

TRUST IN THE PUBLIC HEALTH SYSTEM AND SEASONAL-INFLUENZA VACCINATION

Marian VASILE

Gabriel JDERU

Darie CRISTEA

Abstract

Human vaccination is a complex process that engages social actors, products, infrastructures, and ideology. We explore the role of trust in the healthcare system for immunization with the seasonal influenza vaccine. We use data from a probabilistic national representative survey among Romanian adults 18 years old or older ($n = 2115$) fielded in 2019. Binary logistic regression modeling shows that probability of vaccinating against seasonal influenza is higher when the participants trust the overall healthcare system [Odds Ratio = 1.36, $p \leq 0.001$], discussed, and gathered information about vaccines [OR = 3.12, $p \leq 0.001$], had positive evaluations of the vaccination services [OR = 2.19, $p \leq 0.001$], and evaluate today's vaccine as being safer [OR = 3.05, $p \leq 0.001$] or at least as safe [OR = 2.11, $p \leq 0.001$] than those from the past. Results suggest that trust in the family physicians is built through personal experiences with them which can be easily adjusted in contrast with overall trust in the healthcare system. Increasing the quality of vaccines and vaccination and emphasizing vaccines' benefits and safety is not sufficient but just the tip of the iceberg; the entire healthcare system needs a serious facelift which will make it trustworthy.

Keywords: seasonal-influenza vaccine/vaccination, vaccine hesitancy, trust in the healthcare system.

Marian VASILE (corresponding author)

Associate professor, Department of Sociology,
Faculty of Sociology and Social Work,
University of Bucharest, Bucharest, Romania
Tel.: 0040-723-765.672

E-mail: marian.vasile@unibuc.ro

ORCID: 0000-0002-1719-0141

Gabriel JDERU

Professor, Department of Sociology,
Faculty of Sociology and Social Work,
University of Bucharest, Bucharest, Romania
E-mail: gabriel.jderu@unibuc.ro

Darie CRISTEA

Associate professor, Department of Sociology,
Faculty of Sociology and Social Work,
University of Bucharest, Bucharest, Romania
E-mail: darie.cristea@sas.unibuc.ro

1. Introduction

Seasonal-influenza vaccine/vaccination (SIV) is a medical product resulting from research done by highly trained and specialized professionals, being a black-box for lay people who should put their trust into and accept it year-after-year for their own protection. SIV, as a product and as a process of production, is part of the healthcare system, while its acceptance is the result of the battle between medical science and alternative discourses in private and public spaces. Therefore, SIV approval is the subject of a radius of trust (Schilke, Reimann and Cook, 2021), encompassing trust in the healthcare system, trust in physicians and healthcare professionals, and trust in its own as a product. A history of negative experiences with a system will make it not trustworthy which will spill over onto its associated elements (Jamison, Quinn and Freimuth, 2019). Attitudes towards vaccination are based on confidence in various official and informal sources of information. Therefore, to better understand these attitudes, research should include an analysis and study of trust in these sources of information (Yaqub *et al.*, 2014). In France, in the first wave of the coronavirus disease (COVID-19) pandemic, a link between vaccination attitudes and the political attitudes of the population was found; thus, the reluctance to vaccines and vaccinations was politicized (Ward *et al.*, 2020). On one hand, this attitude is a possible effect of the discourses of activists against vaccination in general. On the other hand, it is an effect of the politicization of pandemic discourses.

Influenza is an acute infectious disease with a high epidemic potential in Romania (National Institute for Public Health, 2019) and yearly global outbreaks, as reported by Flu News Europe¹, a joint initiative of the European Centre for Disease Prevention and Control² and the World Health Organization (WHO) Regional Office for Europe³. According to these institutions, vaccination is the best medical method for preventing influenza and reducing the risk of serious complications. Physicians recommend the SIV for healthcare workers, persons aged 65 years or more, children, pregnant women, and persons with chronic diseases because of the complications of the disease, including death (World Health Organization, 2022; 2023).

During the 2018–2019 influenza season, Romania’s Ministry of Health distributed 1,330,000 influenza vaccines (National Institute for Public Health, 2019), of which 99.97% were used, mostly (56%) for people aged 65 years or more. Although the number of people aged 65 years or more who were vaccinated against influenza (21%) was larger in 2018-2019 than in the previous season, it is still significantly lower than the level recommended by WHO (75%). Romania is the first in the hierarchy of the European Union (EU) with 81% of its population agreeing that SIV is important (Larson *et al.*, 2018). Data show a decreasing tendency in vaccination coverage in Romania. The influenza

1 Official website in January 2024: <https://flunewseurope.org>.

2 Official website in January 2024: <https://www.ecdc.europa.eu/en>.

3 Official website in January 2024: <https://www.who.int/europe/about-us/about-who-europe>.

coverage rates between 2007–2008 and 2014–2015 in vaccine-targeted population groups decreased from one season to another in Romania and elsewhere (European Centre for Disease Prevention and Control, 2017). A similar trend is seen also for pediatric vaccination against measles for example (National Institute for Public Health, 2019).

MacDonald's (2015) 3-C model of vaccine hesitancy identifies confidence, complacency, and convenience as key elements for accepting vaccination. Confidence is about trust in the efficacy and safety of vaccines, in the healthcare system responsible for vaccination, and in policy makers regarding vaccination. Complacency is about the perception of risks from refusing vaccination, which is dependent on the current life situation and psychological characteristics such as self-efficacy. Paradoxically, a working vaccination system can increase complacency because of the prevented diseases becoming invisible over time for newer generations. Healthy people can refuse vaccination because they perceive themselves as being strong and able to cope with the disease, therefore not needing the SIV. Convenience is about factors that make the access to vaccination difficult, including low health system efficacy, patients with low material resources, or health illiteracy. We can extend the list with the ambivalence of medical professionals, which promotes homeopathy and allopathy simultaneously (Eastwood, 2000). Authorities in the healthcare system (Offit, 2011) tend to blame lay people and overlook the healthcare system problems, attributing hesitation towards vaccines and vaccination to their health illiteracy, not being aware of the progress in vaccination development and production, and to the public misunderstanding of science (Wellcome Trust, The Gallup Organization Ltd., 2019).

2. Vaccination as trust

Vaccination, like other public health programs, is about the relationship between the State and patients, with patients suffering when the centralized and coercive communist State switches to a State apparently free from regulation and standardization (Cullen Dunn, 2008). In the communist regime, people did not have the freedom to question State's interference in every aspect of life, while this coercion was building trust in public policies. After communism fell, the new neoliberal State seemed absent, letting people choose how to live with unlimited options available. The void born from this transition and the weakness of the State to translate the black box of vaccines and vaccination, may be driving forces for not complying with the recommendation given by the State to SIV. This mechanism is emphasized during the healthcare crisis; for example, distrust in the capacity to handle the swine flu epidemic by the government made people less likely to vaccinate against the disease (Mesch and Schwirian, 2015).

This 'moral imperative' to become an 'informed patient' is part of the wider process of individualization (Beck and Beck-Gernsheim, 2002), where the burden for the good life lies with persons, not the State and its protective public systems. The second wave of feminism contributed significantly to the democratization of health-related knowledge and detachment from existing gender norms and prescriptions from male-dominated medical

science. In this way, the risks associated with the use of oral contraceptives, treatments for menopause, or hormones taken during pregnancy were emphasized (Conis, 2013). Thus, mothers are unwise or ignorant not when they do not vaccinate their children but when they do not question the negative effects of vaccination. The enforcement of anti-medicalization and consumer rights movements amplified this tendency. Feminists are not fighting against the vaccines *per se* but against healthcare establishments, over-medicalization, and the unquestionable authority of physicians, or mainly men. Vaccine-critical groups also cultivate a so-called critical attitude about external interventions on bodies (Hobson-West, 2007) hoping for ‘awakening’ and ‘enlightenment’ to achieve ‘empowerment’. They capitalize on the inability of specialists to go beyond statistics and to see each patient possibly suffering from side-effects of vaccines as self-contained entities and important in themselves. Physicians are part of the healthcare system and at least one healthcare institution, both with their own rules with which they must comply while showing empathy and respect to patients (Goffman, 2017). The profession and organization are bureaucratic, having their own rationality and rules and procedures, which, once bypassed, can lead to losing jobs and license to practice. Also, patients are a blend of cultural models, social backgrounds, and sets of practices who ask for different approaches from physicians.

The social construction of the decision to vaccinate is obvious for the HPV vaccine (Conrad and Barker, 2010). For SIV, we can foresee it: although medical science acknowledges seasonal influenza as a serious disease with potentially fatal consequences, hence the development of SIV, we can consider seasonal influenza as a contested illness for lay people because it is invisible to most of them, and many could not differentiate it from a simple cold. Thus, we can expect medical staff, especially in the absence of a pandemic and with the Centre saying that the influenza vaccine is only for vulnerable groups, to be less authoritative when promoting it.

A shift in the perceptions of risks complements individualization, which is another perverse effect (Boudon, 1982) of the efficacy of vaccination. For younger generations, the diseases prevented through vaccinations are invisible, so the perceived risk of contracting them is low, whereas the risks of vaccines are ‘real’ because someone talks about them (Berezin and Eads, 2016). They believe that we must complement the perspective of ‘conscious resistance’ to vaccination with the perspective of ‘constraint resistance’ to vaccination. Privileged people have the resources to sieve information and the social status to negotiate their relationship with physicians, they practice conscious resistance. Less privileged people do not have the resources to reach an adequate understanding of science, do not have leverage in their relationship with physicians, and are discriminated against by medical personnel for the precarity of their situation.

Shortages from the communist public health system, decisions that are apparently random and mostly without arguments taken from politruks outside medical institutions, or the control exercised over the female body through Decree 770/1966, which makes abortion illegal (The ‘Decreței’) (Pârvolescu, 2015), are factors that reduce people’s confidence

in the public health system and even their desire to interact with it outside emergencies. Epidemics are not common in the social memory of Romanians because they were not popularized or were ‘sweetened’ by the official propaganda blessing of Romanian communism exceptionalism; such a case is the influenza pandemic in 1971 (World Health Organization, 1972).

Post-socialism was harsh with many Romanians who lost their jobs, social status, and the overall predictability of life, getting stuck without the horizon for a better life in sight (Sandu, 1999; Mărginean, 2006). The ‘future’, steady but sure, brought down Romanian miners, who were the embodiment of force and strength, to a mere shadow of decaying bodies and minds (Kideckel, 2010).

These developments, in which precariousness and unpredictability flourished, allowed for ‘the social production of mistrust... a system of representations and rational strategies that actors follow when a State repeatedly cannot perform its fundamental duties, particularly the responsibility of creating the conditions to guarantee a ‘pacified space’, in which they can trust each other through the ‘rule of law’” (Giordano and Kostova, 2001, p. 75). Post-socialism, which frees people from the standard normality enforced by communism, with the help of consumerism and the shift to individual responsibility, made fear possible: ‘In communism, after the period of terror, we suffered, but we were less exposed to fear, because we did not have a choice (or we strongly believed that); now we have a choice, and the constant responsibility of options generates the feeling of unsafety, which produces fear’ (Mihăilescu, 2013, p. 46). This is how Mihăilescu explains the reception of vaccination against swine flu during the pandemic from 2009 to 2010 after the death of the actor Aurelian-Antonio (Toni) Tecuceanu, a media celebrity and member of the popular television show *Cronica Cârcotașilor*. Unfortunately, the trust of Romanians in the State’s institutions decreased constantly during post-socialism because of their inefficient functioning (Tufiş, 2008).

In the present study, we investigate the role of trust in the public health system for the decision to SIV while controlling for perceptions about aspects such as benefits of vaccination or safety of vaccines.

3. Methods

3.1. Data

The survey was conducted by INSCOP Research, a private company of social and marketing research established in 2013⁴, in partnership with the Faculty of Sociology and Social Work, University of Bucharest, and the National Society of Family Medicine (Romania), the main professional association of family physicians in Romania established in 1990⁵.

4 Official website of the company in January, 2024: <https://www.inscop.ro/en/>.

5 Official website of the association in January, 2024: <https://snmf.ro/en/>.

Questionnaires were administered face-to-face in the homes of respondents between January 21 and February 11, 2019. The total sample size was 2115 respondents, being representative for the population with the age of 18 years or older in Romania. The interviewer applied the questionnaire to the person in the household with the closest birthday to the date of the interview. The sample was stratified across eight NUTS2 regions according to the type and size of locality. All counties of Romania and all districts of Bucharest, the capital city of Romania, were surveyed. The sample was validated with official statistics from the National Statistics Institute, and no weighting was necessary. The questionnaire was not specifically designed to study SIV, but rather to investigate behaviors and attitudes towards adult and children vaccination in general.

The time frame when the questionnaire was applied is characterized, usually, by a high number of infections with SIV. However, the specific period of the field activity was not special, as it could have been if the survey would have taken place during COVID-19 pandemic when the anti-COVID-19 vaccine was pushed forward by national and international governing institutions. Therefore, we do not expect a systematic oversampling of vaccinated people. The sample design is probabilistic with respondents being chosen randomly; therefore, we do not expect a biased selection. Some respondents might have considered that it was desirable to say they were vaccinated against SIV, but this is out of control and a constant peril of surveys.

Respondents were asked verbally if they want to participate in the survey and were informed that they can redraw their consent and stop the interview if they want to. For each question there is also a nonresponse option and respondents were free to choose it if they did not want to provide some specific information. The authors received an anonymized dataset having no possibility to identify respondents.

3.2. Variables

The respondents were asked ‘Did you receive vaccination against seasonal flu this year or last year?’, having two options ‘yes’ or ‘no’. This is our dependent variable. The question does not differentiate between vaccines covered by the Health Insurance and vaccines bought by patients. The question asks about vaccination in 2019 or 2018, therefore we are confident that respondents understood that they should report only their behavior from the current influenza season, which started in late 2018 and ended after the first trimester of 2019. Predictors are trust in the healthcare system, trust in family physicians, awareness and experience with vaccines and vaccination, perceptions about benefits and safety of vaccines, and perceived epidemiological risk of low vaccination.

Trust in the healthcare system is our focal predictor. Trust has two facets, general trust in the healthcare system and specific trust in the family physician. We measured trust in the healthcare system with the question ‘How much trust do you have in the healthcare system from Romania?’ with five options: very much (1), a lot (2), not much or little (3), little (4), and very little (5). In our analysis, we reversed the scale so that a higher value represents more trust in the healthcare system. We measured trust in the family physician with

the question ‘How much trust do you have in your family physician?’, which has the same options as for general trust in the healthcare system.

We measured awareness about vaccination using the question ‘Until today, did you discuss, no matter with whom, or gathered information, regardless of the source, about vaccines and vaccination?’. The response options are ‘yes’ (1) or ‘no’ (2). People choosing ‘yes’ at least know about the existence of vaccines.

The experience with vaccination was measured using the question ‘From your point of view, the medical services regarding vaccination and vaccines offered by the family physician or specialists are very good (1), good (2), neither good nor bad (3), bad (4), and very bad (5)’. In our analysis, we used the item with the scale reversed so that a higher score represents better evaluations of the experience.

We measured trust in the benefits of vaccination using the question ‘How much trust do you have in the benefits of vaccination?’ with the same response options as general trust in the healthcare system. In our analysis, we used it with the scale reversed so that a higher value represents more trust.

Perceptions about safety of vaccines were measured using the question: ‘Do you consider today’s vaccines safer or more unsafe than those of the past?’ with three possible responses: safer (1), the same (2), and more unsafe (3).

We measured the perceived epidemiological risk of not using vaccination using the question ‘Do you believe that not vaccinating children can be a danger to society?’. It had three possible responses, with the following values: ‘Yes, because of the risk of epidemics, including infectious diseases that had disappeared for a long time’ (1); ‘No, because an outbreak cannot happen from only a few cases of unvaccinated children’ (2); and ‘I have never considered the problem that way’ (3).

We included several control variables. Due to higher risks for complications which require hospitalization and even induce death (World Health Organization, 2022), health specialists identify older people, 65 years or older, as a vulnerable group recommending them to be considered as a priority for influenza vaccination (World Health Organization, 2023). In Romania, older people receive the SIV for free being covered by Health Insurance. Older generations, people who lived enough during communist regime to consciously interact with the healthcare system, have experience with its fallacies (Pârvulescu, 2015; Vinea, 2003) which increase the chance not to trust the system and its messages. High social costs of the post-socialist transition to a market economy made through a governmental culture of poverty (Preda, 2002) contribute to the social production of mistrust (Giordano and Kostova, 2001). Therefore, we believe age is an important confounder that must be included in the analysis. Age was recorded in years, ranging from 18 to 88 years. In our analysis, we re-coded age using three categories: 18–39 years old (1), 40–64 years (2), and 65–88 years (3).

Women and men have different visions about health and distinct configurations of their health lifestyles (Cockerham, 2018; Mollborn, Lawrence and Hummer, 2020), with women being more in contact with medical care, seeking more often healthcare, and in

general, being more health conscious, a trend which is obvious in later decades due to improvements in educational attainment, employment, and income giving women more power and control over own lives (Schnittker, 2007; Weitz, 2020). In the dataset people are classified as males (1) and female (2).

Higher education levels are in general good for one's health (Marmot, 2015), increasing the acceptance of SIV for specific populations (Descamps *et al.*, 2020), although the results are inconclusive (Yeung, Lam and Coker 2016). Education has three levels: low education including people without formal education, graduates of primary school or four levels of education, graduates of gymnasium or eight levels of education, or graduates of apprentice school (1); secondary education including graduates of high school, vocational school, or post-secondary school (2), and tertiary education (3).

Higher socioeconomic status empowers people in relationships with physicians, whereas lower socioeconomic status facilitates disengagement with healthy lifestyles (Fenton, 2019; Mollborn, Lawrence and Saint Onge, 2021). We use income as a measure for socioeconomic status. Income has eight categories: no income (1), < 500 lei (2), 501–1,000 lei (3), 1,001–2,000 lei (4), 2,001–3,000 lei (5), 3,001–4,000 lei (6), 4,001–6,000 lei (7), and > 6,000 lei (8). In our analysis, we re-coded income into five categories: (1) without income, (2) < 500–1,000 lei, (3) 1,001–2,000 lei, (4) 2,001–3,000 lei, and (5) > 3,000 lei. We combined the categories because of the low number of cases as follows: 27 cases for < 500 lei, 51 cases for 4,001–6,000 lei, and 11 for > 6,000 lei. Of the respondents, 235 (11%) did not choose a valid category.

In Romania, despite rural heterogeneity (Voicu and Voicu, 2006), there are still significant discrepancies between rural and urban areas regarding many aspects such as access to tertiary education (Voicu and Vasile, 2010; Șerban, 2013). Respondents were asked to say if they live in urban (1) or rural areas (2).

3.3. Analytical strategy

Our dependent variable is a variable with two values, one (decision to SIV) and zero (decision not to SIV); therefore, we use binary logistic regression to understand if trust in the healthcare system is still associated with the decision to SIV after controlling for other predictors and control variables. For statistical analysis, we use Stata statistical software, version 17.0 (StataCorp, 2021a). We used in the regression models the factor notation specific to Stata (StataCorp, 2021b) for all categorical variables.

Given the sampling design, we have cases for each county of Romania. According to official statistics, vaccination appears to differ from one county to another, with clusters of influenza infections in counties such as Caraș-Severin, Alba, Cluj, Iași, Constanța, Prahova, Dâmbovița, Argeș, or Teleorman (National Institute for Public Health, 2019, p. 49). This means that the decision to vaccinate for influenza can depend on the county of residence; therefore, the assumption of independent cases was not met, and we had to account for clusterization using robust standard errors (McNeish, Stapleton and Silverman, 2017; StataCorp, 2021).

To emphasize the role of trust in the healthcare system, we test several regression models, starting from the one containing only the two indicators for trust, general and specific (M1), then adding awareness, experience, perceptions about benefits and safety, and evaluation of epidemiological risk of low vaccination (M2), and finally including the control variables (M3). Table 1 presents the configuration of these models. We looked to see if statistical significance of regression coefficients and their values change from M1 to M3. Our expectation is to see a statistically significant and positive relationship between SIV, trust in the overall healthcare system, and trust in the family physician across all models even after controlling for other predictors and control variables: more trust, general or specific, increases chances to SIV.

Table 1: Configuration of regression models

Variable in the regression model	Role in the model	Name of the model		
		M1	M2	M3
Vaccinated against influenza	Dependent variables	yes	yes	yes
Trust in the healthcare system	Focal independent variable	yes	yes	yes
Trust in the family physician	Focal independent variable	yes	yes	yes
Awareness	Independent variable	no	yes	yes
Experience with vaccination	Independent variable	no	yes	yes
Trust in the benefits of vaccination	Independent variable	no	yes	yes
Perception about safety of vaccines	Independent variable	no	yes	yes
Perceived epidemiological risk	Independent variable	no	yes	yes
Age	Control variable	no	no	yes
Sex	Control variable	no	no	yes
Education	Control variable	no	no	yes
Income	Control variable	no	no	yes
Residence	Control variable	no	no	yes

Source: The authors

4. Results

Two out of ten respondents (20%, count = 413) said they were vaccinated against seasonal influenza in 2018 or 2019, while eight out of ten (80%, count = 1677) did not; 25 respondents did not answer the question, therefore the available sample size (n) for analysis is 2090 out of 2115.

Table 2 presents descriptive statistics for respondents who said they did or did not SIV (n = 2090). Sample sizes differ because we used all nonmissing values for each variable. For Likert type responses scales we also present their mean and standard deviation, although they are harder to interpret not having a specific unit of measurement. Higher means represent rather positive experiences and evaluations with and about vaccines and

Table 2: Descriptive statistics for variables in regression models (maximum sample size available = 2090)

Variable in the regression model	Mean or %	Standard deviation
Trust in the healthcare system	3.1 (n = 2074)	1.1
Trust in family physician	3.7 (n = 2082)	0.9
Awareness (Yes)	79% (n = 2064)	
Experience with vaccination	3.7 (n = 1933)	0.8
Trust in the benefits of vaccination	3.4 (n = 2041)	1.0
Perception about safety of vaccines		
safer	27% (n = 1832)	
the same	43%	
more unsafe	30%	
Perceived epidemiological risk		
yes	55% (n = 1090)	
no	17%	
did not think in this way	28%	
Age		
18–39 years	37% (n = 2090)	
40–64 years	43%	
65–88 years	20%	
Sex (males / females)	49% (n = 2090), 51%	
Education		
primary	12% (n = 2090)	
secondary	63%	
tertiary	25%	
Income		
no income	10% (n = 1857)	
<=501–1000 lei	11%	
1001–2000 lei	40%	
2001–3000 lei	27%	
3001–6000+ lei	11%	
Residence (urban / rural)	56% (n = 2090), 44%	

Source: The authors

vaccination. Although the regression models have different configurations of variables, each with its own nonresponse patterns, descriptive statistics are similar across models and with the overall sample, which is a sign for the validity of our results.

One out of three Romanians (29%, n = 2074) have low trust in the healthcare system, 34% have neither low nor high trust, while 37% have high trust in it. Only 9% (n = 2082) have low trust in their family physician, 29% have neither low nor high trust, while 62% have high trust in (s)he. Romanians are more homogenous regarding their trust in family physicians than the overall healthcare system (standard deviations are 0.9 and 1.1).

Majority of Romanians (79%, n = 2064) discussed, no matter the source, about vaccines until the survey. 65% (n = 1933) had a positive experience with vaccination, 28% appreciate services done by family physicians or specialists as neither good nor bad, while 7% report a negative experience. Half of Romanians (49%, n = 2041) have high trust in the benefits of vaccines and vaccination, 34% have neither low nor high trust, while 18% have low trust in them. Majority of Romanians consider today’s vaccines safe (70%, n = 1832), with 27% evaluating them as safer and 43% being the same, while 30% appreciate they are less safe than vaccines from the past. Half of the population (55%, n = 1971) think that low vaccination rates can be a danger to society, 17% underestimate the danger, while 28% did not think about this correlation.

Table 3 presents the results for binary logistic regression models. The coefficients are expressed as odds ratios. Sample size is different for each model due to distinct nonresponse patterns.

Table 3: Results of binary logistic regression models.

The dependent variable is SIV, value 1 = is vaccinated, value 0 = is not vaccinated. Values are odds ratios [OR]

Variables in regression models	M1 (n = 2070)	M2 (n = 1618)	M3 without income (n = 1618)
Intercept	0.01 ***	0.00 ***	0.00 ***
Trust in the healthcare system	1.82 ***	1.37 ***	1.36 ***
Trust in the family physician	1.42 *	1.09	1.03
Awareness (Yes, base = No)		3.16 ***	3.12 ***
Experience with vaccination		2.16 ***	2.19 ***
Trust in the benefits of vaccination		1.17	1.19
Perception about safety of vaccines (base = less safe)			
safer		2.80 ***	3.05 ***
the same		2.04 **	2.11 ***
Perceived epidemiological risk (base = never thought about it that way)			
yes		1.47	1.42
no		0.97	0.92
Age (base = 18–39 years)			
40–64 years			1.33
65–88 years			2.54 **
Sex is female (base = male)			1.10
Education (base = primary)			
secondary			1.12
tertiary			1.20
Residence is rural (base = urban)			0.68
Pseudo R ²	0.09	0.18	0.20

Note: *p ≤ 0.05; **p ≤ 0.01; ***p ≤ 0.001

Source: The authors

M1 shows that both facets of trust in the healthcare system, general [OR = 1.82, $p \leq 0.001$] and specific [OR = 1.42, $p \leq 0.01$], increase chances of SIV. In M2, after controlling for the other predictors, we notice that general trust in the healthcare system still has a positive relationship with SIV [OR = 1.37, $p \leq 0.001$], while specific trust, in family physicians, loses statistical significance [OR = 1.09, $p = 0.42$]. Awareness, the fact that people discussed about vaccines, increases the chance to SIV [OR = 3.16, $p \leq 0.001$], same as positive experiences with vaccines and vaccination services done by family physicians or other specialists [OR = 2.16, $p \leq 0.001$], and the perception that vaccines are today safer than in the past [OR = 2.80, $p \leq 0.001$] or at least as safe [OR = 2.04, $p \leq 0.001$]. M3 adds the control variables. Income has a high rate of nonresponse which reduces the sample size to 1445 cases. Income does not have a statistically significant relationship with SIV. Due to these two facts, we decided to present the version of M3 without income. M3 without income shows a similar odds ratio with M1 and M2, adding the increased chance to SIV of people with the age of 65 years or more compared with those with the age between 18–39 years [OR = 2.54, $p \leq 0.01$]. M3, the model including income, shows very similar results with M3 excluding income except for an at limit statistically significant relationship of perceived epidemiological risk, people saying that low vaccination rates can be a danger to society having higher chances to SIV in comparison with those that did not think about this [OR = 1.58, $p = 0.05$].

5. Discussions and conclusions

We hypothesized a statistically significant positive relationship between trust in the public health system and the decision to SIV while controlling for perceptions about aspects related to vaccines and vaccinations. For Romania, this hypothesis is partially supported by data. Trust in the healthcare system has a statistically significant and positive association with SIV while trust in family physicians does not, while controlling, for example, for evaluation of vaccination services done by family physicians. This suggests that trust in family physicians is built through experience with them which can be easily adjusted in contrast with overall trust in the healthcare system. This is the key point of this study: increasing the quality of vaccines and the vaccination process and making people aware of vaccines' benefits and safety is not sufficient but just the tip of the iceberg; the entire healthcare system needs a serious facelift which will make it trustworthy.

As we saw, Romanians are not scared of or against today's vaccines (Gallup, 2018; Larson *et al.*, 2018). Their perspective about SIV is dependent on official messages used to promote it, people 65 years or older having higher chances to SIV. Thus, to increase the vaccination rate, the message should be changed to emphasize that SIV is useful for all age categories, not just for the oldest and most vulnerable groups. The COVID-19 pandemic can have a positive effect on social solidarity through the message that young people should think about protecting not only their own health through vaccination but also that of older siblings, their parents, and grandparents (Becchetti, Candio and Salustri, 2021).

None of the other controls were statistically significant in the models. The Romanian public understanding of science is among the lowest in Europe (Vlăsceanu *et al.*, 2010), possibly causing difficulty in differentiating between simple cold and influenza symptoms. This can also explain the lack of effect of the evaluation of epidemiological risk without vaccination. Low trust in State institutions is a constant result in national surveys. Global factors are related to a series of transformations in contemporary societies. They generate new symbolic spaces for interpreting the body-individual-State triad: the need for embodied reflexivity (Crossley, 2006), development of body projects under the pressure of perceived risks (Shilling, 2012), and reconfiguration of the neoliberal principles of health systems (Gheorghiu and Moatty, 2018).

Our study has some limits. The question measuring SIV is rather ambiguous. There is the possibility of having in the sample people vaccinated in the 2017–2018 influenza season and for others vaccinated in the 2018–2019 influenza season. Therefore, data may not reflect the behavior from a specific season but rather general (non)hesitancy regarding SIV. In future surveys the question should specifically refer to the current influenza season to avoid ambiguity. The question measuring awareness about vaccines and vaccination does not differentiate between people having scientific and proven knowledge and those with a poor understanding of the topic. We believe this is an important distinction that should be considered in future surveys. Also, the question does not differentiate between passive receiving and active seeking for information which can also be an important factor for the decision to SIV. Perceived epidemiological risk of low vaccination does not refer directly to SIV. The respondents are asked about what can happen if children are not vaccinated. Unfortunately, we do not have a similar question asking specifically about what happens if people do not vaccinate against seasonal influenza. Some children's diseases against which vaccines are recommended may have more serious repercussions than seasonal influenza although it is difficult to assess the differences, at least in a moral sense. Another problem may be the importance authorities give to children's diseases versus seasonal influenza which will reflect in official and public discourses and instructions for family physicians to recommend each of them. Finally, the question refers to the risk of epidemics given the individual decision to vaccinate excluding the fallacies of contexts, such as the quality of healthcare system or poor conditions of living, which can play significant roles beyond the individual decision.

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