

FACTORS INFLUENCING ATTITUDES TOWARD VACCINATION IN GENERAL AND AGAINST COVID-19 AMONG FAMILY MEDICINE PATIENTS WITH AND WITHOUT CHRONIC DISEASE IN CROATIA

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SUMMARY

Objectives: The aim of the study was to analyse the attitudes and decisions regarding vaccination in general and against COVID-19 among general practitioner (GP) patients in Croatia, and to identify influencing factors, with particular attention to chronic conditions and anxiety.

Methods: A total of 184 patients (stratified by sex and presence of chronic disease) from a GP's offices, aged 18–87 years (average 50.3 ± 1.3 years, 49.5% women) were included. Data were collected using a questionnaire.

Results: Attitudes toward vaccination in general did not differ between patients with and without chronic diseases and were not influenced by anxiety. Chronically ill patients were more likely than those without chronic disease to believe in the efficacy of the COVID-19 vaccine and to express fear of contracting SARS-CoV-2 ($p \leq 0.003$). Anxiety was associated with fear of infection ($p < 0.001$), but not with confidence in vaccine safety or efficacy. After controlling for sex, age, education, chronic illness, anxiety, and knowing someone infected and hospitalized with SARS-CoV-2, factors associated with the decision to be vaccinated against COVID-19 were absence of prior infection (OR = 3.9, 95% CI: 1.6–9.5, $p = 0.003$), history of influenza vaccination (OR = 3.8, 95% CI: 1.4–10.4, $p = 0.009$), and knowing someone who had died from COVID-19 (OR = 3.2, 95% CI: 1.1–9.7, $p = 0.037$).

Conclusion: The decision to vaccinate against COVID-19 was associated with absence of prior infection, knowing someone who died from the disease, and prior influenza vaccination, but not with chronic illness, anxiety, or socio-demographic factors.

Key words: COVID disease, vaccination, chronic diseases, anxiety, family medicine

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INTRODUCTION

Vaccination is widely recognized as one of the greatest achievements of modern civilization, protecting communities from serious and life-threatening infectious diseases (1). However, mandatory vaccination may restrict individual autonomy in health-related decisions-making. Vaccine hesitancy can be influenced by factors such as health literacy, age, socioeconomic status, and parental status (2). The recent COVID-19 pandemic has brought vaccine scepticism and the anti-vaccination movement into sharper focus, despite the clear threat posed by the virus (3).

Although all age groups are susceptible to contracting COVID-19 and experiencing severe outcomes, individuals aged 60 and older, as well as those with comorbidities, such as cardiovascular diseases, cerebrovascular diseases, chronic kidney disease, diabetes, chronic lung disease, obesity, smoking, cancer, and

history of transplantation, are at higher risk for severe clinical outcomes (4–7). Consequently, the pandemic posed a significant professional challenge for general practitioners (GPs), as patients with chronic conditions required special attention due to their increased risk of complications from COVID-19 and were prioritized for vaccination (5). Furthermore, males are at a higher risk of developing severe clinical outcomes and death from COVID-19 (8).

The pandemic has also had substantial impact on mental health (9). Evidence from previous SARS epidemics indicates an increase in mental health problems such as depression, anxiety, panic attacks, psychomotor agitation, and suicide (9–11). Individuals with anxiety disorders often have lower adaptive capacity and resilience, making them more vulnerable to stress. The additional strain of the pandemic is therefore likely to exacerbate their psychological distress. Furthermore, SARS-CoV-2, which

can affect the central nervous system, may cause long-term neurological and cognitive impairments, further compromising mental health (12–15).

Throughout the COVID-19 pandemic, GPs played a crucial role in detecting, preventing and treating the disease, as well as in vaccinating and counselling patients – efforts that significantly contributed to reduced mortality (16, 17). In their work to protect the general population, particularly more vulnerable groups, GPs frequently encountered patients' concerns and doubts about vaccination.

This study explored the extent to which chronic illness, anxiety, socio-demographic factors, prior experiences with the disease and flu vaccination influence GP patients' decisions to receive vaccine, both in general and specifically against COVID-19. We hypothesized that the decision to vaccinate would be associated with older age, being woman, higher education, chronic illness, anxiety, and prior experience with the disease.

MATERIALS AND METHODS

This cross-sectional study employed a stratified sample. A total of 188 respondents were initially included in two strata: presence of chronic disease and sex. Each of the four resulting groups, male patients with chronic disease, male patients without chronic disease, female patients with chronic disease, and females without chronic disease, contained an equal number of respondents ($n = 47$). Four questionnaires contained missing data, leaving 184 participants for the analysis. The survey was conducted over two months (June–July 2022). Eligible participants were patients over 18 years of age attending a family medicine clinic for examination. Five clinics in the wider Rijeka area (city and suburbs) participated.

The study used a previously validated questionnaire on attitudes towards vaccination (18), adapted for the purposes of this research. The Generalized Anxiety Disorder (GAD-7) self-administered questionnaire was used to assess the severity of generalized anxiety (19). It consists of seven questions, each rated on a 4-point Likert scale (0–3), with higher scores indicating more severe symptoms. Scores of 0–4 indicate minimal anxiety, 5–9 mild anxiety, 10–14 moderate anxiety, and scores above 15 indicate severe anxiety. The diagnosis was not based on whether participants were using anxiolytic medication. Subjects completed the informed consent form and questionnaires in the clinic waiting room and submitted them upon completion. The study complies with all ethical recommendations including data protection.

The Kolmogorov-Smirnov test and the Shapiro-Wilk test were used to assess the normality of the data distribution. Parametric tests (analysis of variance with Student-Newman-Keuls post-hoc test, t-test, and Pearson correlation) were applied to normally distributed data, while non-parametric tests (Kruskal-Wallis, Mann-Whitney and Spearman correlation) were used otherwise. When the Mann-Whitney test served as a post-hoc test following Kruskal-Wallis test, the Bonferroni correction of the p-value for multiple comparisons was used. The χ^2 test and the Fischer exact test were used to compare frequencies. The z-test for proportions with Bonferroni correction was applied as a post-hoc test after the χ^2 test. The effect size for the t-test was calculated using the formula $r = \sqrt{(t^2/(t^2+df))}$; for the Mann-Whitney test, the formula

$r = Z/\sqrt{N}$ was applied; Cramer's V was used for the Fischer's test; and for the χ^2 Kendall's τ_b . Effect sizes were interpreted according to Cohen's criteria: small (0.1–0.3), moderate (0.3–0.5), and large (> 0.5). Correlations were classified as very strong (> 0.9), strong (0.7–0.9), moderate (0.5–0.7), and weak (0.25–0.5); correlations below 0.25 were not interpreted, even if $p < 0.05$. Linear and logistic regression analyses were used to identify predictors of vaccination characteristics, with odds ratios (OR) presented alongside 95% confidence intervals (CI). Data analysis was performed using the commercial software IBM SPSS v.22.0 (IBM Corp., Armonk, USA).

RESULTS

Characteristics of the Sample

A total of 184 participants aged 18–87 years (average 50.3 ± 1.3 years, 49.5% women) were analysed. Regarding education level, 2% of participants had completed eight years of education, 53% had completed twelve years, and 45% had attained a higher level of education. There were no significant differences in age and sex between education levels. There were also no significant differences in age between the sexes. In total 93 (50.5%) participants were chronically ill. They were older than respondents without chronic disease (61.5 ± 16.4 vs. 38.8 ± 11.9), with a large effect size observed ($p < 0.001$, $r = -0.615$).

Relationship between Attitudes towards Vaccination and Chronic Diseases

Chronically ill patients did not have a more positive general attitude toward vaccination than those without chronic disease. Overall, 5% of respondents were against vaccinations, 36% favoured only mandatory vaccinations, and 59% supported both mandatory and voluntary vaccinations. Patients with chronic illnesses were significantly more likely to be vaccinated against influenza than non-chronically ill patients ($p < 0.001$, $V = -0.349$). Compared to non-chronically ill patients, chronically ill patients were more likely to be regularly vaccinated (32% vs. 6%) and less likely to never be vaccinated (45% vs. 70%). There were no significant differences in willingness to receive the COVID-19 vaccine between chronically ill patients and non-chronically ill patients, although chronically ill patients were more likely to have been vaccinated than patients without chronic disease (86% vs. 75%). Chronically ill patients were also more likely to believe in the efficacy of the COVID-19 vaccine than patients without chronic disease ($p = 0.003$, $r = 0.216$) and expressed greater fear of contracting the SARS-CoV-2 ($p < 0.001$, $r = 0.359$) (Fig. 1).

Logistic regression models were used to assess the predictive value of chronic illness for belief in the efficacy of the SARS-CoV-2 vaccine and fear of infection with the virus, controlling for age, sex and education level. Attitude were dichotomized using a cut-off value of 3 ('I agree with the statement'), age was dichotomized at 50 years, and education was dichotomized at a minimum of twelve years of schooling.

Fear of SARS-CoV-2 infection was associated with chronic disease (6.4-fold higher odds, 95% CI: 2.4–17.0, $p < 0.001$) and female gender (2.8-fold higher odds, 95% CI: 1.3–5.9, $p = 0.009$)

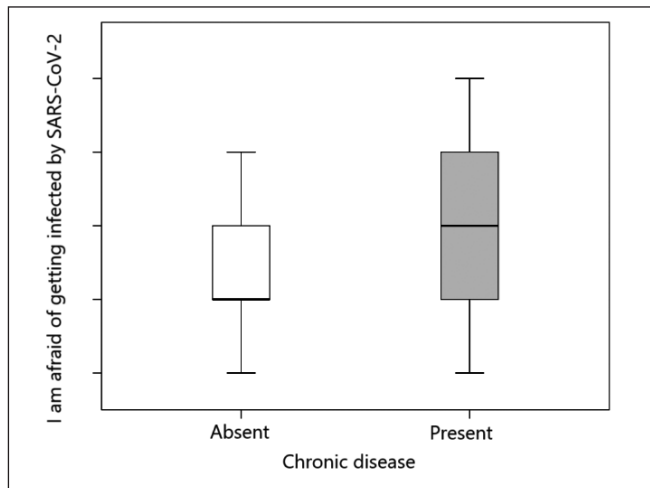


Fig. 1. Comparison of fear of getting infected by SARS-CoV-2 between patients with and without chronic disease.

The scale presents statement 'I am very afraid of contracting the SARS-CoV-2 virus' rated on a Likert scale from 0 (completely disagree) to 4 (completely agree).

(Table 1), after controlling for age and education level. Logistic regression model correctly classified 78% of cases (89% with low and 41% with high fear of SARS-CoV-2 infection) with Nagelkerke's pseudo $R^2 = 0.255$, $p < 0.001$.

Regarding belief in vaccine efficacy, after controlling for education level and chronicity, older age was associated with 2.5-fold higher odds of believing in the efficacy of the vaccine (95% CI: 1.2–5.4, $p = 0.019$) and being man was associated with 2.2-fold higher odds (95% CI: 1.2–4.0, $p = 0.017$) (Table 2). Logistic

regression model correctly classified 63% of participants (52% with low belief and 71% with high belief in vaccine efficacy with Nagelkerke's pseudo $R^2 = 0.116$, $p = 0.002$).

A total of 80% of respondents had already been vaccinated against the SARS-CoV-2. The most frequently reported reasons for vaccination were feeling safer and enjoying greater freedom, including access to public institutions (90%), trust in the medical profession and science (89%), contributing to the epidemic control (82%), and a recommendation from their family doctor (38%). There were no significant differences observed between patients with and without chronic conditions.

Relationship between Attitudes toward Vaccination and Demographic Characteristics

No significant differences were observed between women and men regarding attitudes towards vaccination in general, frequency of influenza vaccination, or COVID-19 vaccination. However, men were more likely to believe that the COVID-19 vaccine is safe and effective and were less likely to wait for information about its safety than women ($p \leq 0.018$, $r = -0.175/-0.203$). Men were also less likely to fear infection, report negative vaccination experiences, or consider SARS-CoV-2 as a population control attempt ($p \leq 0.036$, $r = 0.155/-0.197$). No gender differences were found in the reasons for vaccination.

In terms of age, those over 50 were more likely to favour vaccination than those under 49 (Fig. 2). Older people were significantly more likely to be vaccinated against influenza (34% vs. 7%, $p < 0.001$, $rb = 0.300$) (Fig. 3) and COVID-19 (88% vs. 74%, $p = 0.025$, $V = 0.172$) (Fig. 4). Confidence in the effectiveness of

Table 1. Logistic regression model of predictors of fear of SARS-CoV-2 infection

Predictors	n (%)	p-value	Crude OR (95% CI)	Adjusted OR (95% CI)
Education ≥ 13 years finished	83 (45.1)	0.712	0.6 (0.3–1.3)	0.9 (0.4–1.9)
Reference group: ≤ 12 years	101 (54.9)			
Chronic disease present	93 (50.5)	<0.001	7.2 (3.1–16.5)	6.4 (2.4–17.0)
Reference group: chronic disease absent	91 (49.5)			
Sex female	91 (49.5)	0.009	2.4 (1.2–4.7)	2.8 (1.3–5.9)
Reference group: male	93 (50.5)			
Age ≥ 50 years	83 (45.1)	0.504	3.4 (1.7–6.9)	1.3 (0.6–3.2)
Reference group: ≤ 49 years	101 (54.9)			

OR – odds ratio; CI – confidence interval

Table 2. Logistic regression model of predictors of belief in SARS-CoV-2 vaccine efficacy

Predictors	n (%)	p-value	Crude OR (95% CI)	Adjusted OR (95% CI)
Education ≥ 13 years finished	83 (45.1)	0.106	2.5 (1.4–4.5)	1.7 (0.9–3.3)
Reference group: ≤ 12 years	101 (54.9)			
Chronic disease present	93 (50.5)	0.534	1.9 (1.0–3.4)	1.3 (0.6–2.7)
Reference group: chronic disease absent	91 (49.5)			
Sex male	93 (50.5)	0.017	1.9 (1.0–3.4)	2.2 (1.2–4.0)
Reference group: female	91 (49.5)			
Age ≥ 50 years	83 (45.1)	0.019	2.5 (1.3–4.5)	2.5 (1.2–5.4)
Reference group: ≤ 49 years	101 (54.9)			

OR – odds ratio; CI – confidence interval

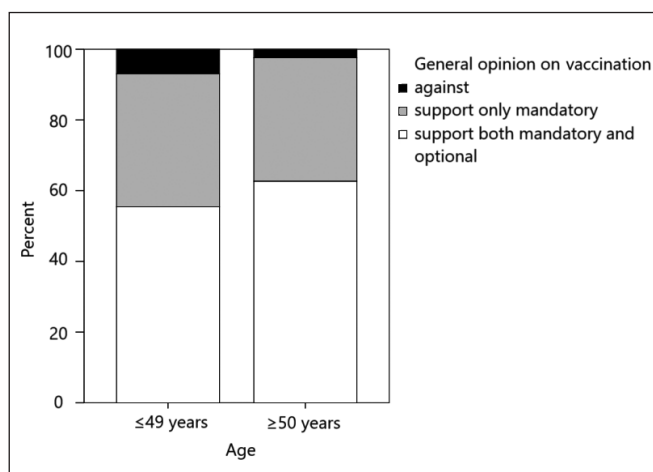


Fig. 2. Relationship between attitude about vaccination in general and age.

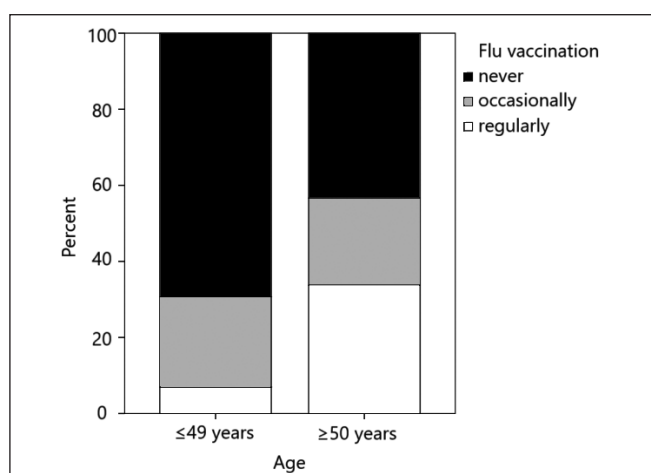


Fig. 3. Relationship between attitude towards flu vaccination and age.

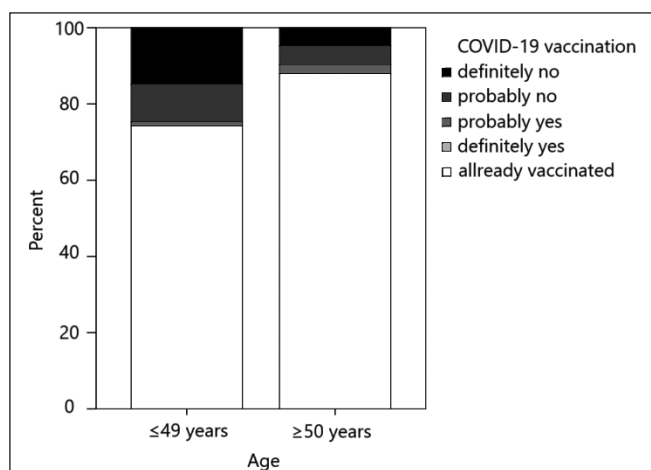


Fig. 4. Relationship between attitude towards vaccination against COVID-19 and age.

the COVID-19 vaccine and fear of infection increased linearly with age ($r = 0.309-0.311$, $p < 0.001$), but the association was weak. Responses to the statement, 'I believe that the COVID-19 vaccine is effective' and 'I am very afraid of contracting the

SARS-CoV-2 virus' rated on a Likert scale from 0 (completely disagree) to 4 (completely agree), were analysed in relation to age (in years) using Spearman's correlation. Older people were also more likely to be encouraged to vaccinate by their GP than younger people (49% vs. 27%, $p = 0.006$, $V = 0.233$).

Education level did not significantly affect attitudes toward vaccination in general or vaccination frequency although there was a tendency for people with higher education to be more supportive of vaccination and to receive influenza and COVID-19 vaccines. While attitudes toward COVID-19 vaccination did not differ significantly by education, the more educated were more likely to believe in vaccine safety and efficacy and less likely to perceive it as an attempt to control the population. There were no differences in the reasons for COVID-19 vaccination based on education.

Anxiety and Vaccination

Most of respondents were not anxious (77%), 16% reported mild anxiety, 3% moderate, and 4% severe anxiety. Anxiety levels were not associated with attitudes towards vaccination in general, influenza vaccination or COVID-19 vaccination. Women and individuals with higher education reported higher anxiety than men and those with lower education ($p \leq 0.031$, $r = -0.159/-0.226$), but anxiety was not related to age. Anxiety was more common among chronically ill patients (31%) than non-chronic respondents (14%, $p = 0.008$, $V = 0.201$), and its severity was higher in chronically ill patients than in patients without chronic disease (median 3 vs. 1 scalar point, $p = 0.001$, $r = -0.236$), although both medians fall within the minimal anxiety.

Anxiety was significantly associated only with fear of SARS-CoV infection ($r = 0.256$, $p < 0.001$) and was not associated to confidence in vaccine safety and efficacy, and negative vaccination experiences or beliefs that vaccination is an attempt to control the population. It also did not influence the reasons for vaccination. When dichotomized using a GAP score cut-off of ≥ 5 (no anxiety vs. mild to severe anxiety), there were no differences in vaccination uptake between those with and without anxiety.

Relationship between Previous COVID-19 Experience and Attitudes towards Vaccination

Opinions on vaccination were generally influenced by a prior COVID-19 infection: all previously infected individuals were against vaccination, whereas none of the non-infected individuals were opposed ($p = 0.004$, $V = 0.247$). Prior COVID-19 infection did not affect influenza vaccinations. Individuals who had not been infected were more likely to be vaccinated against COVID-19 than those who had been infected (91% vs. 70%, $p < 0.001$, $V = 0.263$) (Fig. 5). Similarly, people who knew someone who died from COVID-19 were more likely to be vaccinated than those who did not (90% vs. 74%, $p = 0.012$, $V = 0.194$) (Fig. 6).

Those previously infected were less likely to believe that the SARS-CoV-2 vaccine is safe and effective, less likely to fear infection and less likely to view COVID-19 as a flu-like illness ($p \leq 0.025$, $r = -0.165/-0.263$). In contrast, individuals who know someone infected were more likely to believe in the vaccine safety and less likely to consider COVID as dangerous as the flu and an attempt to control the population ($p \leq 0.036$, $r = -0.155/-0.265$).

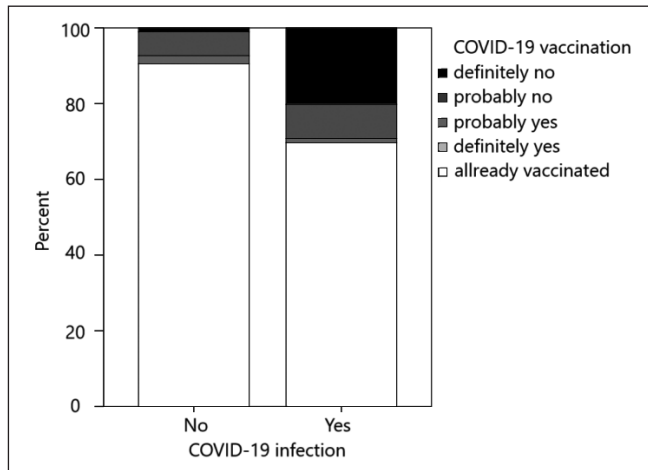


Fig. 5. Relationship between previous infection with COVID-19 and vaccination.

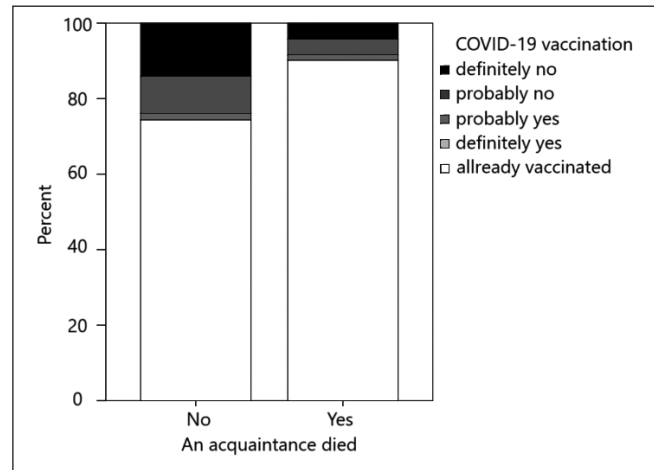


Fig. 6. Relationship between the death of an acquaintance from COVID-19 and attitudes towards vaccination.

Hospitalization or the death of an acquaintance did not influence attitudes. Previous COVID-19 experience was not associated with reasons for vaccination or with anxiety.

Predictors of Decision to Be Vaccinated against COVID-19

Logistic regression was used to analyse predictors of the decision to vaccinate against COVID-19, including age, sex, education, chronic illness, anxiety, and previous experiences (own infection, infection of a friend, hospitalization, death from

COVID-19, and influenza vaccination). After controlling for sex, age, education, chronicity, anxiety, and knowing someone who had been infected and hospitalized with SARS-CoV-2, the significant predictors of vaccination were absence of prior SARS-CoV-2 infection, knowing someone who had died from COVID-19, and prior influenza vaccination. Specifically, the absence of prior infection was associated with 3.9-fold higher odds of vaccination (95% CI: 1.6–9.5, $p=0.003$), prior influenza vaccination with 3.8-fold higher odds (95% CI: 1.4–10.4, $p=0.009$) and knowing someone who had died from COVID-19 with 3.2-fold higher odds (95% CI: 1.1–9.7, $p=0.037$) (Table 3). The logistic

Table 3. Results of logistic regression predicting vaccination decision

Predictors	n (%)	p-value	Crude OR (95% CI)	Adjusted OR (95% CI)
Education ≥ 13 years finished	83 (45.1)	0.420	1.6 (0.8–3.4)	1.4 (0.6–3.5)
Reference group: ≤ 12 years	101 (54.9)			
Chronic disease present	93 (50.5)	0.745	2.1 (1.0–4.4)	1.2 (0.4–3.5)
Reference group: chronic disease absent	91 (49.5)			
Sex female	91 (49.5)	0.442	1.3 (0.6–2.7)	1.4 (0.6–3.3)
Reference group: male	93 (50.5)			
Age ≥ 50 years	83 (45.1)	0.409	2.5 (1.1–5.6)	1.6 (0.5–4.9)
Reference group: ≤ 49 years	101 (54.9)			
Previous infection with SARS-CoV-2 – no	95 (51.6)	0.003	4.2 (1.8–9.5)	3.9 (1.6–9.5)
Reference group: yes	89 (48.4)			
Knowledge of a person infected with SARS-CoV-2 – yes	151 (82.1)	0.153	2.1 (0.9–4.9)	2.1 (0.8–6.0)
Reference group: no	33 (17.9)			
Knowledge of a person who has been hospitalised for SARS-CoV-2 – yes	97 (52.7)	0.873	1.5 (0.7–3.1)	0.9 (0.4–2.4)
Reference group: no	87 (47.3)			
Knowledge of a person who has died from a SARS-CoV-2 infection – yes	71 (38.6)	0.037	3.1 (1.3–7.7)	3.2 (1.1–9.7)
Reference group: no	113 (61.4)			
Anxiety mild to severe (≥ 5)	42 (22.8)	0.927	1.3 (0.5–3.2)	1.0 (0.3–2.8)
Reference group: none or minimal (≤ 4)	142 (77.2)			
Flu vaccinated – yes	78 (42.4)	0.009	4.7 (1.9–12.1)	3.8 (1.4–10.4)
Reference group: no	106 (57.6)			

0 – not vaccinated, 1 – vaccinated; OR – odds ratio; CI – confidence interval

regression model correctly classified 85% of participants (97% of vaccinated and 33% of unvaccinated with Nagelkerke's pseudo $R^2 = 0.291$, $p < 0.001$).

In terms of absolute vaccination rates, 91% of previously uninfected individuals versus 70% previously infected individuals were vaccinated ($p < 0.001$, $V = 0.263$), 90% of those whose acquaintance had died versus 74% of those who had not ($p = 0.012$, $V = 0.194$), and 92% of those regularly vaccinated against influenza versus 72% of those who were not ($p < 0.001$, $V = 0.257$).

DISCUSSION

This study shows that chronic disease and anxiety are associated with greater fear of contracting the SARS-CoV-2 virus but do not significantly influence the decision to be vaccinated.

Patients with chronic illness in the GP practice were significantly more likely to receive the influenza vaccine than those without chronic conditions, a finding confirmed in this study, and they were also more likely to be vaccinated against COVID-19. However, attitudes towards vaccination in general as well as preferences for COVID-19 vaccination did not differ between patients with and without chronic illness.

Patients with chronic conditions reported greater fear of contracting SARS-CoV-2 and had greater confidence in the vaccine's effectiveness. This likely reflects that individuals with chronic illnesses are more attentive to their health and recognize that their condition could be complicated by an additional illness, such as COVID-19. Numerous studies have shown that people with comorbidities, such as hypertension, diabetes, chronic obstructive pulmonary disease, heart failure, coronary artery disease, cerebrovascular disease, hyperlipidaemia, chronic liver disease, chronic kidney disease, and cancer, are at higher risk of severe COVID-19 outcomes, including fatal complications (4, 5, 20). One study also identified factors influencing chronically ill patients' decisions to vaccinate, included working in health care, knowing someone who had died from COVID-19, having a better understanding of the disease, believing in the vaccine's effectiveness, perceiving a higher risk of infection, and recognizing the benefits of vaccination (4).

Notably, 80% of participants in this study were vaccinated against the SARS-CoV-2, which may reflect the context in which the study was conducted. Participants were drawn from specific group – patients attending a GP practice – rather than from the general population. Consequently, relatively healthier individuals, who tend to visit their GP less frequently, were underrepresented in the study and may have had lower vaccination rates. The main reasons for vaccination were feeling safer and living more freely, trust in the medical profession and science, and contributing to epidemic control. GP recommendations were infrequent. This pattern was consistent across both chronically ill and non-chronically ill patients, suggesting that the GP did not play a central role in motivating vaccination; rather, patients appeared to make decisions independently, drawing on widely available information since the start of the COVID-19 pandemic, with GP advice primarily provided when solicited.

Demographic analysis indicated that age was significantly associated with vaccination uptake. Individuals over 50 were nearly three times more likely to be vaccinated than younger

participants, reflecting heightened concerns about disease severity and perceived vulnerability – patterns also documented in previous studies (21, 22). Additionally, participants with higher levels of education were more likely to vaccinate, a trend similarly observed in two Australian studies (23, 24).

In our study, no significant differences in vaccination rates were observed between women and men, although men expressed greater confidence in the safety and effectiveness of the COVID-19 vaccine. Therefore, our hypothesis that men would demonstrate more negative attitudes towards vaccination was not supported. Compared with women, men reported being less fearful of contracting the coronavirus, experienced fewer adverse effects following vaccination, and were less likely to perceive vaccination as a form of population control. These more favourable attitudes toward vaccination among men are consistent with findings in other studies (18, 23, 25–27). Furthermore, consistent with our results, one study reported that men over the age of 65, individuals with higher levels of education, and patients with chronic illnesses were more likely to vaccinate, whereas women, younger individuals, and those with lower education levels were less likely to do so (28).

Our results suggest that GPs have a greater influence on vaccination uptake among older patients compared to younger patients. This may be attributed to the educational role that GPs play in addressing vaccine-related questions as well as the trust patients place in their long-standing relationship with their physicians. In this study, anxiety levels were not associated with attitudes toward vaccination in general, or specifically with attitudes toward influenza and COVID-19 vaccines. Similarly, anxiety was not linked to prior experiences with SARS-CoV-2, such as personal infection, infections among acquaintances, hospitalizations, or COVID-19-related deaths. These findings may be explained by the timing of the study, which was conducted in June–July 2022, when greater knowledge about COVID-19, access to treatments for severe cases, and booster vaccinations were already available. As information about the disease increased, uncertainty and fear of the unknown were likely reduced, particularly in relation to COVID-19.

We initially hypothesized that individuals with less direct experience of the disease would hold more negative attitudes toward vaccination. However, our results showed that those who had not been previously infected were more likely to receive the COVID-19 vaccine compared with those who had recovered from the infection. This finding is understandable, as recovery from the disease confers a degree of immunity, and guidelines at the time recommended waiting at least six months post-infection before vaccination. Consistent with previous studies, we also found that individuals who knew someone who had died from COVID-19 were more likely to be vaccinated than those who did not (18). By contrast, we did not identify a relationship between vaccination decision and knowing someone who had been infected or hospitalized, which differs from findings reported in other studies (4).

Among our respondents, the decision to receive the COVID-19 vaccine, as well as broader attitudes toward vaccination, confidence in vaccine safety and effectiveness, and rejection of the notion that vaccination serves as a means of population control, was more strongly associated with trust in political authorities than with trust in healthcare professionals. This pattern suggests that confidence in health care may have been weakened potentially

due to insufficient training on how to effectively communicate vaccine-related information, as well as a limited time available for patient consultations (28).

A strength of this study lies in its control of several predictors. However, limitations include its focus on a single geographic region and the non-random selection of clinics. Future research would benefit from examining vaccination attitudes on a national scale, which could provide deeper insight into the dynamics of communication about vaccination among health institutions, the media, healthcare providers, and the general public.

CONCLUSION

The decision to vaccinate against COVID-19 was associated with absence of prior infection, knowing someone who died from the disease, and prior influenza vaccination, but not with chronic illness, anxiety, or socio-demographic factors.

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Conflicts of Interest

None declared

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