



# Healthcare provider and medical student impressions of vaccine hesitancy in Romania

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## ARTICLE INFO

### Keywords:

Vaccine hesitancy  
Healthcare providers  
Medical students  
Romania

## ABSTRACT

**Objectives:** Vaccine hesitancy, including vaccination delay and refusal, threatens gains made to improve global health. Recent outbreaks of measles attributed to lower vaccination rates and the COVID-19 pandemic have added urgency to the need for current and future healthcare providers to effectively identify and address barriers to vaccination.

**Study design:** Cross-sectional interviews and online surveys.

**Methods:** Healthcare providers in Cluj-Napoca, Romania were interviewed. Transcripts were translated for inductive coding. Medical students at the Iuliu Hațieganu University completed an online survey accessed via a university social media group. Descriptive statistics were calculated for each survey question.

**Results:** Practicing clinicians lack confidence in their ability to communicate risks and benefits of vaccination, including the need to use social media for this purpose and seek greater support from the Ministry of Health and parents. Medical students have higher confidence in national and local health officials than practitioners.

**Conclusion:** Neither practicing clinicians nor medical students feel adequately prepared to effectively address vaccine hesitancy. They need additional support from health authorities, particularly around communication and policy.

## 1. Introduction

Vaccine hesitancy, which includes both delayed acceptance of vaccines as well as outright refusal of vaccination when vaccines are available, is a critical threat to global health [1,2]. Hesitancy is a global problem, present in more than 90% of nations, and is the primary cause for the resurgence of diseases once considered eradicated, such as measles [3]. Vaccine hesitancy continues to burden global public health systems and staff and unnecessarily endanger the public with outbreaks of otherwise preventable diseases [4,5].

Of 53 countries in the World Health Organization European Region (WHO EURO), 10 remain endemic for the vaccine preventable disease measles [2]. The European Centre for Disease Prevention and Control (ECDC) reported approximately 44,074 cases of measles in the European Union/European Economic Area between January 1, 2016 and March 31, 2019 [6]; of those 17,850 (40.5%) were reported in Romania [6]. More than 15,000 of these cases were part of an epidemic in Romania that began in late 2016 and ended in late 2018, which resulted in 59 deaths [7,8].

According to the National Institute of Public Health, although many cases of measles are in Romania are imported, falling vaccination rates are responsible for the endemic status of measles [7]. Vaccine hesitancy in Romania has been attributed to informational distortion by anti-vaccination groups, safety concerns, accessibility, lack of perceived benefits, and a lack of trust in public health officials [9]. These correlate with the “3 Cs” [Complacency, Convenience, and Confidence] Vaccine Hesitancy Model developed by the WHO EURO Working Group on Vaccine Communications [1].

In general, medical providers are considered the most trustworthy source of information for parents seeking guidance about vaccinating their children [10]. In Romania specifically, two-thirds of Romanians consider family physicians their primary source of information about vaccines and vaccination, including benefits, risks, availability, and schedule [11,12]. Therefore, this study sought to explore how current and future (i.e., medical students) medical providers in Cluj-Napoca, Romania understood their perceived role in responding to vaccine hesitancy, their confidence in doing so, and their trust in public health agencies and the other informational resources available to them.

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<https://doi.org/10.1016/j.puhip.2022.100261>

Received 6 January 2022; Received in revised form 31 March 2022; Accepted 22 April 2022

Available online 28 April 2022

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## 2. Methods

### 2.1. Study location

The city of Cluj-Napoca, Romania, is the primary metropolitan area in the Transylvania Region. Cluj is the location of Iuliu Hațieganu University of Medicine and Pharmacy, a public medical university with an enrollment of approximately 8000 students in the Faculty of Medicine, Faculty of Dental Medicine, and Faculty of Pharmacy.

### 2.2. Data collection

An interview guide and online survey were developed to collect data in the following domains: perceptions of vaccine hesitancy, perceived levels of confidence in communicating risks and benefits to vaccine hesitant patients, levels of trust in public health agencies, and overall perceptions of barriers to vaccination of patients. All materials were developed in English and translated by native Romanian speakers. The interview guide and survey were reviewed by the University of Delaware Institutional Review Board and determined to be exempt (IRB 1546420).

### 2.3. Medical provider sample

An initial sample of medical providers were selected at random from a complete census of local clinics and hospitals. Face-to-face interviews were conducted by at least two team members at a location chosen by the respondent, recorded with their approval, and transcribed without identifiers (e.g., name or hospital). Interviews were conducted in Romanian and transcripts were translated into English. To increase cooperation rates, at the end of each successful interview, the provider was asked to refer the study team to other potential respondents. Fifteen interviews were completed out of 25 attempts (Response Rate = 60%).

### 2.4. Medical student sample

The online survey was posted on a Facebook page that was only available to fourth, fifth, and sixth year medical students enrolled at the Iuliu Hațieganu University and was recommended by university professors. The survey remained open for responses for 14 days.

### 2.5. Data analysis

Medical practitioner interview transcripts were downloaded into Microsoft Excel 2016 (Redmond, WA) and SAS Studio (Cary, NC). Inductive coding was used to identify themes from interviews. Descriptive statistics (e.g., counts and frequencies) were calculated for each survey question.

## 3. Results

### 3.1. Demographics and professional characteristics

Most provider (13 of 15; 86.7%) and student (26 of 33; 78.8%) respondents were female, similar to the overall percentages in Romania [9,11] (Table 1). The median age of providers was 48 (range: 28–62) and the median age of students was 23 (range: 21–30). All providers described their medical education and current practice setting as urban; all students are being trained in an urban setting. One student reported plans to practice in a rural setting. Nine of 15 (60.0%) providers were general practitioners and 10 of 15 (66.7%) worked in a medical office rather than a hospital. All reported having pediatric patients. Twenty of 33 (60.6%) medical students were pursuing a clinical education specialty.

**Table 1**

Demographic and professional characteristics of medical providers (N = 15) and students (N = 33).

	Providers N (%)	Students N (%)
Gender		
Female	13 (86.7)	26 (78.8)
Male	2 (13.3)	7 (21.2)
Age* (years)	47.8 (9.3)	23.2 (1.8)
Medical Training		
Urban	15 (100)	32 (97.0)
Rural	0 (0)	1 (3.0)
Upbringing		
Urban	14 (93.3)	31 (93.9)
Rural	1 (6.7)	2 (6.1)
Practice Area		
General Practice	9 (60.0)	–
Neonatologist	5 (33.3)	–
Pediatrician	1 (6.7)	–
Practice Type		
General Practice	10 (66.7)	–
Maternity Ward	5 (33.3)	–
Year Completed Residency		
2010 or After	4 (26.7)	–
2000–2009	6 (40.0)	–
1990–1999	4 (26.7)	–
1989 or Earlier	1 (6.7)	–
Specialty Aim		
Clinical	–	20 (60.6)
Surgical	–	9 (27.3)
Paraclinical	–	3 (9.1)
Family Medicine	–	1 (3.0)
Years of Medical School Completed		
4	–	22 (66.7)
5	–	2 (6.1)
6	–	9 (27.3)

\*Mean (Standard Deviation).

### 3.2. Comprehension and communication of vaccine benefits/risks

Most providers (12 of 15; 80.0%) and students (26 of 33; 78.8%) strongly disagreed that the risks of vaccines are greater than the benefits of vaccinating, although 3 providers were neutral. The majority were also strongly confident in their comprehension of vaccine risks (Providers: 13 of 15; 86.7%); Students: 24 of 33; 72.7%) and benefits (Providers: 15 of 15, 100%; Students: 29 of 33; 87.9%). As one provider stated, “It is the doctor’s responsibility to know as much as possible, it is their responsibility to be informed.” However, fewer were strongly confident in their ability to communicate the risks (Providers: 8 of 15; 53.3%; Students: 19 of 33; 57.6%) and benefits (Providers: 11 of 15; 73.3%; Students: 25 of 33; 75.8%) to vaccine hesitant patients. As one respondent put it, “I am uncomfortable when I have to explain the risks of the vaccines to my patients.”

Many providers do not feel they have access to the resources necessary to effectively communicate vaccine risk to their patients, especially to vaccine hesitant patients. This may be due to lack of time, with one provider stating, “I do not have time to communicate [with patients] on social media” and another pointing out that using “social media [to communicate means] patients expect doctors to respond immediately.” The lack of available resources from the Ministry of Health were frequently mentioned. “I feel like I am alone and I do not have the support of public health” stated one, while others pointed out that the Ministry should do a better job “working with the mass media to effectively send a message to the public.” But others reported feeling optimistic based on improvements in communication around vaccination since the 2016–2018 measles outbreak. “Since the [measles] outbreak, the Ministry [of Health] has started to be more proactive at effectively providing information to the public,” suggesting that there may be capacity within the governmental public health agencies to help providers with communication.

### 3.3. Responsibility for vaccine advocacy

When asked if it was their responsibility to encourage their patients to vaccinate, most strongly agreed (Providers: 14 of 15; 93.3%; Students: 25 of 33; 75.8%). Most also strongly agreed that it was not only their responsibility but also the responsibility of both the Ministry of Health (Providers: 12 of 15; 80.0%; Students: 23 of 33; 69.7%) and parents (Providers: 12 of 15; 80.0%; Students: 25 of 33; 75.8%). While one respondent pointed out that “it is the Ministry of Health’s responsibility to create a vaccine policy that would encourage and enforce the general population to get vaccinated” another expressed concern about the lack of support received from the local public health agency or the Ministry of Health due to the inability of “[public health authorities] to communicate within their own organization,” which values “nepotism, not knowledge of the field.” Providers point out that hesitant parents require multiple reminders from many sources because they feel that their children will not be affected by vaccine preventable diseases or “request alternative schedules [to delay vaccination] because their bodies would respond better to the vaccines” at an older age.

### 3.4. Trust in public health sources for vaccine information

Trust in the Ministry of Health as a viable source of information around vaccination was lower among providers than students, with only 4 of 15 providers (26.7%) and 16 of 33 students (48.5%) strongly agreeing the Ministry was a trusted source of vaccine information. Provider views of the District Health Authority were polarized, with 6 of 15 (40%) strongly disagreeing and 5 of 15 (33.3%) strongly agreeing the District Authority was a trusted source. Students were not polarized; most strongly agreed (16 of 33; 48.5%) or somewhat agreed (13 of 33; 39.4%) the District Authority was a trusted source of vaccine information. Most providers (8 of 15, 53.3%) distrusted the College of Physicians as a source of vaccine information, stating that “it wasn’t their role to promote vaccines,” while students strongly agreed 24 of 33 (72.7%) they were a trusted source. Trust in scientific journals among providers and students was high, with 11 of 15 (73.3%) providers strongly agreeing journals were a trusted source and 26 of 33 (78.8%) students strongly or somewhat agreeing journals were a trusted source of information about vaccines. However, in Romania, access to journals is largely limited to specialists.

## 4. Discussion

Vaccine hesitancy is an extremely complex topic that has been associated with demographic characteristics (e.g., gender, age, education, income, and race/ethnicity), sources of information, and compliance with other healthcare interventions [13,14]. In this mixed methods study, both practicing physicians and medical students agreed they knew the benefits of vaccination and had a clear understanding of vaccine risks and benefits. However, they lacked confidence in effectively communicating this information to patients, especially vaccine hesitant patients. The reasons for this varied, and included a lack of time and limited access to information and other resources, as well as a lack of policy guidance from, and loss of trust in, public health authorities.

In this study, one main barrier to addressing vaccine hesitancy identified by current and future physicians was related to communication (e.g., a lack of resources and a lack of confidence to use available resources to communicate with patients). Healthcare providers are among the most trusted sources of information about vaccination; therefore, any barriers that prevent them from communicating vaccination recommendations can be a major contributor to vaccine hesitancy, especially among parents [10,14]. Similar to the findings in this study, healthcare provider hesitancy to recommend vaccination has previously been associated with a provider’s lack of confidence in their ability to effectively communicate vaccine recommendations due to limited time, heavy workloads, and inadequate training in responding to

parents [13]. While reducing workloads or creating more time for providers to communicate with patients may be difficult, there are successful models for the development and implementation of interventions that address current and future healthcare providers’ lack of confidence around communication. Training and other types of supports, like role playing, simulated interactions, or problem based learning, beginning during medical training and included as part of continuing education, has been shown to be effective at improving communication skills among students [15] and practicing physicians [16].

In this study, providers and students agreed that the local and national public health authorities should play a more central role in addressing vaccine hesitancy; however, providers especially are distrustful of officials at both the Ministry of Health and the District Health Authority. Increasing trust in government policymakers among physicians is key to addressing vaccine hesitancy as experts employed at governmental public health agencies can be essential to both the dissemination of accurate information and, if trusted by physicians, can leverage trust in physicians beyond their own patients to make impacts at a larger scale [10]. In addition, the enforcement of policy-based disincentives by officials, such as charging more for treatment of vaccine-preventable diseases among unvaccinated patients and assuring adequate vaccine supply, are several specific areas where actions of public health authorities could contribute to increased trust among both practitioners and the public.

One area of optimism among respondents was the effectiveness of proactive, mass media-based communications around vaccination directly from governmental public health authorities to the public during the 2016–2018 measles outbreak. To build on this, policymakers may need to consider new approaches, such following the playbook of highly effective anti-vaccination websites and social media accounts, which use a combination of links to other sites, legal information, and emotional appeals to encourage vaccine hesitancy [9,17]. Although practitioners interviewed as part of this study recognized social media as a source of much of the vaccine misinformation in Romania, they differed on their interest in, and ability to, use social media to engage patients with pro-vaccination information. However, research has demonstrated that governmental public health agencies at national, state, and even local levels can use social media effectively for both improving public health and identifying target populations for interventions [18].

Highly localized research like that presented here can capture cultural and social influences of hesitancy and provide opportunities for targeted interventions to improve trust, communications, and ultimately increase vaccine uptake. For example, local public health agencies that are diverse and representative of the vulnerable populations they serve can adapt vaccination strategies to local needs, engage local leaders and influencers, and tailor communications appropriately [19]. It will take concerted efforts at all levels of governmental public health to improve rapport between, communication with, and confidence in public health authorities’ ability to adequately address vaccine hesitancy.

This study has several important limitations. Although the sampling frame of practitioners was well-defined, the use of snowball sampling to identify interview respondents likely introduced selection bias if respondents shared a stance on vaccine hesitancy or attitudes towards governmental public health agencies. In addition, the total number of eligible fourth, fifth, and sixth year medical students was not known, so no response rate could be calculated for the online survey. Only students who were part of the University’s closed Facebook group were able to participate, missing students with limited internet access or participation with social media, which is a major venue for vaccine misinformation. Although access to medical offices and vaccines is known to be very low in rural Romania, both practitioner and student respondents were almost entirely urban. The exclusion of other healthcare providers, including nurses and pharmacists, who have traditionally had responsibility for addressing vaccine hesitancy among parents, is also a limitation [20]. Finally, the small size of the sample of both practitioners

and students limits the generalizability of findings to other provider settings and medical schools.

In light of the ongoing COVID-19 pandemic, the challenge of effective infectious disease control through vaccination, and the potential economic, social and population health costs of vaccine hesitancy, have become more apparent. Reduced capacity of healthcare systems, missed and cancelled appointments, and concerns about exposure to COVID-19 have disrupted access to routine vaccinations, increasing the risk of an outbreak when public health systems have the least capacity to effectively respond [21–23]. As access to COVID-19 vaccination continues to expand globally, national levels of vaccine hesitancy and limited ability of current and future medical providers to address hesitancy, may be critical potential barriers to disease control [24].

### Author statements

All materials including the interview guide and survey were reviewed by the University of Delaware Institutional Review Board and determined to be exempt (IRB 1546420). This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. The authors have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Acknowledgements

Adrian Rad and Monica G. Brînzac assisted with data collection.

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