases SARS and MERS–but it differed from previous ones in terms of its global spread. The Spanish flu of 1918-1920 resulted in a higher number of deaths than the recent pandemic, with Taubenberger and Morens (12) estimating it at 50 million deaths worldwide. However, the overall health, economic, and social impact of the Spanish flu was not as robust as that of the current pandemic. As of February 27, 2023, according to the Johns Hopkins University Coronavirus Resource Center (online a), the number of confirmed cases worldwide was 675,042 million, and the number of deaths 6,870 million.

During the first half of 2022, the last wave of the pandemic, Omicron, died down, and governments around the world gradually relaxed restrictive measures. The COVID-19 pandemic is now expected to turn into a common flu-like illness (13). In the aftermath of the pandemic, two opposing positions emerged regarding its overall evaluation. One perspective holds that the pandemic will become a 'common' illness, similar to the flu (14). The other emphasizes that some people who have recovered from COVID-19 continue to experience symptoms for weeks or months. These medium- and long-term symptoms, such as fatigue, breathlessness, and cognitive dysfunction, are referred to as long COVID if they persist for three months or more and cannot be explained by an alternative diagnosis (15). The most common psychological symptoms suffered by 30-40 percent of people affected by long COVID are anxiety, depression, and sleep disorders (16). According to the guidelines of the British National Institute for Health and Care Excellence (17), the distinction between acute COVID-19 and long COVID is based on a 12-week period. The acute phase of COVID-19 lasts anywhere from 4-12 weeks, and long COVID is considered as anything beyond this point. Globally, the number of people affected by long COVID is reported to be at least 65 million (18), and it is expected that millions of people will live with long COVID even after the official end of the pandemic. In the WHO Europe region, which is made up of European and Central Asian countries, there were 17 million cases of long COVID during 2020-2021 (19). It is natural that authors focusing on health-related quality of life (hereafter HRQOL) and 'general' quality of life have paid attention to the pandemic (8, 9, 16, 20-22). Some scholars have compared long COVID to post-traumatic stress disorder (PTSD), noting that 11% of patients with long COVID suffer from its chronic form. The one-year prevalence of PTSD among this population was 23.9%, peaking at six months (23). Other researchers have focused on the impact of long COVID on mental health. Naidu et al. (24) pointed out an estimate of the prevalence of depression in the general population at 24%, and PTSD at 15%. Among individuals with acute illness due to COVID-19, the prevalence increased significantly—42% for depression and 96% for symptoms corresponding to PTSD. According to Houben-Wilke et al. (25), 37% of patients exhibited PTSD symptoms, 36% had symptoms of anxiety, and 47% showed signs of depression. These symptoms were comparable between hospitalized and non-hospitalized patients, with no significant differences in the symptoms of PTSD, anxiety, or depression. Research conducted among patients in six countries indicated that psychological symptoms, anxiety, and impaired functioning were among the most persistent effects. Recent studies have examined the impact of long-COVID on quality of life (26). For example, patients with long COVID in Slovakia had a lower quality of life than control groups of healthy individuals (27). In addition to health-related consequences, the pandemic also brought significant changes to work practices, especially among 'white-collar' and 'highly skilled' workers. Due to the lockdown, these employees started to work from home, a practice often referred to as 'home office' or 'teleworking.' The proportion of people working like this increased from 4% before the pandemic to 40% during this period (28). Vyas discussed the changes that the pandemic brought to work organization and its impact on work-life balance (29).

## Vaccination

Vaccination against certain diseases, such as measles, which is mandatory by law in many countries, is a fundamental part of public health policies around the world (30, 31). At the end of the 18th century, around ten percent of the population died of smallpox, with mortality rates reaching up to twenty percent in cities. Since the introduction of vaccination, there has been resistance to it. In the 19th century, the United Kingdom passed the Compulsory Vaccination Act, which was later followed by the Compulsory Smallpox Vaccination Act. Vaccination opponents responded by founding the Anti-Vaccination League and the Anti-Compulsory Vaccination League (32). In the second half of the 19th century, compulsory vaccination was introduced against rabies, typhoid, cholera, and plague; af-

ter World War I against diphtheria, tetanus, tuberculosis, and other viral diseases; after World War II against polio, pneumococcus, hepatitis B, and other viral diseases (33). At the beginning of 2021, drug registration authorities approved the first COVID-19 vaccines, which demonstrated an effectiveness of over 90 percent, with additional vaccines authorized shortly thereafter. Due to the urgency of the situation, the effects of these vaccines could not be verified by the standard procedures that are applied to conventional drugs. The governments of all countries encouraged and motivated the population to be repeatedly vaccinated, and being in the possession of a vaccination certificate was a condition for entering some facilities. However, a portion of the population resisted these measures, leading to social conflict between supporters and opponents of vaccination. This was one of the most prominent social phenomena of the pandemic. Although opposition to mandatory vaccination took the form of demonstrations in some countries, in rare cases leading to violent clashes with the police, the sociodemographic characteristics of members in both opposing groups were the same (31). This paper focuses on the question of whether their quality of life differed. The dispute between supporters and opponents of vaccination has attracted significant attention from scientists (30, 31, 34-36). While the majority of researchers support vaccination, whether mandatory or voluntary, anti-vaxxers remain vocal. According to Petersen et al. (34), transparency is essential in the provision of information about vaccination, even though negative information may reduce willingness to get vaccinated in the short term. A lack of transparency leads to decreased trust and increased support for conspiracy theories. In the long run, the benefits of transparency outweigh the drawbacks, as it fosters trust in health authorities. Maintaining public trust is crucial both in the short and long term. In the short term, because vaccination requires several doses, and long term so that society accepts the decisions of the health authorities during future public health emergencies. If people lose confidence, vaccination campaigns are unlikely to achieve their intended outcomes. Resistance to mandatory vaccination in the second half of 2021 resulted in a lower vaccination rate than what health authorities considered sufficient. In their studies, authors (30, 31) evaluated vaccine acceptance and rejection in Germany following the first two waves of the pandemic. They found that public distrust was undermined by mandatory vaccination policies, combined with the belief that the vaccine was ineffective and that enforcement threatened the freedom of the individual. However, resistance to vaccination was not immutable, but dynamic. This allowed health authorities to reduce the number of anti-vaxxers by taking appropriate measures. Hesitancy to accept or reject vaccination has a sociocultural context (37). Vaccine acceptance is influenced by trust in justice and by cultural values (38), where culture is broadly understood as a set of values, social relations, historical experience, and institutional characteristics. This is supported by the fact that the countries of the former Soviet bloc, including the eastern part of Germany, show a lower vaccination rate than those in Western Europe (39). While voluntary vaccination yields positive results, compulsory vaccination enforced through legislation can significantly undermine these efforts. Legislatively enforced vaccination is only justified if there is a critical epidemiological situation and it is necessary to ensure collective immunity. The refusal or acceptance of vaccination involves several dimensions. The primary one is medical, followed by social factors. An individual's decision to vaccinate or not is not merely one of the many daily choices. State and health authorities exerted considerable pressure on anti-vaxxers to get vaccinated, particularly on social networks. In turn, anti-vaxxers responded to this with attacks on vaccine supporters, including prominent public figures, and in some cases, they filed lawsuits against health authorities. The result was an escalated social conflict, which, fortunately, was short-lived in the context of the COVID-19 pandemic. The third dimension influencing the acceptance or refusal of vaccination is the dimension of trust, which is arguably the most important dimension in the long term. Trust operates on both personal and institutional levels; individuals may place trust in other people or in institutions such as the government, parliament, courts, police, church, and the military.

Trust is a cohesive force within society (40). Belief in the effectiveness of vaccines reflects trust in scientists, which has been declining in recent years (6). At the same time, a new phenomenon has emerged: the rise of a strong and growing anti-scientific counterculture. It is important to emphasize that vaccination itself is not the main goal but a means to achieving the goal—the ultimate goal being the elimination of the virus. In the case of the current SARS-CoV-2 coronavirus and the resulting dispute between supporters and opponents of vaccination, one of the key tasks is understanding the motivational factors and investigating the behavioral aspects involved (35). Western rationality, grounded in scientific knowledge, has shaped the development of modern civilization, which is the most successful in human history. Its standard of living, values, technology, way of life, and forms of entertainment and leisure are imitated all across the globe. Wealthy individuals, scientists, athletes, and refugees from the rest of the world continue to migrate to the West. The dispute between vaxxers and anti-vaxxers is presented as a conflict of trust and distrust in science. Encouragingly, the rejection of vaccination by anti-vaxxers does not automatically mean the rejection of scientific knowledge itself (36). Given these factors, the dimension of trust can be considered as the most important dimension in the long run.

## The Pandemic and Vaccination in Slovakia

In Slovakia, the first case of COVID-19 was confirmed on March 7, 2020, and the first death was recorded on March 30, 2020. The government announced a lockdown on December 19, 2020. Slovakia's position is shown in Table 1.

The number COVID-19 deaths according to the Slovak health authorities as of January 30 was 20,940 (42) (COVID2019.sk). As of February 27, 2023, the Johns Hopkins University Coronavirus Resource Center (online b) reported 2.664 million confirmed cases and 21,017 deaths in Slovakia. In less than a month, 77 people died in Slovakia as a result of the pandemic, which seems to support the expectations that COVID-19 will become a 'common' disease. A temporal comparison of cases and deaths in Slovakia is shown in Figure 1.

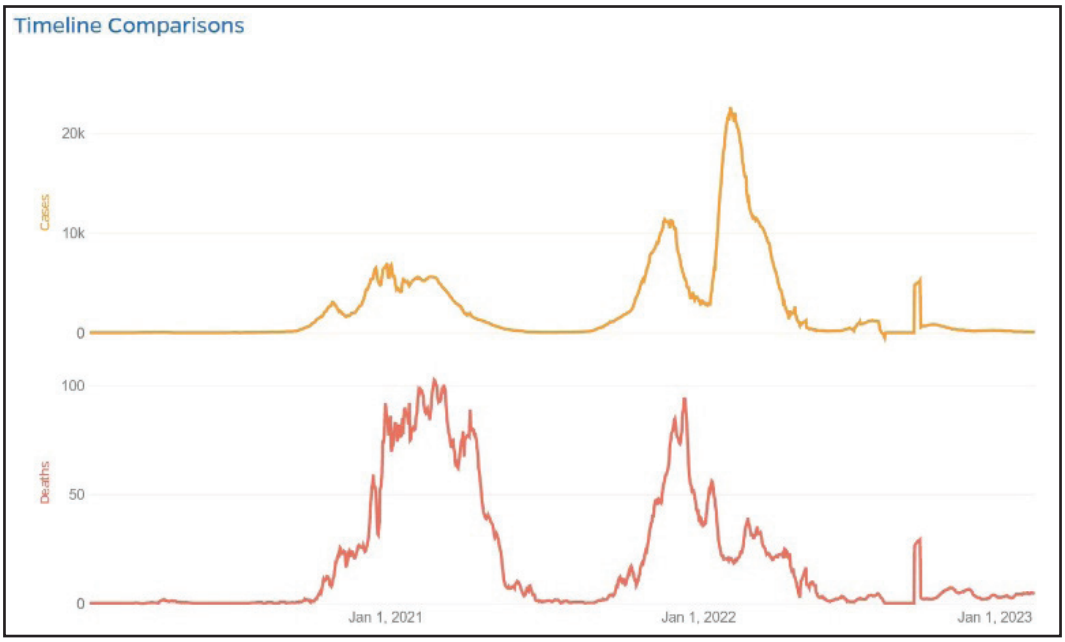
**Table 1** Doses of the COVID-19 vaccine in countries with the highest and lowest numbers, and the V4 countries

| Country | Doses | |
|---|---|---|
| | % | per 100 people |
| Cuba | 77 | 379 |
| Chile | 93 | 330 |
| Brunei | 99 | 296 |
| Vietnam | 89 | 275 |
| Malta | 94 | 274 |
| Cambodia | 89 | 274 |
| Taiwan | 87 | 272 |
| Portugal | 87 | 270 |
| Qatar | 99 | 268 |
| Peru | 87 | 267 |
| World | 66 | 172 |
| Czechia | 65 | 174 |
| Hungary | 64 | 171 |
| Poland | 90 | 152 |
| Slovakia | 47 | 106 |
| Haiti | 2 | 5 |
| Yemen | 3 | 4 |
| Burundi | 0.2 | 0.3 |

Note: Countries are listed according to the number of doses per 100 people in 2023, adapted from Holder (2023) (41).

Cintulová et al. (35) discuss the attitude of Slovak inhabitants to wearing face masks. In Germany, 16% of the population answered "definitely no" to the question of whether they would get vaccinated, and 19% in the USA (31). In our research, there were three possible answers to the question about vaccination: (i) I am vaccinated against the COVID-19 disease, (ii) I am not vaccinated against the COVID-19 disease, but I want to be vaccinated. (iii) I am not vaccinated with the vaccine against COVID-19 and I do not want to be vaccinated. Option (i) was selected by 70.5%, option (ii) by 4.2%, and option (iii) by 25.3%. Given the polarization between vaccination approval and rejection, we merged options (i) and (ii) as pro-vaccination. This indi-

**Figure 1** Time course of confirmed cases and deaths in Slovakia




Source: Adapted from Holder, 2023 [41]

**Table 2** Values of health, quality of life, and other variables in men and women

| Variables | Health | Course of the disease | Vaccination | Relationships before the pandemic | Trust | Relationships after the pandemic | Quality of life | Happiness |
|---|---|---|---|---|---|---|---|---|
| **Men** | ´8.00 | ´6.76 | yes/no | ´8.16 | ´5.13 | ´6.95 | ´6,89 | ´6.64 |
| **Women** | ´8.47 | ´6.12 | yes/no | ´7.97 | ´5.14 | ´6.86 | ´6.65 | ´6.53 |

Source: own research

**Table 3** Values of health, quality of life, and other variables in men and women according to their agreement or disagreement with vaccination

| Variables | | Health | Course of the disease | Vaccination | Relationships before the pandemic | Trust | Relationships after the pandemic | Quality of life | Happiness |
|---|---|---|---|---|---|---|---|---|---|
| **Men** | **Vaxxers** | ´8.28 | ´6,90 | Yes | ´8.31 | ´5.25 | ´7.27 | ´7.12 | ´6.87 |
| | **Anti-vaxxers** | ´7.25 | ´6.08 | No | ´7.75 | ´4.83 | ´6.08 | ´6.25 | ´6.00 |
| **Women** | **Vaxxers** | ´8.72 | ´5.95 | Yes | ´8.25 | ´5.30 | ´7.34 | ´6.95 | ´6.91 |
| | **Anti-vaxxers** | ´7.92 | ´6.50 | no | ´7.30 | ´4.81 | ´5.70 | ´5.97 | ´5.59 |

Source: own research

cates that 74.7% of respondents approve vaccination in Slovakia, and 25.3% reject it. In Slovakia, a fine of 331 euros may be imposed by the health authorities for refusing vaccination (43).

### Quality of Life

The concept of quality of life, along with related variables, such as well-being, happiness, and quality of place, is experiencing significant growth (44). This development is the result of several factors: (a) the reorientation of the American Psychological Association towards positive psychology, which occurred after the election of Martin Seligman as the president of this organization, (b) sustained interest in quality of life on the part of the World Health Organization and health professionals, which resulted in the formulation of Health Related Quality of Life, and (c) the publication of the Stiglitz report, which recommended replacing GDP as the universal measure of human development with quality of life indicators. Quality of life is a concept through which people in the current period of late modernity cognitively and emotionally evaluate their satisfaction life (45). The term 'quality of life' inherently raises the question: what constitutes quality of life? Subjective, self-reported assessments of quality of life, whether quantitative or qualitative, are widely used in public discourse and are valued by researchers because they offer valid insights into how people perceive their life in the current late modern period. In recent years, studies of subjective well-being have received considerable attention in both public and scientific debates. This growing interest stems from the fact that subjective well-being indicators provide reliable information about the quality of life of people and modern societies (6). Quality of life is synonymous with life satisfaction; its quantification reflects the degree of satisfaction with one's own life. Diener et al. (46) consider the strongest predictor of life satisfaction to be the fulfillment of material desires. However, this statement only applies to people with low income. In developed countries, an above-average quality of life prevails (values 6-10 on the Cantril scale of 0-10), commonly referred to as well-being. Researchers have studied the impact of vaccination on quality of life in different countries, including Romania, Bulgaria, Taiwan, and Poland (47-48). More recent studies focus on post-COVID quality of life (26).

### Measurement and results

Several methods have been developed to measure the impact of the pandemic on quality of life. Repišti et al. (50) developed a method called "The COV19 – Impact on Quality of Life (COV19-QoL)," which consists of six items presented on a 5-point Likert scale. The items cover key areas of quality of life with regard to mental health. The scale was administered to 1,346 participants from the general population in Croatia (non-clinical sample) and 201 patients with severe mental illness from four European countries (Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia), which constitute the clinical sample. The clinical sample was a part of the IMPULSE randomized controlled trial funded by the European Commission. Data on age and gender were collected for both samples, along with psychiatric diagnoses collected for the clinical sample. Another measurement used is the multidimensional HRQOL questionnaire, "The Oslo COVID QLQ-W61"©, to assess symptoms, functioning, and the quality of life of COVID-19 patients through 61 items (51). The paper uses a questionnaire that includes seven questions measured on a 0-10 scale and one question measured on a yes/no scale. The result is self-reported values of health, disease course, vaccination, relationships before the pandemic, trust, relationships after the pandemic, quality of life and happiness (Table 2). These values represent all individuals involved in the study, without distinguishing between supporters and opponents of vaccination.

In Table 3 and others, individuals approving vaccination are labeled as vaxxers, and those rejecting vaccination are labeled as anti-vaxxers.

## Discussion

This paper had two goals. The first was to explore whether the significant social dispute between supporters and opponents of vaccination, which is highly visible in public discourse, also manifested itself on a personal level—in

**Table 4** Correlations of health with other variables in male vaxxers

| Variables | Quality of life | health | Course of the disease | Relationships before the pandemic | Trust | Expected relationships | Happiness |
|---|---|---|---|---|---|---|---|
| **Quality of life** | 1 | | | | | | |
| **Health** | .05 | 1 | | | | | |
| **Course of the disease** | ′.38 | ′.03 | 1 | | | | |
| **Relationships before the pandemic** | ′.37 | ′.14 | ′-.27 | 1 | | | |
| **Trust** | ′.08 | ′.04 | ′-14 | ′.13 | 1 | | |
| **Expected relationships** | ′.41 | ′-.13 | ′-.35 | ′-19 | ′.16 | 1 | |
| **Happiness** | ′.80 | ′.08 | ′-.07 | ′.42 | ′.15 | ′.29 | 1 |

Source: own research

**Table 5** Correlations of health with other variables in male anti-vaxxers

| Variables | Quality of life | Health | Course of the disease | Relation-ships before the pandemic | Trust | Expected relationships | Happiness |
|---|---|---|---|---|---|---|---|
| **Quality of life** | 1 | | | | | | |
| **Health** | ′,11 | 1 | | | | | |
| **Course of the disease** | ′-.03 | ′-.12 | 1 | | | | |
| **Relationships before the pandemic** | ′.23 | ′.18 | ′.08 | 1 | | | |
| **Trust** | ′.23 | ′.09 | ′.22 | ′.03 | 1 | | |
| **Expected relationships** | ′.48 | ′-.04 | ′-.27 | ′-.04 | ′.18 | 1 | |
| **Happiness** | ′.79 | ′.14 | ′.24 | ′.30 | ′,27 | ′.35 | 1 |

Source: own research

terms of quality of life. Among men, the quality of life is higher for vaxxers (7.12) than for anti-vaxxers (6.25). Vaxxers also scored higher on other variables measured on the Cantril scale (0-10), with differences ranging from 0.42 (trust) to 1.19 (relationships after the pandemic). For women, the result is similar but less pronounced, with quality of life higher among vaxxers (6.95) than anti-vaxxers (5.97). The difference is that in the variable 'disease course,' a higher value (meaning a lighter course) was achieved by anti-vaxxers than by vaxxers. For all the other variables, vaxxers scored higher than anti-vaxxers, with differences ranging from 0.49 (trust) to 1.64 (relationships after the pandemic). The results reveal differences in the quality of life of vaxxers and anti-vaxxers, both men and women, in favor of vaxxers. Regarding the first goal, it can be concluded that the social conflict between supporters and opponents of vaccination is associated with a higher quality of life for supporters of vaccination, both for men and women. Vaxxers also scored higher on most other variables, with the exception of one for women. The second goal was to explore whether the same or different predictors influence the quality of life of supporters and opponents of vaccination. According to Petrovič and Maturkanič (52) and others results (53-68), a predictor is a variable that correlates with another variable. In our case with quality of life, it would have a correlation coefficient of 0.30 or higher. For male vaxxers, a very strong predictor variable is happiness (.80), and expectations of relationships (.41), course of disease (.38), and relationships before the pandemic (.37) are also significant predictors. The expected correlation between quality of life and health was not confirmed (69). The value of the Spearman rank correlation coefficient between quality of life and health is only .05, which, according to the wording of correlations, is interpreted as 'no correlation' (70). Happiness is also a very strong predictor among anti-vaxxers (.79), and of the other variables, only expected relationships is a predictor (.48). Among female vaxxers, the same predictors prevail. There is one very strong predictor, as with male vaxxers, and the predictors include happiness, relationships before the pandemic, the course of the disease, and expected relationships. The Spearman rank correlation coefficient values and their predictors are higher in women than in men. For anti-vaxxer women, these correlations are the strongest among all groups studied, with the correlation between quality of life and self-happiness approaching the threshold of a 'near perfect predictor' (52). Trust is a very strong predictor of quality of life (.74), while expectations of relationships (.66), relationships before the pandemic (.61), and the course of the disease (.50) are strong predictors. Regarding the second goal, it can be concluded that there are no significant differences between vaxxers and anti-vaxxers in either the number of predictors (ranging from 2 to 4) or in the value of the correlation between the predictors, as measured by the Spearman correlation coefficient. Only among anti-vaxxer women are the correlation values higher than for the other measurements.

## Conclusions

The respiratory disease caused by the SARS-CoV-2 virus, which emerged in China in December 2019, rapidly spread worldwide. As a result, the WHO declared it a pandemic in March 2020 and called it COVID-19. In addition to the high number of confirmed cases and deaths, the pandemic had a robust impact on healthcare, economies, social relationships, work, travel, culture, and sports. Even after it ends, symptoms of long COVID can persist for several months. In Slovakia, patients with long COVID reported a lower quality of life than control groups of healthy individuals (27). This paper focuses on a significant phenomenon brought about by the pandemic: the social conflict between supporters and opponents of vaccination. The central research question is whether this dispute affected the quality of life of both groups. The social conflict emerged after the first vaccines against COVID-19 were approved by the drug registration authorities at the beginning of 2021, with additional vaccines quickly introduced thereafter. Due to time constraints, the effects of these vaccines could not be verified using the standard procedures typically applied to conventional drugs. Governments and health authorities called on the population to be repeatedly vac-

**Table 6** Correlations of health with other variables in female vaxxers

| Variables | Quality of life | Health | Course of the disease | Relationships before the pandemic | Trust | Expected relationships | Happiness |
|---|---|---|---|---|---|---|---|
| **Quality of life** | 1 | | | | | | |
| **Health** | ′.20 | 1 | | | | | |
| **Course of the disease** | ′-.42 | ′-.18 | 1 | | | | |
| **Relationships before the pandemic** | ′.46 | ′.32 | ′-.12 | 1 | | | |
| **Trust** | ′.12 | ′.01 | ′-.05 | ′.17 | 1 | | |
| **Expected relationships** | ′.39 | ′.04 | ′-.51 | ′.16 | ′.04 | 1 | |
| **Happiness** | ′.89 | ′.21 | ′-.42 | ′.50 | ′.19 | ′.38 | 1 |

Source: own research

**Table 7** Correlations of health with other variables in female vaxxers

| Variables | Quality of life | Health | Course of the disease | Relationships before the pandemic | Trust | Expected relation-ships | Happiness |
|---|---|---|---|---|---|---|---|
| **Quality of life** | 1 | | | | | | |
| **Health** | .11 | 1 | | | | | |
| **Course of the disease** | ′.50 | ′-.14 | 1 | | | | |
| **Relationships before the pandemic** | .61 | .30 | ′-.36 | 1 | | | |
| **Trust** | .74 | .35 | ′-.84 | .53 | 1 | | |
| **Expected relationships** | .66 | .08 | ′-.77 | .33 | .83 | 1 | |
| **Happiness** | .90 | .06 | ′-.58 | .38 | .81 | .74 | 1 |

Source: own research

cinated with these vaccines, making possession of a vaccination certificate a condition for entering some facilities. There was strong public opposition to these measures among part of the population. We measured the attitude to vaccination among a group of university students in Slovakia and found that 25.3% of them refused to be vaccinated, which is higher than the 16% in Germany and 19% in the US. The quality of life of vaccination adherents was assessed on a scale of 0-10. Men who were vaccinated scored 7.12, and unvaccinated men 6.25. Vaccinated women scored 6.95, and unvaccinated women 5.59. Using Spearman's rank correlation coefficient, the correlation between the quality of life and selected variables was determined. The results indicate that both vaccinated and unvaccinated men and women have 2-4 significant predictors of quality of life with similar correlation values, except for unvaccinated women, who showed some differences. Overall, the correlations between predictors and quality of life do not differ significantly between vaccinated and unvaccinated groups of men and women.

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