

I.

BACKGROUND

Several different coronavirus (COVID-19) vaccines have already been authorized and distributed all over the world, including Hungary since December 2020, but vaccination rates and acceptance of the vaccines vary.

II.

OBJECTIVE

We aimed to assess the factors influencing the acceptance of COVID-19 vaccinations and the determinants of vaccination.

III.

METHODS

We conducted a cross-sectional online questionnaire survey exploring the determinants of vaccination in May 2021. The survey included question on demographic and socio-demographics (such as age, gender, education, marital status, employment status, household size, monthly net household income, place of residence) factors, and respondents' experience with COVID-19 infections and vaccination (registration was required in order to receive vaccination in Hungary).

IV.

RESULTS

Altogether 2,000 respondents filled out our survey, with the average age of 49.1 (SD=15.3), out of whom 370 respondents (18.5%) stated that they already had a COVID-19 infection.

Table 1 – Comparison of vaccinated and non-vaccinated sub-groups

Variables	Total sample	Vaccinated	Registered, but not vaccinated	Non-vaccinated
	N (%)	N (%)		
Total	2000 (100.0%)	1374 (67.4%)	106 (5.3%)	547 (27.4%)
Age				
Age < 65	1647 (82.4%)	1045 (63.7%)	95 (5.8%)	507 (30.9%)
Age ≥ 65	353 (17.7%)	302 (85.6%)	11 (3.1%)	40 (11.3%)
Age <65 living in the same household with				
Age ≥ 65	684 (34.2%)	536 (78.4%)	20 (2.9%)	128 (18.7%)
Age < 65	1316 (65.8%)	811 (61.6%)	86 (6.5%)	419 (31.8%)
Gender				
Male	756 (37.8%)	554 (73.3%)	28 (3.7%)	174 (23.0%)
Female	1244 (62.2%)	793 (63.7%)	78 (6.3%)	373 (30.0%)
Education				
Primary	435 (21.8%)	253 (58.2%)	22 (5.1%)	160 (36.8%)
Secondary	900 (45.0%)	567 (63.0%)	52 (5.8%)	281 (31.2%)
Tertiary	665 (33.3%)	527 (79.2%)	32 (4.8%)	106 (15.9%)
Residence				
Capital	428 (21.4%)	320 (74.8%)	21 (4.9%)	87 (20.3%)
City	1088 (54.4%)	729 (67.0%)	54 (5.0%)	305 (28.0%)
Village	484 (24.2%)	298 (61.6%)	31 (6.4%)	155 (32.0%)
Income (missing: n=355)				
<300 000HUF	869 (52.8%)	539 (62.0%)	49 (5.6%)	281 (32.3%)
≥300 000HUF	776 (47.2%)	573 (73.8%)	37 (4.8%)	166 (21.4%)

Altogether 1374 (67.4%) respondents received at least the first dose of vaccine, while 106 (5.3%) have registered to be vaccinated, and 547 respondents (27.4%) did not get the vaccine nor register to be vaccinated.

We found that higher income and residence in the capital or county seats were associated with a higher probability of vaccination. The rate of vaccination was higher in the group aged above 65 years (85.6% vs. 63.7%) and male respondents had a higher rate of vaccination (73.3% vs. 63.7%), suggesting that they might be more willing to accept the vaccine. We found that education also has significant impact on vaccine acceptance (58.2% vaccinated in primary education. 79.2% in the tertiary education group). (Table 1)

Table 2 – Regression model exploring the determinants of vaccination*

	Significance level	Exp(B)	95% Confidence Interval for Exp(B)	
			Lower Bound	Upper Bound
Intercept	0.357			
Female gender	0.036	0.760	0.588	0.982
Over 65 years of age	0.072	1.647	0.956	2.836
Living in the same household with someone over the age of 65	0.065	1.370	0.980	1.916
Income over the median income (300 000HUF)	0.000	1.913	1.488	2.460
Residence (reference category: living in a town)				
Living in Budapest	0.010	1.622	1.124	2.341
Living in a city, excluding Budapest	0.131	1.240	0.938	1.638
Employment (reference category: unemployed)				
Working	0.028	1.776	1.065	2.964
Student	0.079	2.305	0.907	5.856
Retired	0.000	3.380	1.773	6.442
Disability pensioner	0.008	2.853	1.308	6.223
Other employment status	0.702	0.888	0.483	1.632
Previously had COVID-19 infection	0.001	0.536	0.374	0.768
Previously had been in a mandatory quarantine	0.140	1.335	0.910	1.957
GAD7 categorized**	0.234	0.853	0.657	1.108
Fear of COVID-19***	0.000	2.004	1.491	2.692
Lockdown Captivity	0.000	0.922	0.897	0.947
Fear of Missing Out	0.007	1.028	1.008	1.049
Cox and Snell Pseudo R square: 0.154, Model Fitting Criteria Log Likelihood p value: 0.000				

*The reference category was "not vaccinated"

**GAD scores were categorized into a binary variable, where scores below 10 (mild and moderate) were given a 0 value, all scores above a 1 value,

***Fear of COVID-19 scores were categorized into a binary variable, where scores below 13.5 were given a 0 value, all scores above a 1 value

V.

CONCLUSION

Sociodemographic factors, such as age, gender, level of education and income might have significantly influenced respondent's probability of vaccination in Hungary. (Table 2)