

# The Impact of Socioeconomic Status, Perceived Threat and Healthism on Vaccine Hesitancy

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**Abstract:** The ideology of healthism and low perceptions of the threat of vaccine-preventable diseases may explain the positive link between socioeconomic status (SES) and vaccine hesitancy in high-income countries. The present study aimed to examine the effect of three measures of SES (education, income and family economic status), the perceived threat of infectious diseases and two dimensions of healthism (personal responsibility for own health and distrust in healthcare institutions) on vaccine hesitancy, adjusting for sociodemographic variables. A cross-sectional quantitative study was performed in 2019. Non-probability sampling was employed by sending invitations to respondents over the age of 18 to participate in the study. The snowball technique was used, employing e-mails and digital social networks (Facebook, Twitter and Instagram). Data from 661 respondents were collected via 1 ka.si, an online survey tool. Multivariate regression analysis indicated that vaccine hesitancy was significantly more likely to be expressed by women ( $\beta = 0.29$ ;  $p < 0.001$ ), high-income respondents ( $\beta = 0.09$ ;  $p < 0.01$ ), those who have lower perceptions of the threat of vaccine-preventable diseases ( $\beta = 0.39$ ;  $p < 0.001$ ) and those scoring high on two healthism measures (expressing high perceived control of their own health ( $\beta = 0.18$ ;  $p < 0.001$ ) and high distrust in the Slovenian healthcare system and institutions ( $\beta = 0.37$ ;  $p < 0.001$ )). The findings indicate that among the examined predictors, low perceived threat of vaccine-preventable diseases and low trust in the healthcare system are among the strongest predictors of vaccine hesitancy among the Slovenian public. Policymakers, physicians and other healthcare workers should be especially attentive to the public's and patients' perceptions of the risk of infectious diseases and distrust in medical institutions, including during doctor–patient communication and through public health campaigns and policies.

**Keywords:** vaccine hesitancy; vaccine attitudes; socioeconomic status; healthism; perceived threat

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## 1. Introduction

Immunization directly affects health and helps achieve fourteen of the seventeen sustainable development goals (SDGs), including good health and well-being, reducing hunger and inequalities, ending poverty and achieving gender equality [1–3]. However, despite global efforts, immunization coverage has plateaued in the last decade and fallen from 86% in 2019 to 81% in 2021 [4]. Understanding the determinants of attitudes related to vaccines is vital for vaccine uptake [5–7] and, consequently, for achieving sustainable development goals worldwide.

Studies have shown substantial between- and within-country variance in *vaccine hesitancy* [8], which refers to doubts, concerns and negative attitudes toward vaccines, or rejecting or delaying one's own or a child's vaccine uptake [9–13]. Studies indicate that lower vaccine uptake, higher vaccine hesitancy and anti-vaccine attitudes are generally linked to lower economic and social resources, including lower income, education, social support, knowledge and health literacy [14,15]. For example, higher educational levels have been linked to more positive vaccine attitudes, partly due to increased knowledge and awareness of vaccine benefits gained through education [16,17]. More highly educated individuals may have fewer difficulties searching for and interpreting

information related to immunization and vaccines [18,19]. At the same time, higher income provides people with better access to healthcare and physician continuity, enabling more effective communication about vaccine safety and efficacy [18].

On the other hand, the link between education and anti-vaccine attitudes at the aggregate (i.e., country) level does not follow the same pattern. Several *between*-country studies indicate that the public in countries with higher modernization levels—including high economic development and educational levels—increasingly expresses anti-vaccine attitudes and vaccine hesitancy [8]. High socioeconomic development, robust healthcare systems and extensive vaccine coverage have almost eradicated many vaccine-preventable diseases in high-income countries. Paradoxically, this has also decreased the perceived threat of communicable diseases among the public and increased vaccine scepticism [20,21].

The Slovenian public's distrust of vaccines aligns with these worldwide trends. According to the latest United Nations Human Development Report [22], Slovenia is ranked 23rd on the Human Development Index among 191 countries/territories, with comparatively high gross national income per capita, high educational levels and high life expectancy. Slovenia also has a strong healthcare and welfare system, as evidenced by health outcomes in times of economic crisis [23,24]. Coinciding with its high socioeconomic development and strong healthcare system, however, the data for Slovenia show a low uptake of vaccines for several vaccine-preventable diseases, for example, seasonal influenza [25], rotavirus [26] and human papillomavirus [27,28]. Low vaccine confidence was also evident during the COVID-19 pandemic, as Slovenia has reached among Europe's lowest COVID-19 vaccine uptakes, with only 58% uptake at the beginning of 2023 [29]. Low COVID-19 vaccine uptake may result from the increased general vaccine hesitancy of the Slovenian public compared with populations in other countries [8].

The macro-level link between higher socioeconomic development and vaccine scepticism is recently also being detected at the individual level. Generally, low-SES groups tend to overestimate various types of risks, e.g., the risk of vaccines, and perceive vaccines to be less safe [30,31], resulting, as mentioned, in lower vaccine acceptance among low-SES groups [16,32–34]. However, in recent years, studies in several high-income countries have indicated that high-SES individuals, i.e., those with more social, economic and educational resources available to them, are more likely to be vaccine-hesitant [35,36]. The paradoxical link at the individual level between one's higher resources and vaccine scepticism can be explained by the concept of "healthism" [33,37–39].

First defined by Crawford [40] as "preoccupation with personal health as a primary—often the primary—focus for the definition and achievement of well-being", healthism is also referred to as "beliefs, behaviour and expectations of the articulate, health-aware and information-rich middle-classes" [37]. In recent years, socially privileged middle and upper classes are increasingly seeking to self-supervise their health behaviours as closely as possible with the aim of improving their health [37,38,40]. Specifically, in the last several decades, we have witnessed the emergence of a subculture of socioeconomically privileged citizens who are—despite their advantageous resources—nevertheless more likely to spread false information, seek inefficient or unnecessary care and reject effective preventive health measures [38]. They tend to be university educated, vocal and articulate regarding health and enthusiastically seek information on health and illness via various resources, including the Internet. They favour a "holistic" and "natural" understanding of health and well-being and are highly wary of "unnatural" substances, including chemicals, additives, medical drugs and vaccines, especially when civil liberties issues are involved (e.g., genetically modified foods, fluoridation of water and mass vaccination). Instead of associating modern science and medicine with safety and health, they perceive them as a source of danger [37]. They tend to be sceptical of preventing communicable diseases through vaccines and immunization and favour a "natural" and "strong" immune system instead [41]. Proponents of healthism express *decreased* perceived threat

of vaccine-preventable diseases, but also *more pronounced* perceptions of the “manufactured” risks posed by technological and medical developments, including vaccines [41–43], and, as a result, develop a distrust of science and medicine [33,44].

While the importance of healthism in (post)modern society has been extensively debated in the literature [37,40,45], empirical research on vaccine attitudes and healthism remains scarce. Recently, qualitative [43] and quantitative [46] research has indicated a positive link between healthism and vaccine hesitancy. Furthermore, healthism fully explained the link between higher educational levels and vaccine hesitancy in a study of the French population [47].

However, no quantitative studies exist on the link between SES, disease threat perceptions, healthism and vaccine attitudes in high-income East and Central European countries. Their citizens have been shown to be among the most vaccine-hesitant globally [8]. While vaccine hesitancy is among the top ten threats to global health [13], it is a particularly pressing public health issue in the East-Central European region, including for achieving sustainable development goals, including during the (post-)COVID-19 era.

Therefore, this study aimed to assess the impact of socioeconomic status (education, income and family economic status), perceived threat and healthism on vaccine hesitancy among the public of an East-Central European country.

## 2. Methods

### 2.1. Sample

A cross-sectional quantitative investigation was carried out in November 2019. Using the snowball technique, adult respondents over the age of 18 were invited to participate in a non-probability sample survey via the University of Maribor and other Slovenian online social network profiles (Facebook, Twitter and Instagram) and e-mails. The total sample consisted of 661 Slovenians ( $M_{\text{age}} = 34.9$  years). The data were collected using the online survey tool 1 ka.si. Being older than 18 years old and Slovenian were the only qualifications for inclusion. After reading the written consent form and explicitly agreeing to take part in the study and the publication of the results, participants were then asked to complete a survey that reflected on their opinions and behaviours about vaccination as well as their sociodemographic data.

### 2.2. Measures

Vaccine attitudes were measured with four items. Three of the items have previously already been used in several studies [8,11]: “In general, I think vaccines are effective”, “In general, I think vaccines are safe”, “Vaccines are important for a child’s health” (1 = strongly agree; 2 = agree; 3 = neither; 4 = disagree; 5 = strongly disagree). I also used a fourth item, “People who do not vaccinate their children are endangering others”. A four-item summation variable was created with higher scores indicating vaccine hesitancy (Cronbach’s  $\alpha = 0.98$ ).

The perceived threat of vaccine-preventable diseases was measured with a single item on the perceived risk of contracting a vaccine-preventable disease (perceived susceptibility): “Nowadays the chance of getting an infectious disease is so low that vaccination is no longer necessary” (1 = strongly disagree; 5 = strongly agree).

Consistent with the notion of healthism, its characteristics and earlier operationalizations [37,40,45,47], I used a two-dimensional measure. The first dimension of healthism was captured by three items that indicated the extent to which respondents believed each individual should take his/her health and life into his/her own hands (“*exercising control*”), including by exercising agency in one’s own healthcare decisions. The first item used was “Instead of relying on science and scientists, it is better for the individual to inform himself before making important decisions” (1 = completely disagree; 5 = completely agree). The second item was a semantic differential ranging from 1 to 10 (1 = People should take more responsibility for taking care of themselves and their

well-being; 10 = The government should take more responsibility for ensuring the well-being of the people) (reversed). Finally, I measured respondents' views of the role individuals should have in important decisions that influence the whole society, adapted from Inglehart [48]. Respondents' views were captured with the stated goal "to give people more say" (1 = not chosen by the respondent as an important goal; 2 = chosen as the first or second most important goal). All three measures were coded so that higher values indicate higher "exercise of control", standardized and then summated into a scale (Cronbach's alpha = 0.63).

The second dimension of healthism captured distrust in healthcare and medical institutions [37,43]. I measured "distrust in healthcare" with five items from the Health Care System Distrust scale [49]: "The Health Care System does its best to make patients' health better" (reversed), "The Health Care System covers up its mistakes", "The Health Care System makes too many mistakes", "The Health Care System puts making money above patients' needs", and "The Health Care System experiments on patients without them knowing" (1 = completely disagree; 5 = completely agree). I also included respondents' perceived importance of the source of information about vaccination: "general practitioner" and "National Institute for Public Health (NIJZ)" (1 = very important; 5 = not important at all) (Cronbach's alpha = 0.92).

Socioeconomic status (SES) was measured with three separate items. First, *education* was measured on an 11-point scale. I recoded the values on a 3-point scale (1 = secondary education or less, 2 = post-secondary education, 3 = master's degree or PhD). Second, respondents stated their personal income in euros, and I grouped respondents into income terciles. Third, respondents also assessed their family economic status (1 = strongly below average; 10 = highly above average), and I grouped them into terciles. All three measures of SES were investigated as separate predictors.

In multivariate analyses, I adjusted for demographic variables, including gender (0 = male; 1 = female), age (in years) and size of residential settlement (1 = less than 2000 residents; 3 = more than 50,000 residents).

### 2.3. Statistical Analysis

Statistical Package for the Social Sciences (IBM SPSS Statistics Version 27) was used for the analyses. After the descriptive statistics were examined (Table 1), bivariate correlations were calculated to test associations between vaccine hesitancy and sociodemographic variables, the three SES measures, both healthism dimensions and perceived threat. Vaccine attitudes were then analysed by multiple linear regression, with gender, age and size of residential settlement included in the models as control variables and SES indicators, perceived threat and healthism as predictor variables.

**Table 1.** Descriptive statistics of the sample (control, predictor and vaccine hesitancy variables).

Sociodemographic Feature		n	%
Gender	Female	506	76.6
	Male	155	23.4
Age	18–29 years	218	33.0
	30–39 years	244	36.8
	40+ years	199	30.2
Size of residential settlement	Less than 2000 residents	240	36.3
	2000 to 50,000 residents	182	27.5
	More than 50,000 residents	239	36.2
Income	Up to 850 EUR monthly	189	28.6
	851–1300 EUR monthly	264	39.9
	More than 1300 EUR monthly	208	31.5
Family economic status	1–4 (below average)	98	14.9

	5–6 (average)	315	47.5
	7–10 (above average)	248	37.6
Education	Secondary education or less	183	27.7
	Post-secondary education	394	59.6
	Master's degree or PhD	84	12.7
Nowadays, the chance of getting an infectious disease is so low that vaccination is no longer necessary.	Completely disagree	233	35.2
	Disagree	141	21.3
	Neither agree nor disagree	107	16.2
	Agree	94	14.2
	Completely agree	86	13.0
Instead of relying on science and scientists, it is better for the individual to inform himself before making important decisions.	Completely disagree	127	19.2
	Disagree	182	27.6
	Neither agree nor disagree	225	34.1
	Agree	126	19.1
	Completely agree	127	19.2
Responsibility of an individual vs. the state	People should take more responsibility for taking care of themselves and their well-being.	260	39.3
	Both should take responsibility.	141	21.3
	The government should take more responsibility for ensuring the well-being of the people.	260	39.3
People should have more say in important decisions that influence the whole society.	First (or second) chosen goal.	378	57.2
	Not chosen goal.	283	42.8
The Health Care System does its best to make patients' health better.	Completely disagree	124	18.8
	Disagree	138	20.9
	Neither agree nor disagree	148	22.4
	Agree	197	29.8
	Completely agree	54	8.2
The Health Care System covers up its mistakes.	Completely disagree	9	1.4
	Disagree	47	7.1
	Neither agree nor disagree	119	18.0
	Agree	262	39.6
	Completely agree	224	33.9
The Health Care System makes too many mistakes.	Completely disagree	12	1.8
	Disagree	95	14.4
	Neither agree nor disagree	176	26.6
	Agree	204	30.9
	Completely agree	174	26.3
The Health Care System puts making money above patients' needs.	Completely disagree	36	5.4
	Disagree	83	12.6
	Neither agree nor disagree	127	19.2
	Agree	196	29.7
	Completely agree	219	33.1
The Health Care System experiments on patients without them knowing.	Completely disagree	123	18.6
	Disagree	134	20.3
	Neither agree nor disagree	151	22.8

The importance of the general practitioner as a source of information about vaccination	Agree	121	18.3
	Completely agree	132	20.0
	Not important at all	63	9.5
	Not important	55	8.3
	Neither important nor unimportant	91	13.8
	Important	260	39.3
The importance of the National Institute for Public Health as a source of information about vaccination	Very important	192	29.0
	Not important at all	94	14.3
	Not important	59	9.0
	Neither important nor unimportant	118	17.9
	Important	238	36.1
Vaccine attitudes *	Very important	150	22.8
	In general, I think vaccines are effective.	376	56.9
	In general, I think vaccines are safe.	337	51.0
	Vaccines are important for a child's health.	354	53.6
	People who do not vaccinate their children are endangering others.	339	51.3

Note: \* agree or strongly agree with the statement.

### 3. Results

#### 3.1. Univariate Analysis

Table 2 presents bivariate correlations between vaccine hesitancy and sociodemographic and economic variables. Mean values on the vaccine hesitancy scale are shown for each sample subgroup. Women were significantly more likely to express vaccine hesitancy than men ( $p = 0.001$ ), as were middle-aged and older respondents compared with the youngest age group ( $p = 0.001$ ). In addition, those living in rural areas were the most anti-vaccine-oriented compared with (sub)urban residents ( $p = 0.001$ ). There were no statistically significant differences in vaccine attitudes according to educational level, income group and family economic status.

**Table 2.** Respondents' vaccine hesitancy according to sociodemographic and socioeconomic characteristics.

	Sociodemographic/Economic Feature	Mean (SD)	<i>p</i> -Value
Gender	Female	3.10 (1.61)	0.001
	Male	2.12 (1.34)	
Age	18–29 years	2.39 (1.42)	0.001
	30–39 years	3.35 (1.65)	
	40+ years	2.80 (1.59)	
Size of residential settlement	Less than 2000 residents	3.09 (1.60)	0.001
	2000 to 50,000 residents	3.22 (1.64)	
	More than 50,000 residents	2.39 (1.47)	
Income	Up to 850 EUR monthly	2.72 (1.52)	Ns (0.444)
	851–1300 EUR monthly	2.99 (1.64)	
	More than 1300 EUR monthly	2.85 (1.63)	
Family economic status	1–4 (below average)	2.95 (1.60)	Ns (0.133)
	5–6 (average)	2.96 (1.60)	
	7–10 (above average)	2.73 (1.61)	
Education	Secondary education or less	2.70 (1.51)	Ns (0.798)

Post-secondary education	3.01 (1.65)
Master's degree or PhD	2.57 (1.57)

### 3.2. Multivariate Analysis

Table 3 shows the results of a series of linear regression models. Model 1 included three sociodemographic control variables only (gender, age and size of residential settlement). All three variables were statistically significant predictors of vaccine hesitancy; anti-vaccine attitudes were more likely to be expressed by women ( $\beta = 0.29$ ;  $p < 0.001$ ), older respondents ( $\beta = 0.19$ ;  $p < 0.001$ ) and those who lived in smaller settlements ( $\beta = -0.19$ ;  $p < 0.001$ ). Model 2 included sociodemographic variables and three economic status indicators: education, income and family economic status. Sociodemographic controls remained significant predictors of vaccine attitudes, while higher income was positively associated with vaccine hesitancy ( $\beta = 0.14$ ;  $p < 0.01$ ). It was the only significant socioeconomic predictor in Model 2, as education and family economic status proved insignificant. Finally, Model 3 included all examined variables, including perceived threat and measures of two healthism dimensions: control and distrust in the healthcare system. Perceived threat, perceived control of own health and distrust in healthcare institutions were all significant predictors of vaccine attitudes. There was a negative link between vaccine hesitancy and perceived threat ( $\beta = -0.39$ ;  $p < 0.001$ ) and a positive impact of distrust in healthcare ( $\beta = 0.37$ ;  $p < 0.001$ ) and exercising control over one's health ( $\beta = 0.18$ ;  $p < 0.001$ ) on vaccine hesitancy. Gender remained the only significant sociodemographic predictor of vaccine attitudes in Model 3, as did income among economic predictors; however, it decreased substantially (from  $\beta = 0.14$  to  $\beta = 0.09$ ;  $p < 0.001$ ), indicating that perceived threat and healthism may partially explain increased vaccine hesitancy among high-income groups.

**Table 3.** Multiple linear regression of vaccine hesitancy.

	<b>Model 1 (<math>R^2 = 0.12</math>; <math>p &lt; 0.001</math>)</b>		<b>Model 2 (<math>R^2 = 0.14</math>; <math>p &lt; 0.001</math>)</b>		<b>Model 3 (<math>R^2 = 0.77</math>; <math>p &lt; 0.001</math>)</b>	
	<b>B (SE)</b>	<b><math>\beta</math></b>	<b>B (SE)</b>	<b><math>\beta</math></b>	<b>B (SE)</b>	<b><math>\beta</math></b>
Gender (female)	1.11 (0.16)	0.29 ***	1.17 (0.16)	0.31 ***	0.35 (0.09)	0.09 ***
Age	0.03 (0.01)	0.19 ***	0.03 (0.01)	0.15 ***	0.00 (0.00)	0.02
Size of residential settlement	−0.26 (0.05)	−0.19 ***	−0.26 (0.05)	−0.19 ***	−0.06 (0.03)	−0.04
Education			−0.09 (0.08)	−0.05	0.02 (0.04)	0.01
Income			0.20 (0.07)	0.14 **	0.12 (0.04)	0.09 ***
Family economic status			−0.14 (0.08)	−0.08	−0.06 (0.04)	−0.03
Perceived threat					−0.45 (0.03)	−0.39 ***
Exercising control					0.42 (0.08)	0.18 ***
Distrust in healthcare					0.73 (0.07)	0.37 ***

Note: \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

## 4. Discussion

The present study analysed the impact of socioeconomic status, healthism and perceived threat on vaccine hesitancy among the Slovenian public. The findings indicate that vaccine hesitancy is more widespread among women, those with higher incomes and those who have lower perceptions of the threat of infectious diseases. In addition, vaccine sceptics were more likely to be those who expressed healthist attitudes—an individualistic approach to their health (as indicated by the higher perceived control of their health) and higher distrust in the Slovenian healthcare system and medical institutions.

The study findings are broadly consistent with previous research on vaccine hesitancy, attitudes and healthism [43,45,47], in which individuals who expressed healthism, lower perceived threat and higher SES also proved to hold anti-vaccine

attitudes. Interestingly, higher income (but not education nor subjective family economic status) proved to be a significant predictor of vaccine hesitancy in the present study. Other research shows that more socially privileged individuals are more sceptical and less trusting of medicine [43], which is one of the characteristics of a *risk society* [44] and the ideology of healthism [40]. Healthist attitudes may be pervasive within the model of “neoliberal” parenting [50], whereby parents see their children as unique and feel they know what is best for their child healthwise, including by seeing unitary immunization programmes as problematic or even dangerous. Since taking care of one’s health is a social norm, parents (and patients in general) often “go overboard” by seeking information and “doing their own research” on vaccines and immunization programmes on the Internet [51]. This can lead to overemphasizing the potential side effects of vaccines and underestimating the risks of infectious diseases in modern-day societies.

In the context of healthist attitudes, the present research found relatively high levels of distrust in the healthcare system and medical institutions among survey respondents. More importantly, the findings indicate that low institutional trust decreases pro-vaccine attitudes. This finding is consistent with earlier studies on institutional trust and vaccine acceptance [52–54]. Since distrust in the healthcare system and the medical profession plays a central role in public vaccine attitudes and low vaccine uptake, public health strategies and future studies should also focus on the link between healthcare workers’ and the public’s vaccine acceptance. Studies show that doctors, nurses and other healthcare workers are essential channels for communicating the importance of vaccines to the general public [9,55,56]. However, in a study of several European countries, Slovenian healthcare workers were found to be the *most* distrustful of vaccines and reported the lowest vaccine uptakes among healthcare workers [57]. Some Slovenian physicians, for example, express vaccine safety as an issue; one third of them do not find it important that all healthcare workers are regularly vaccinated against influenza, and 15% of physicians are afraid of (or undecided about) vaccination due to vaccines’ side effects [58]. Based on the evidence on the importance of various forms of trust for vaccine acceptance—including trust in medicine, healthcare, science and political institutions [53,54,59,60]—policies targeting the public’s institutional and generalized trust [61] might prove effective in increasing vaccine acceptance.

Public health policies, strategies and interventions are crucial in how the public perceives vaccines. However, it has previously been emphasized that, for example, public health interventions are primarily based on a “knowledge-deficit” approach [60]. Yet, many studies have detected no beneficial impact of informational and educational interventions on vaccine acceptance, while building trust in health organization, scientists and healthcare professionals is crucial [62]. Nonetheless, partly due to a lack of information or increased misinformation, people’s concerns regarding vaccine safety and efficacy remain the main barriers to vaccination uptake globally [63]. In line with these findings, recent studies have increasingly focused on “health literacy” and its role in promoting vaccine acceptance. Health literacy can be defined as one’s ability to make sound health-related decisions, including finding, understanding, assessing and using health information, or, in the case of “vaccine literacy”, vaccine-related information [64–69]. While some studies show that health literacy may positively impact vaccine acceptance [70,71], other studies indicate that some types of health literacy may decrease vaccine confidence. For example, in one study, “critical” health literacy, which refers to cognitive skills applied in order to “critically analyse information, and to use this information to exert greater control over life events and situations” [72], was found to decrease vaccine acceptance [73]. Interestingly, critical health literacy seems related to healthism; both focus on the critical assessment of information and emphasize relying on one’s own control of one’s health, e.g., through an individual’s search for health- and vaccine-related information. It is, therefore, not surprising that both were found to lower vaccine acceptance, as indicated by the present and other studies [43,46,73]. Future studies



may want to investigate the potential overlap of healthism and specific types of health literacy and their possible interaction in impacting vaccine attitudes and behaviour.

In contrast to the information-deficit model and potentially overly optimistic perception of the positive role of health literacy for vaccine outcomes, the results of the present and previous studies, including in Slovenia [54,74–77], show that vaccine-related decision-making is complex and involves social, demographic, psychological, cultural, economic, political and other micro- and macro-level determinants [8,78], which should be taken into account by various interventions. However, when interventions and policies are implemented, it is essential to plan a rigorous evaluation of their effect on vaccine attitudes [60]. Vaccination mandates, for example, may increase vaccine immunization rates. However, they do not target underlying *causes* and various factors of vaccine hesitancy and might even have negative consequences, e.g., by decreasing trust in immunization programmes and institutions in general [60,79].

Furthermore, studies have found that the general population tends to have higher vaccine acceptance than subpopulations with specific health conditions, predisposing them to increased vulnerability and poorer health outcomes in case of infection with a virus [63]. Therefore, future studies should examine how a person's prior health status might moderate the impact of trust and healthist attitudes on vaccine confidence. The potential moderating effect should inform policymakers in targeting specific sections of the population to increase vaccine acceptance. Providing information on the health risks of vaccine-preventable diseases among the high-risk groups with chronic diseases and increasing their trust might be especially beneficial for increasing immunization.

Although the present study presents evidence on the importance of healthism and threat perceptions for vaccine attitudes, it has several limitations. Firstly, it was cross-sectional; therefore, causality cannot be ascertained. Secondly, the sample was not representative, so there should be caution with interpreting the results. Thirdly, several potential confounders of vaccine acceptance were not examined, such as social trust [80], beliefs in conspiracy theories [81], perceptions of alternative medicine [82,83], political attitudes [84–86] and health status [87,88]. In addition, only one dimension of perceived threat was examined (perceived susceptibility), as the questionnaire did not include items on the perceived severity of vaccine-preventable diseases. Future research should aim to overcome these limitations.

## 5. Implications

One of the main implications of the current study is that vaccine-related public policies and health campaigns should focus primarily on improving the trust of the Slovenian public in the healthcare system and medical institutions. In addition, healthcare workers should be particularly attentive to communicable disease risk perceptions when communicating with their patients. High-SES (especially high-income) individuals may have previously acquired more (mis)information about vaccines and their potential side effects. Healthcare workers should aim to adapt their communication strategies taking into account the recent trends in increased patient autonomy and the scope of health-related information patients acquire daily. Policymakers should consider these findings when formulating policies and strategies to increase favourable vaccine attitudes among the public. Increasing trust in medical institutions and communicating the perceived risk of communicable diseases might have several positive consequences, including improving the quality of patient–doctor communication and increasing patients' positive vaccine attitudes. This will, in turn, help to improve public health, reduce inequalities and advance sustainable development goals.

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**Institutional Review Board Statement:** The study was conducted according to the guidelines of the Declaration of Helsinki. All study participants gave their written informed consent to use and share

their data for scientific purposes. No personally identifiable information of respondents was obtained in the survey, ensuring anonymity. Subjects were informed that participation was on a fully voluntary basis, that completion of the questionnaire indicated their consent for study participation and that all gathered data would be collectively elaborated, having no other purpose than evaluation of determinants of vaccine attitudes. In addition, they were informed that they can withdraw from the survey at any point without any penalty.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data are available upon reasonable request to the author.

**Conflicts of Interest:** The author declares that he has no financial, professional or personal conflicting interests related to this study. The funders had no role in the design of the study; the collection, analyses or interpretation of data; the writing of the manuscript; or the decision to publish the results.

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