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COVID-19 vaccination intention at the beginning of COVID-19 pandemic in Slovenia

Namera cepljenja proti covidu-19 ob začetku pandemije covida-19 v Sloveniji

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Abstract

Background: With the successful development and introduction of vaccines to protect against COVID-19 disease, the pandemic is expected to end. The success of a vaccination programme depends on the uptake rates in the Slovenian population and especially among healthcare workers (HCWs), who are at higher risk of infection. Recently, several studies have examined the readiness of different population groups worldwide to be vaccinated. This study compares COVID-19 vaccination intentions between lay people and HCWs, and relationships between socio-demographic characteristics, attitudes and beliefs about COVID-19 vaccination, and vaccination intentions reported in the early stages of epidemics.

Methods: A cross-sectional study based on an online survey was performed in Slovenia between 13 and 14 March 2020, when the epidemic was officially announced in the country. Data from 2,494 eligible respondents were analysed.

Results: The study has shown that 33.2% of all respondents expressed the intention to get vaccinated against COVID-19 disease. This intention was expressed slightly more frequently among HCWs (38.9%) than among lay respondents (30.3%). Men compared to women, older and younger HCWs compared to middle-aged adults, and university graduates compared to HCWs with lower levels of education were more likely to get vaccinated against the disease. More HCWs than lay respondents believed that the COVID-19 vaccine would be safe and effective, and they were also more in favour to support vaccination of high-risk groups than mandatory vaccination of the general population.

Conclusion: It is critical to communicate the importance of vaccination against COVID-19 appropriately and on a sound scientific basis through various health education programmes and the media, as only one-third of respondents and less than a half of HCWs indicated that they would be willing to get vaccinated once a vaccine is available.

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Izvleček

Izhodišča: Za obvladovanje pandemije covida-19 je pomemben uspešen razvoj cepiv in izvajanje cepljenja. Uspešnost programov cepljenja je v veliki meri odvisna od tega, kako sprejema cepljenje prebivalstvo in zlasti zdravstveni delavci, pri katerih je tveganje za okužbo večje. V času pandemije je več študij v različnih državah proučevalo pripravljenost različnih skupin prebivalstva za cepljenje. V naši raziskavi smo primerjali namero za cepljenje proti covidu-19 med splošno populacijo in zdravstvenimi delavci v zgodnji fazi epidemije ter ugotavljali, kako je namera, da se bodo cepili, povezana z njihovimi socialno-demografskimi značilnostmi, stališči in prepričanji o cepljenju proti covidu-19.

Metode: Raziskava je bila izvedena v Sloveniji s spletnim anketiranjem v obdobju med 13. in 14. marcem 2020, ko je bila v državi uradno razglašena epidemija. V analizo smo zajeli 2.494 respondentov.

Rezultati: Raziskava je pokazala, da je 33,2 % vseh anketiranih izrazilo namero za cepljenje proti bolezni covid-19. Namero za cepljenje je izrazil večji delež zdravstvenih delavcev (38,9 %) kot t.i. laikov (30,3 %). Namero za cepljenje so v večjem deležu izrazili moški kot ženske, med zdravstvenimi delavci pa starejši in mlajši v primerjavi s srednjo generacijo, pa tudi univerzitetno izobraženi v večjem deležu kot tisti z nižjo izobrazbo. Zdravstveni delavci so v večjem deležu menili, da bo cepivo proti covidu-19 učinkovito in varno. Zdravstveni delavci so bili bolj naklonjeni, da se cepijo rizične skupine, kot pa da bi bilo obvezno cepljenje splošne populacije.

Zaključek: Glede na ugotovitev, da je komaj tretjina vseh respondentov in manj kot polovica zdravstvenih delavcev izrazila namero, da so se pripravljeni cepiti takoj, ko bo cepivo na voljo, pa izhaja, kako pomembno je načrtovati in izvajati ustrezne programe zdravstvene vzgoje in informirati o cepljenju proti covidu-19 na osnovi strokovnih dejstev, ki izhajajo iz znanstvenih spoznanj.

1 Introduction

Since its outbreak in China in December 2019, COVID -19 disease has spread so rapidly that the World Health Organization (WHO) declared a global pandemic on March 11, 2020 (1). In addition to research on prevention, diagnosis and treatment, the successful development and introduction of vaccines against COVID-19 disease will be important to reach the pandemic endpoint. On top of the fact that a COVID-19 vaccine must be safe, elicit a good immune response, and be widely available, the success of a vaccination programme depends on uptake rates in the general population and particularly among health professionals who are at higher risk of infection. Previous research in Slovenia has shown that vaccine confidence is relatively low and growing vaccine hesitancy is influenced by internet information sources (2,3). Trust in health professionals is important factor for vaccination acceptance in general population, e.g. mothers who trusted paediatrician were more likely to be vaccine confident (3). Also physicians' decision to be vaccinated against seasonal influenza is conditioned by trusting in vaccination or professional recommendations regarding vaccination and different attitudes regarding vaccination and vaccine-preventable diseases influence (4).To ensure high levels of vaccination coverage, mandatory vaccination policy is an important factor in Slovenia (5). It is important to identify the intentions of the general population and health professionals in order to prepare and develop effective strategies to maximize uptake once a COVID-19 vaccine is available.

Up to date, several studies have investigated factors related to the intention to be vaccinated against COVID-19 in the population (6-12). A global study among 19 countries shows that 71.5% reported they would be very or somewhat likely to take a COVID-19 vaccine. Differences in acceptance across countries ranged from almost 9 in 10 (China) to fewer than 6 in 10 (Russia). Older people were more likely to accept the vaccine. Gender differences were small; men were slightly less likely to respond positively than women (11). According to the US study, 67% of people would accept a COVID-19 vaccine if it was recommended to them. Males (72%) compared to females, older adults (≥ 55 years; 78%) compared to younger adults, and college and/or graduate degree holders (75%) compared to people with less than a college degree were more likely to accept the vaccine (10). A European survey (D, F, G, I, P NL, I, UK) on willingness to be vaccinated against COVID 19 has shown that 73.9% participants stated that they would be willing to get vaccinated against COVID-19 if a vaccine would be available. A significantly higher proportion of men were willing to get vaccinated (77.94%) than women (70.15%). The willingness to be vaccinated is the highest among those

above the age of 55 (12). Southeast Asian study revealed that acceptance of a COVID-19 vaccine is highly influenced by the perception of vaccine effectiveness (8). British study on different factors associated with vaccination acceptability found that 64% of participants reported being likely to be vaccinated against COVID-19. Personal and clinical characteristics, previous influenza vaccination, general vaccination beliefs, and beliefs and attitudes about COVID-19 and a COVID-19 vaccination explained 77% variance in vaccination intention (6). Intention to be vaccinated was associated with more positive general COVID-19 vaccination beliefs and attitudes, weaker beliefs that the vaccination would cause side effects or be unsafe, greater perceived risk of COVID-19 to others but not oneself, older age, and having been vaccinated for influenza last winter (2019/20) (7).

Apart from the fact that the risk of being infected by COVID-19 is higher in HCWs than in the general population (13-14), HCWs are also crucial to perform adequate health education of general population to understand and accept vaccination. A Southeast Asian study found that the acceptance of a vaccine against COVID-19 is higher among health care workers than in the lay population, which is based on a higher perceived risk of COVID-19 infection (8). A Chinese study found that there is a higher tolerance for future vaccinations in HCWs than in the general population. 76.4% of HCWs (compared to 72.5% in the general population) showed their willingness to be vaccinated. In contrast, for the lay population, vaccine safety and decisions on social contacts were the most important predictors (15). Since HCWs are the key information sources and the strongest influencing factors in vaccination decisions by people (16-17), it is vital to understand how the main socio-demographic factors and opinion are associated with the vaccination intention.

The aim of this study was to assess the COVID-19 vaccination intention of the general population and HCWs, and the relations between socio-demographic characteristics, attitudes and beliefs about COVID-19 vaccination and vaccination intention.

2 Methods

The research work was based on a survey in which the data were collected with the voluntary participation of anonymous participants. The online survey was distributed using snowball sampling which is in line with previous similar studies (18-19). Target groups were health professionals (HCWs) and lay persons. The initial group of respondents were contacted via professional (HCWs) and personal contacts (laics) of project members and the link to the survey was disseminated further via social network Facebook. Participants were asked to complete a self-administrated, structured electronic questionnaire. The survey was active for 24 hours from 13 March at 2:20 pm, to 14 March at 2:20 pm.

The survey was accessed by 18,760 individuals, 12,305 of which responded to it, with 8,023 responses being appropriate for further analysis, and 7,764 completely filled out the questionnaire. There were 87.2% female and 12.7% male respondents. Their age ranged from 13 to 83 years (average 38.2), with 4.8% aged 65 years or more. As many as 42.9% of the respondents completed secondary school education, 53.3% had a graduate degree, and 4.6% a postgraduate degree; 14% of respondents belonged to healthcare sector.

To measure vaccination intention, respondents were asked to use answers "yes", "no" or "I do not know", to the question whether they would be definitely vaccinated when a coronavirus vaccination became available to them. To measure respondents' attitudes towards COVID-19 in relation to the vaccinated population, three claims were made: "Vaccination should be mandatory for all", "Vaccination should be recommended for people over 65" and "Vaccination should be recommended for people with chronic diseases". In addition, respondents' opinions about the safety ("I believe the vaccine will be safe") and the effectiveness of COVID-19 vaccines ("I believe the vaccine will be effective") and their attitude towards the vaccination in general ("I am categorically against the use of vaccines"), were recorded. The question about any previous influenza vaccination was also asked. Previous research reported that fear of adverse side effects and perceived vaccine ineffectiveness were the main reasons for vaccine hesitancy (20).

For the case-control study about the effect of health professionals' attitude and practice of vaccination, we used the propensity score (PS) method. Two controls were selected for each health professional respondent among all lay respondents (n = 6,664) using PS matching. In the PS model, we included age as a continuous variable, education as a categorical variable (4 categories), and gender as a dichotomous variable. We performed 1:2 matching with an optimal matching algorithm. After the matching protocol was applied, 832 HCWs and a corresponding control sample of 1,662 individuals (from 6,664 lay respondents) were selected for further analysis, together 2,494 respondents.

For statistical calculations, we used statistical

Table 1: Attitudes about a COVID-19 vaccination by (non-)healthcare profession.

	Yes	No	Don't know	p value
I will definitely get vaccinated.				
HCWs	324 (38.9%)	180 (21.6%)	328 (39.4%)	
LRs	503 (30.3%)	356 (21.4%)	801 (48.3%)	0.001
Vaccination should be mandatory for all.				
HCWs	255 (30.6%)	300 (36.1%)	277 (33.3%)	
LRs	551 (33.2%)	506 (30.5%)	603 (36.3%)	0.019
Vaccination should be recommended for people over 65.				
HCWs	713 (85.7%)	28 (3.4%)	91 (10.9%)	
LRs	1301 (78.3%)	76 (4.6%)	284 (17.1%)	0.001
Vaccination should be recommended for people with chronic diseases.				
HCWs	717 (86.2%)	32 (3.8%)	83 (10.0%)	
LRs	1303 (78.4%)	73 (4.4%)	285 (17.2%)	0.001
I believe the vaccine will be effective.				
HCWs	216 (26.0%)	110 (13.2%)	506 (60.8%)	
LRs	334 (20.1%)	180 (10.8%)	1145 (69.0%)	0.001
I believe the vaccine will be safe.				
HCWs	256 (30.8%)	109 (13.1%)	466 (56.1%)	
LRs	378 (22.7%)	215 (12.9%)	1069 (64.3%)	0.001
I am categorically against the use of vaccines.				
HCWs	79 (9.5%)	695 (83.5%)	58 (7.0%)	
LRs	203 (12.2%)	1267 (76.3%)	191 (11.5%)	0.001

Legend: HCWs – health care professionals; LRs – lay respondents; n = 2494.

program IBM SPSS Statistics for Windows, Version 25.0 and R (21) with R-package "Matchlt" (22). For all calculation Chi-square test was used and a two-sided probability (p) value < 0.05 was considered statistically significant.

The study protocol was reviewed and approved by the Ethical Committee at the Faculty of Health Sciences, University of Novo mesto (approval number FZV-98/2020, 10. 3. 2020).

3 Results

About one-third of all respondents stated that they would intend to be vaccinated against COVID-19 disease. Almost half of them did not know whether they would decide to be vaccinated. Statistically significantly more HCWs intended to be vaccinated comparing to lay respondents as shown in Table 1. Less HCWs were undecided to be vaccinated against COVID-19 disease compared to lay respondents. Statistically significantly less HCWs stated that they were categorically against vaccination than lay respondents. More HCWs than lay respondents believed that the vaccine would be safe and effective. Less HCWs than lay respondents expressed uncertainty about the safety and efficacy of the vaccine. Slightly less HCWs than laics argued that vaccination should be mandatory for all. However, more HCWs than lay respondents felt that the vaccine should be recommended for vulnerable groups.

Statistically significantly more men than women expressed their intention to be vaccinated. Table 2 shows the results by gender differences in the lay respondents and HCWs – in both groups, men are more in favour of vaccination. When asked who should be vaccinated, there was statistically significant gender difference in HCWs where women in higher percentage state that

Table 2: Beliefs and attitudes about COVID-19 vaccination of health care professionals (HCWs) and lay respondents (LRs) by gender.

	HCWs (n = 832)			LRs (n = 1662)			Total
	Yes	No	Don't know	Yes	No	Don't know	(n = 2494)
I will definitely get vaccinated.							
Men	50.5%	21.5%	28.0%	38.8%	23.9%	37.3%	
Women	37.2%	21.7%	41.1%	29.1%	21.1%	49.8%	
p value		0.01			0.02		0.001
Vaccination should be mandatory for all.							
Men	31.8%	36.4%	31.8%	37.8%	29.7%	32.5%	
Women	30.5%	36.0%	33.5%	32.5%	30.6%	36.9%	
p value		0.932			0.283		0.322
Vaccination should be recommended for people over 65.							
Men	80.4%	7.5%	12.1%	77.9%	5.3%	16.8%	
Women	86.5%	2.8%	10.8%	78.4%	4.5%	17.1%	
p value		0.034			0.869		0.203
Vaccination should be recommended for people with chronic diseases.							
Men	80.4%	9.3%	10.3%	75.0%	4.8%	20.2%	
Women	87.0%	3.0%	9.9%	78.9	4.3%	16.7%	
p value		0.06			0.422		0.057
I believe the vaccine will be effective.							
Men	31.8%	12.1%	56.1%	30.1%	6.7%	63.2%	
Women	25.1%	13.4%	61.5%	18.7%	11.4%	69.9%	
p value		0.340			0.001		0.001
I believe the vaccine will be safe.							
Men	38.3%	15.0%	46.7%	37.1%	11.9%	51.0%	
Women	29.7%	12.8%	57.7%	20.7%	13.1%	66.3%	
p value		0.107			0.001		0.001
I am categorically against the use of vaccines.							
Men	8.4%	86.9%	4.7%	10%	82.8%	7.2%	
Women	9.7%	83.0%	7.3%	12.5%	75.3%	12.1%	
p value		0.535			0.047		0.026

Legend: HCWs – health care professionals; LRs – lay respondents.

vaccination should be recommended to elderly and to people with chronic diseases. There is a statistically significant gender difference in the assumption that the vaccine would be safe and effective in lay respondents (where men express more trust in safety and effectiveness of vaccine and are less against vaccination), but not in HCW's.

There is no statistically significant difference among respondents with different educational levels in relation to vaccination intentions, either in HCWs or in laics (Table 3). The proportion of those who believed that vaccination should be mandatory for all decreased statistically significantly in laics as education levels increased, but not in HCWs. The belief that vulnerable groups should be vaccinated does not differ significantly in HCWs and laics according to education level. HCWs with a

Table 3: Beliefs and attitudes about a COVID-19 vaccination of health care professionals (HCWs) and lay respondents (LRs) by education levels.

	HCWs (n = 832)			LRs (n = 1662)			Total
	Yes	No	Don't know	Yes	No	Don't know	(n = 2494)
I will definitely get vaccinated.							
Secondary school	35.0%	24.2%	40.7%	31.4%	19.4%	49.2%	
Graduate level	41.1%	19.6%	39.3%	29.5%	23.5%	47.0%	
Postgraduate level	50%	21.1%	28.9%	29.6%	16.9%	53.5%	
p value		0.219			0.337		0.496
Vaccination should be mandatory for all.							
Secondary school	33.6%	36.5%	29.9%	39.2%	24.3%	36.4%	
Graduate level	28.9%	34.8%	36.3%	28.7%	35.1%	36.2%	
Postgraduate level	23.7%	47.4%	28.9%	28.2%	35.2%	36.6%	
p value		0.077			0.001		0.001
Vaccination should be recommended for people over 65.							
Secondary school	84.3%	4.0%	11.7%	78.2%	5.1%	16.7%	
Graduate level	87.4%	2.5%	10.1%	78.2%	4.3%	17.4%	
Postgraduate level	78.9%	7.9%	13.2%	80.3%	2.8%	16.9%	
p value		0.426			0.833		0.925
Vaccination should be recommended for people with chronic diseases.							
Secondary school	89.1%	2.6%	8.3%	79.8%	4.6%	15.6%	
Graduate level	87.4%	3.4%	9.2%	77.2%	4.3%	18.5%	
Postgraduate level	78.9%	7.9%	13.2%	78.9%	2.8%	18.3%	
p value		0.685			0.275		0.739
I believe the vaccine will be effective.							
Secondary school	21.4%	16.5%	62.1%	19.5%	10.4%	70.1%	
Graduate level	27.8%	10.8%	61.4%	20.3%	11.8%	67.9%	
Postgraduate level	47.4%	10.5%	42.1%	23.9%	2.8%	73.3%	
p value		0.002			0.246		0.039
I believe the vaccine will be safe.							
Secondary school	25.7%	16.0%	58.3%	22.0%	12.3%	65.7%	
Graduate level	33.4%	11.1%	55.5%	22.8%	10.3%	66.9%	
Postgraduate level	47.4%	10.5%	42.1%	25.7%	16.9%	58.3%	
p value		0.018			0.467		0.064
I am categorically against the use of vaccines.							
Secondary school	12.8%	78.3%	8.8%	12.9%	74.1%	13.0%	
Graduate level	6.8%	87.3%	5.9%	11.8%	77.7%	10.5%	
Postgraduate level	10.5%	86.8%	2.7%	10.0%	81.4%	8.6%	
p value		0.180			0.075		0.005

Legend: HCWs – health care professionals; LRs – lay respondents.

postgraduate degree mostly stated that the vaccine was effective. There is no statistically significant difference in the education level of this opinion in lay respondents. As regards vaccination safety, there is a statistically significant difference in the education level of respondents among HCWs, but not among laics. There is no statistically significant difference in the level of education of respondents among HCWs and laics in their categorically negative attitude towards vaccines.

There is a statistically significant age difference in HCWs and laics in terms of vaccination intention and mandatory vaccination. A higher percentage of younger and older respondents among HCWs and laics expressed an intention to be vaccinated compared to middle-aged respondents, claiming that vaccination should be mandatory for all and believing that the vaccine was effective and safe (Table 4). There is no statistically significant age difference in the effectiveness of the vaccine in laics; however, a higher percentage of younger and older respondents among HCWs expressed a belief that the vaccine would be effective. There is a statistically significant age difference in the belief that the vaccine would be safe. As regards age, neither HCWs nor lay respondents statistically significantly differ in their categorically negative attitude toward vaccines.

4 Discussion

The aim of the study was to analyse vaccination intention and vaccination acceptance in healthcare professionals in comparison with lay persons. The study showed that 33.2% of all respondents expressed intention to be vaccinated against COVID-19 disease. Almost half of them (45.3%) did not know whether they would be vaccinated. In a group of lay respondents, 30.3% of respondents stated that they would be vaccinated. Males compared to females, older and younger adults compared to middle age adults, and postgraduate degree holders compared to people with less than graduate level of education were more likely to get vaccinated. According to other studies on vaccination intention in the early stage of pandemic (6-812), the results differ in view of the low proportion of respondents willing to get vaccinated. Lower vaccination intention is not surprising, since the Slovenian study on the views of key stakeholders on vaccination found out that the proportion of mothers of children who trust in vaccination is not high (47%) (17). The results also differ from other studies on vaccination intention in the early stage of pandemic (6-12) with respect to the low proportion of middle-aged respondents who intend to be vaccinated against Covid-19. This may be explained by the fact that the majority of representatives of the middle generation or "sandwich generation" in Slovenia is extremely burdened and averse to various additional obligations, such as in our case vaccination (23).

The study showed statistically significant differences between HCWs and lay people, but these differences were relatively small. More HCWs (38.9%) than lay respondents (30.3%) expressed a clear intention to get vaccinated against COVID-19 disease. Interestingly, in a study performed in Slovenia in December 2020, 33% of respondents indicated that they definitively intended to participate in vaccination and 26% replied that they would probably agree to vaccination; in total, 59% intended to get vaccinated (24). Vaccination intention was very high in physicians and medical students, however vaccination intention in other healthcare professionals and healthcare students was similar to general population (24). Our study however did not collect data about different healthcare professionals. Similar results have also been found in PANDA-SI survey preformed periodically every 2 weeks since December 2020, where 45.8% to 57.8% respondents intended to get vaccinated (25).

Men compared to women, older and younger HCWs compared to middle-aged adults, and postgraduate degree holders compared to HCWs with lower level of education were more likely to get vaccinated. More of them also believed that the COVID-19 vaccine would be safe and effective, and they were more in favour of vaccinating high-risk groups and less in favour of mandatory vaccination than lay people. This is consistent with the findings of an earlier Slovenian study, which found that while most Slovenian healthcare practitioners have confidence in vaccination safety, they have reservations about vaccination itself, and only about half of them get regularly vaccinated against influenza (17).

Surprisingly, there was no statistically significant difference between education levels with respect to vaccination intentions, either within a group or between groups. This may be due to the fact that attitudes themselves, and especially attitudes toward vaccination, are a psychological construct, a complex mental and emotional entity that is not related to the cognitive features alone (26). This means that we cannot acquire them rationally or change them through education, but that emotional and social influences are also important in their expression. One possible reason for the low affinity to vaccination is that previous communication did not take into account the emotional dimension or was too much based on hierarchical and even intimidating communication, against which Slovenian people usually

Table 4: Beliefs and attitudes about COVID-19 vaccination of health care professionals (HCWs) and lay respondents (LRs) by age.

	HCWs (n = 832)			LRs (n = 1662)			Total
	Yes	No	Don't know	Yes	No	Don't know	(n = 2494)
I will definitely get vaccinated.							
0-19	52.6%	21.1%	26.3%	43.2%	6.0%	50.0%	
20-29	38.0%	24.6%	37.4%	39.5%	17.5%	42.9%	
30-39	39.0%	21.3%	39.7%	26.9%	25.8%	47.2%	
40-49	37.2%	21.1%	41.7%	23.8%	24.0%	52.2%	
50-59	39.7%	18.3%	42.1%	31.7%	16.3%	52.0%	
60+	56.3%	31.3%	12.5%	38.2%	17.6%	44.1%	
p value		0.0442			0.001		0.001
Vaccination should be mandatory for all.							
0-19	57.9%	26.3%	15.8%	52.3%	9.1%	38.6%	
20-29	28.5%	43.0%	28.5%	35.3%	26.6%	38.1%	
30-39	26.8%	37.9%	35.3%	28.7%	35.9%	35.5%	
40-49	27.5%	35.8%	36.7%	30.1%	35.9%	34.0%	
50-59	42.9%	25.4%	31.7%	39.9%	21.7%	38.3%	
60+	31.3%	31.3%	37.5%	47.1%	11.8%	41.2%	
p value		0.001			0.010		0.001
Vaccination should be recommended for people over 65.							
p value		0.312			0.284		0.395
Vaccination should be recommended for people with chronic diseases.							
p value		0.156			0.066		0.309
I believe the vaccine will be effective.							
0-19	15.8%	52.6%	31.6%	13.6%	22.7%	63.6%	
20-29	16.2%	29.1%	54.7%	8.8%	28.0%	63.2%	
30-39	12.1%	26.5%	61.4%	14.6%	20.3%	65.1%	
40-49	11.0%	22.0%	67.0%	10.7%	16.1%	73.1%	
50-59	13.5%	23.8%	62.7%	6.3%	15.0%	78.7%	
60+	18.8%	18.8%	62.5%	5.9%	17.6%	76.5%	
p value		0.001			0.080		0.001
I believe the vaccine will be safe.							
0-19	5.3%	52.6%	42.1%	9.1%	31.8%	59.1%	
20-29	13.4%	39.7%	46.9%	10.7%	32.5%	56.8%	
30-39	15.5%	29.2%	55.4%	16.4%	23.9%	59.7%	
40-49	10.1%	27.5%	62.4%	12.4%	17.0%	70.6%	
50-59	12.7%	23.8%	63.5%	11.4%	14.2%	74.4%	
60+	25.0%	31.3%	43.8%	5.9%	26.5%	67.6%	
p value		0.020			0.001		0.001
I am categorically against the use of vaccines.							
p value		0.665			0.199		0.069

Legend: HCWs – health care professionals; LRs – lay respondents.

resist (27). Affinity to vaccination is one of the predictors that should be taken into account in modelling of the dynamics of the disease or in estimating the impact of intervention strategies (28).

As previous studies on vaccination acceptance and intention to vaccinate have shown, these phenomena are strongly influenced by trust (29). This was also demonstrated during the first wave of the COVID-19 pandemic, when studies showed an association between trust in health and government agencies (30,31) or vaccine safety (32-34) and vaccination intention.

5 Conclusion

Since only one-third of respondents and less than half of HCWs indicated that they would be willing to get vaccinated once a vaccine is available, it is important to communicate the importance of vaccination against COVID-19 appropriately and on a sound scientific basis through various health education programmes.

A limitation of this study stems from the snowballing procedure in which the survey is not randomly distributed to specific segments of the population, but both study groups were included in the same manner. The survey was conducted during the initial phase of the first wave of the COVID-19 epidemic, so the results must be interpreted within a specific time frame, and both vaccination acceptance and attitudes can be expected to change significantly in later phases.

Conflict of interest

None declared.

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