Qualitative Research on Reasons for Vaccination No-Show in Brașov and Mureș Counties

STUDY REPORT, 2024

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The views expressed in this study are those of the authors and do not necessarily reflect the views of the funders.

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The report outlines the importance of considering the Full Public Health Value (FPHV) of vaccination, emphasizing vaccination as a critical tool in preventing infectious diseases. Recent data reveal an alarming rise in preventable diseases such as measles and whooping cough (pertussis), exacerbated by declining vaccination rates.

Romania's National Vaccination Program (NVP) provides free vaccines for children, offering protection against 11 infectious diseases considered priorities for public health. Despite this, public health reports show that Romania faces declining vaccination rates, particularly with the Measles, Mumps, and Rubella (MMR) vaccine, which has led to an increase in measles cases. The decline in vaccine uptake is attributed to factors such as misinformation, vaccine hesitancy, vaccine stockouts and a shortage of community health professionals, home medical services and general practitioners. Romania's National Strategy for Vaccination (2023-2030) aims to improve vaccination coverage, sustain disease elimination, and boost public confidence in vaccination. **Proposed solutions include training healthcare providers, improving communication about vaccine benefits, and addressing social factors contributing to vaccine hesitancy**.

While several quantitative studies have documented the decline in vaccination rates, there is a need for qualitative research to explore the psychological and behavioral drivers of vaccination no-show among caregivers. Understanding the complex interplay of factors, including social influence, personal beliefs, and perceived risks, will enable policymakers and public health officials to design tailored interventions that address these concerns at the local level. This research is essential for understanding the nuanced reasons behind vaccine hesitancy and for formulating strategies that can effectively address these barriers, ensuring that all children receive the vaccines they need for a healthy future.

The research was conducted in two counties, Brașov and Mureș, which have both high incidence rates of infectious diseases (MMR) and low rates of vaccination with the MMR vaccine. The objectives of the study were: a) to identify the primary reasons for caregivers' missing vaccinations of their children; b) to explore the barriers perceived by caregivers, including misinformation, cultural beliefs, and access to healthcare services; c) to assess caregivers' attitudes toward vaccination and their trusted sources of information; d) to investigate the psychological, motivational, social, and economic factors that influence caregivers' vaccination behaviors.

The target population for the qualitative research were caregivers (parents or grandparents) of children aged 0-5 years who failed to attend the full vaccination schedule of their child/children according to the NVP. Caregivers were selected from both urban and rural areas in Brașov and Mureș counties. The sampling method was purposeful sampling, with a cross-section of participants based on level of education: low (no formal education or primary school), medium/high (high school and university education) and area of residence: urban or rural. The study included 62 in-depth interviews, with caregivers distributed across four groups for each county. The methodological framework that guided the data analysis was the COM-B model, adapted for this particular study.

The study highlights several factors influencing caregivers' attitudes and behaviors regarding child vaccination. For rural caregivers, logistical hurdles, including long travel distances, high costs, and limited public transportation options, are a key challenge. These structural barriers suggest an urgent need for locally accessible vaccination services or improved transportation for rural areas.

Knowledge gaps about the vaccines in the NVP were observed, particularly among rural caregivers and those with lower education levels. Many caregivers rely on general practitioners (GPs) for information, yet knowledge dissemination could be more effectively targeted to improve understanding and uptake. Caregivers weigh perceived risks against benefits, and while most see vaccination as beneficial, some caregivers expressed concerns about adverse effects, such as autism or other long-term impacts were exposed as reasons for non-vaccination. Emotional responses, such as fear of side effects, contribute to vaccination no-show, which was further intensified by COVID-19 pandemic-era skepticism.

The prevalence of misinformation and mistrust regarding the composition and safety of vaccines is a significant concern, particularly given the ease with which unreliable sources, such as social media and anti-vaccine influencers, can be accessed. Although many caregivers are aware of the positive health outcomes associated with vaccination at individual and community levels, exposure to misinformation, particularly regarding potential side effects, has resulted in a certain degree of hesitancy and skepticism among some individuals that led to missed vaccinations for their children. This serves to illustrate the considerable influence that digital information exerts on attitudes towards vaccination.

The findings underscore a need for multifaceted interventions: policy changes to enhance equitable access to healthcare services, including vaccination, community services and personnel (e.g. GPs, nurses, health mediators) closer to marginalized rural and urban areas, targeted information campaigns addressing common concerns, and strategies to combat misinformation on digital platforms. Such measures could strengthen caregivers' knowledge, confidence, and motivation, ultimately promoting higher vaccination uptake.

INTRODUCTION
INTRODUCTION

The issue of caregivers' failure to attend vaccination appointments for children aged 0-5 years in Romania is a growing concern, particularly considering the resurgence of preventable diseases such as measles. Understanding the reasons of vaccination no-show is important for designing effective public health interventions and ensuring higher vaccination rates, which are essential for preventing outbreaks and protecting public health. In the report, we acknowledge that vaccination no-show can be influenced by multiple factors, including vaccine hesitancy, which is defined by the WHO as a 'delay in acceptance or refusal of vaccines despite the availability of vaccination services' (Dubé et al. 2014), as well as barriers such as insufficient infrastructure, access issues, and misinformation.

This research enables policymakers to gain valuable insights into the localized causes of vaccination no-show and develop strategies to overcome them, thus building trust among caregivers and ultimately improving vaccination coverage.

While several quantitative studies have documented the decline in vaccination rates, there is a pressing need for qualitative research to explore the psychological and behavioral drivers of vaccination no-show among caregivers (parents, grandparents). Understanding the complex interplay of factors, including social influence, personal beliefs, and perceived risks, will enable policymakers and public health officials to design tailored interventions that address these concerns at the local level.

Need for the Study

1. Local conditions and specific context: In Romania, vaccination refusal rates and vaccination coverage vary significantly between counties. For example, Brașov, Alba, Călărași, Giurgiu, and Mureș counties have high measles incidence rates and low vaccination coverage. Each county has its own particularities in terms of demographic structure, level of education, access to health services and cultural and social influences, which can influence attitudes and behaviors related to vaccination.

2. Exploring the causes of vaccination no-show: A qualitative study in the counties of Brașov and Mureș, for example, would allow a deeper understanding of the specific reasons for vaccination no-show. These counties recorded vaccination refusal rates and vaccination coverage below the national average, suggesting the existence of local factors that warrant in-depth investigation.

3. Updating and adjusting vaccination strategies: Data obtained from this qualitative study would provide updated and context-specific evidence needed to review and adjust public health strategies. This information would contribute to the development of communication campaigns, interventions and community-based activities tailored to the needs and concerns of the targeted communities, to enhance their effectiveness in improving vaccination rates.

4. Understanding local perspectives: The study would investigate caregivers' perspectives and experiences, identifying perceived barriers and reasons for vaccination no-show. This includes attitudes towards vaccination, cultural, social and economic influences, and previous experiences with health services.

5. Implications for public health policies: The results of the study could inform public health policies at county and national level, providing recommendations for enhancing trust and confidence in vaccination programs and Primary Health Care (PHC) services. This could include developing specific educational materials, training medical staff to address caregivers' concerns, and implementing strategies to facilitate access to vaccination in communities with low vaccination coverage.

Study Limits

Researchers faced difficulty recruiting participants, particularly those who habitually missed appointments or refused vaccinations. 144 individuals had to be recruited to conduct the 62 interviews planned. Many declined without explanation, highlighting a challenge in persuading them to share their views due to distrust and fear of repercussions.

Vulnerable groups, with lower education attainment and socioeconomic status, were more cooperative and more inclined to give desirable answers, likely due to their reliance on their GPs for healthcare access. They have limited options for switching doctors and fear jeopardizing their care. This highlights the inadequate primary healthcare coverage in Romania, particularly in rural areas and urban outskirts.

Conversely, families with higher socioeconomic status were less willing to participate. They have the resources to challenge their GPs or utilize private healthcare and can access information to support their anti-vaccination stance. However, they were unwilling to engage in discussions with pro-vaccination individuals, potentially indicating a lack of confidence in defending their position.

1. BACKGROUND AND RATIONALE

BACKGROUND AND RATIONALE

There is a growing focus from public health experts and organizations on considering the full public health value (FPHV) of vaccination when prioritizing, making regulatory decisions, and devise policies for public health initiatives (Gessner et al. 2017). Vaccination is a successful global public health intervention that prevents nowadays more than 20 life-threatening diseases. Between 2010 and 2018, 23 million deaths were averted by the measles vaccine alone (Hotez and Vázquez 2024). More than 116 million infants are vaccinated annually reaching 86% of all children born, which is the highest level ever reported (Hotez and Vázquez 2024). Since 2010, 116 countries have introduced in their public health schedules vaccines that they did not use before, including those against pneumococcal pneumonia, rotavirus diarrhea, cervical cancer, typhoid, cholera, and meningitis (Hotez and Vázquez 2024). Worldwide, immunization should be integrated into primary healthcare services (such as those provided by general practitioners), as lifelong immunization is vital for individual and public health. Equitable access to immunization programs and vaccines is a global concern (World Health Organization 2022), thus implementation of immunization programs must include: a) strategies regarding vaccine supply and equitable distribution for vaccination of hard-to-reach populations and b) strategies to address vaccine hesitancy.

The WHO Europe region is experiencing an alarming increase in measles cases. Between January and December 2023, over 58,114 cases were reported by 41 of the region's 53 member states. This represents more than a 60-fold increase compared to the year 2022 when 941 cases were reported. The increase in the number of cases has accelerated in recent months and this trend is expected to continue unless urgent measures are put in place to reduce the spread of the virus. Vaccine refusal or hesitancy among caregivers has risen worldwide, even though immunization remains one of the most significant achievements of public health efforts. The success of immunization programs depends on high uptake rates and increasing vaccine hesitancy and refusal pose a serious threat to their sustainability and benefits. Most vaccine-hesitant caregivers have a common denominator: they do not fully immunize their children (certain vaccines are not administered), selectively administering only certain vaccines.

Most studies show a clear correlation between suboptimal vaccination coverage and increased rates of preventable disease (Tickner, Leman, and Woodcock 2006; Brenzel et al. 2006; Wicker and Maltezou 2014) mumps and rubella (MMR. Data from Romania show that national vaccination coverage for children aged 12 months is below optimal, with values below 70% for most vaccines included in the NVP.

Data from the European Centre for Disease Prevention and Control (ECDC) reveals that, between May 2023 and April 2024, 30 EU/EEA states reported measles cases to the European Surveillance System (TESSy). **The highest numbers of measles cases were reported by Romania, Austria, France, Italy and Belgium; the most affected age group was the one under 1 year (35 cases/100.000 inhabitants) represented by children ineligible for measles vaccination**. Unvaccinated children under the age of five are also at increased risk, as measles can develop a number of severe complications in this age group (European Centre for Disease Prevention and Control. 2024b). In Europe and Central Asia, more than 1.8 million infants were not vaccinated against measles in 2020-2022 (World Health Organization 2023a). The suspension of public health measures related to COVID-19 has increased the risk of disease transmission. In 2023, 30,601 measles cases were reported in Europe and Central Asia, up 3.36% compared to 2022 when 909 cases were notified (UNICEF 2023a). In 2023, **Romania recorded one of the highest proportions (20%) of children who did not receive the first dose of measles-containing vaccine (MCV1) with Turkey reporting an even higher share (27%) (WHO/UNICEF Immunization Regional Snapshot 2023). This underscores the importance of identifying and addressing inequities in immunization to achieve and maintain high vaccination coverage in every community.**

Thus, public health experts and institutions should work not only to address inequities in immunization programs caused by limited access to these programs for hard-to-reach populations (caused by low socio-economic status or residential isolation) but to find solutions to address the vaccine hesitancy, by expanding their efforts towards information campaigns targeting the caregivers who fail to attend vaccination and better highlighting the lifelong benefits of immunization in managing preventable diseases.

Romania has a National Vaccination Program (NVP) which is financed from the state budget and provides free vaccination of all children, from birth through adolescence- ***I. Vaccination of individuals at the ages specified in the national vaccination calendar***, as well as vaccination programs for at-risk populations- ***II. Vaccination in special epidemiological situations*** (Ord MS No. 964/2022 approving the Technical Norms for Implementing National Public Health Programs).

The NVP provides protection against 11 infectious diseases considered public health priorities: poliomyelitis, diphtheria, tetanus, pertussis, measles, rubella, mumps, viral hepatitis type B, Haemophilus influenzae type b infections, tuberculosis, infection with S. Pneumoniae. Vaccination against measles is carried out with the combined MMR vaccine, thereby providing simultaneous protection against multiple diseases. The national schedule for MMR vaccination provided for in the NVP consists of two doses: the first is given at 12 months and the second dose at 5 years of age. As with most vaccines included in the PNV, MMR vaccination is administered by general practitioners. Also, within the NVP (II. Vaccination in special epidemiological situations) MMR vaccination is provided to limit the spread of measles outbreaks (*Analysis Report on the Mechanisms for Tracking Child Immunization in 11 Counties in Romania | UNICEF Romania*).

Several quantitative studies have shown the reasons behind vaccine hesitancy in Romania. A 2022 survey conducted by the Romanian Association for Health Promotion (ARPS) for UNICEF, involving parents and healthcare professionals, revealed that respondents generally held unfavorable attitudes toward vaccination during the COVID-19 pandemic. The primary concerns were a lack of information about the vaccine and its side effects. Other concerns mentioned were the lack of confidence in the effectiveness of the vaccine and the fear of long-term adverse effects. Another survey conducted in 11 counties between December 2021 and November 2022 by the Romanian Angel Appeal Foundation (RAA), with the support of the UNICEF Romania and the National Institute for Public Health (NIPH) showed that the main factors behind the low measles vaccination rates were both structural (a shortage of GPs in rural areas, long distances to the GP's offices, and reduced population mobility during the pandemic) and individual: distrust in the benefits of vaccination caused by poor healthcare education, or because of the harmful influence of widespread anti-vaccination campaigns (*Analysis Report on the Mechanisms for Tracking Child Immunization in 11 Counties in Romania | UNICEF Romania*).

A study conducted by NIPH in March 2023 with 805 parents revealed that most of the respondents obtained their information about vaccination from general practitioners and nurses. However, a significant share of the parents still did not fully trust the effectiveness of vaccines. Thus, vaccine hesitancy remains a notable problem, fueled by misinformation and mistrust that were exacerbated during the SARS-COV-2 pandemic.

A recent report published by UNICEF (2023b) revealed that public perception of the importance of vaccines for children declined during the COVID-19 pandemic in 52 out of 55 countries studied. In Romania, public perception of the benefits of childhood vaccination has decreased by 10 percent compared to less than 10 years ago (UNICEF 2023b). Children born just before or during the pandemic have now passed the age at which they should have been vaccinated according to the NVP, which is why urgent actions are needed to recover the restitutions, thus preventing outbreaks and epidemics caused by diseases that can develop severely deadly diseases. For example, in 2022, the number of measles cases more than doubled compared to the previous year (UNICEF 2023b). In addition, the SARS-COV-2 pandemic significantly contributed to exacerbating existing inequities. For too many children, especially in marginalized (rural) communities, access to vaccination was difficult. **Even before the pandemic, vaccination progress had stagnated for nearly a decade as efforts increased to facilitate access to immunization programs for children living in marginalized communities**.

In Romania, the steady decline in vaccination coverage rates since 2010 has been driven by several factors (Institutul Național de Sănătate Publică 2024): (a) Vaccination no-show (40.3%) is largely due to the migration of young families, which prevents them from bringing their children in for vaccinations, (b) dispersed and sometimes incorrect information regarding the vaccination schedule and temporary contraindications to vaccination (c) the general practitioners network is unevenly distributed in the country, and the number of general practitioners is decreasing (d) a steady increase in vaccine hesitancy and widespread anti-vaccination

campaigns and (e) discontinuities in the supply of MMR vaccine (*Analysis Report on the Mechanisms for Tracking Child Immunization in 11 Counties in Romania | UNICEF Romania*).

However, the most worrying factor is vaccine hesitancy, with a growing mistrust in the safety of vaccines observed worldwide (Larson et al 2022). The widespread fear of long-term adverse reactions to vaccines- which remains scientifically unproven- has emerged an important reason for vaccine refusal even in Romania (Habersaat et al. 2020).

According to the National Strategy for Vaccination for the period 2023-2030 published by the Romanian Ministry of Health (2023), one of the main challenges that the NVP faces is the fact that vaccine hesitancy is prevalent among the population, and some medical staff adopt a defensive behavior regarding vaccination. Vaccination is mainly administered by general practitioners, who do not always inform patients about the vaccines their children are eligible for or about possible post-vaccination adverse reactions and their management. A degree of mistrust in the safety of vaccines exists among the population, with the fear of adverse reactions being a significant barrier to vaccination.

The national strategy aims to strengthen the capacity of all sectors involved in achieving immunization goals, improve cooperation between sectors to achieve optimal vaccination coverage for all vaccines included in the NVP by 2030, and to increase access and lifetime vaccination coverage for people at risk of vaccine-preventable diseases.

2. RATIONALE FOR COUNTIES SELECTION

RATIONALE FOR COUNTIES SELECTION

The counties from which GPs and, implicitly, caregivers were selected for inclusion in the study were chosen based on a combination of criteria, considering aspects such as:

1. Previous UNICEF interventions in various counties in Romania
2. Measles incidence and mortality from January 1, 2023 to September 1, 2024 (source: National Institute for Public Health (INSP)
3. Vaccination coverage at 18 months of age for children born in July 2022 (source: INSP)
4. MMR vaccine coverage at 12 and/or 18 months for children born in July 2022 (source: INSP)
5. Monthly birth numbers in maternity wards
6. Local healthcare personnel: nurses, GPs, community health workers, and health mediators
7. Urban/rural distribution of the resident population (source: INS)
8. Ratio of GPs to resident population

The evaluation and selection were conducted using the most recent and complete publicly available data. Based on the assessment criteria mentioned above, counties Brașov and Mureș were selected for their relevant characteristics and for meeting the necessary criteria to be included in the study.

From October 2019 to December 2022, UNICEF in Romania, in partnership with the US Centers for Disease Control & Prevention, designed and implemented an intervention based on motivational interviews (MI) to increase timely immunization rates among children in Vrancea, Brașov, Mureș, and Neamț counties. This intervention aimed to train healthcare workers in hospitals, primary and community healthcare systems, to initiate and maintain conversations with mothers of newborns about vaccination, and to train community mobilizers to reach out to parents who missed vaccination visits for their children. The purpose of these interviews was to provide information about vaccines, investigate vaccine hesitancy, address concerns, and establish a personal connection with parents.

An analysis of the latest official data on measles (INSP, September 1, 2024) shows that, from January 1, 2023 to September 1, 2024, a total of 23,972 confirmed measles cases were reported in Romania, with 21 deaths (5 in Bucharest, 4 in Brașov County, 3 in Giurgiu County, 2 in Argeș County, 1 in Mureș County, 1 in Sibiu County, 1 in Buzău County, 1 in Constanța County, 1 in Iași County, 1 in Alba County, and 1 in Ialomița County). The 23,972 confirmed cases of measles were reported across all counties in the country and in Bucharest, as shown in Table 1 in Appendices. It should be noted that two of the counties where the intervention was implemented (Brașov and Mureș) currently have significant incidences of measles cases, ranking 1st and 5th respectively, compared to other counties. Furthermore, Brașov recorded the highest number of measles-related deaths (4 deaths) after Bucharest.

In February 2024, the vaccination coverage was estimated for children born in July 2022 based on a specific methodology. Vaccination records were evaluated for 12,735 children, representing 92.8% of the total number of live births in July 2022. Of the total number of 12,735 children, 7,372 (57.9%) were from urban areas and 5,363 (42.1%) from rural areas. For this cohort, a child is considered fully vaccinated if they received: 1 dose of BCG vaccine, 4 doses of pediatric Hep B vaccine, 3 doses each of DTaP, IPV, Hib, and Pneumococcal vaccines, and 1 dose of the MMR vaccine.

The MMR vaccination coverage at 18 months in Brașov and Mureș counties is suboptimal, with values of 79.5% and 73.2%, respectively, which explains the high measles incidence rates in these counties. The disease cannot be controlled with vaccination coverage rates below 95% for both the first and second dose of the MMR vaccine (Table 2 in Appendices).

The vaccination coverage rates for the second dose of MMR at 5 years of age and for the Tdap at 14 years of age also indicate that Brașov and Mureș counties have concerning coverage levels, with values of 63.8% (second dose of MMR at 5 years) and 59.2% (Tdap at 14 years) for Brașov County, and values of 63.8% (second dose of MMR at 5 years) and 59.2% (Tdap at 14 years) for Mureș County (Table 3 in Appendices). Access to healthcare services and the availability of medical services within communities are contextual factors that can influence vaccination behaviors. Table 4 in Appendices presents key population and demographic data at county level in Romania, as well as data on the distribution of healthcare personnel, community health workers, and health mediators by county.

The data shows that Brașov County has the lowest number of community health workers among all counties in Romania, after the Municipality of Bucharest (Table 5 in Appendices). The analysis of other demographic data and healthcare personnel, as well as the ratios of these data (such as the number of GPs relative to the total population or the number of births, and the number of children aged 0-5 years), reveals that Brașov County has the lowest number of GPs and community health workers in relation to the total population of children aged 0-5 years (Table 6 in Appendices). For other population data, the analysis shows that there are no significant differences between Brașov and Mureș counties and other counties.

Based on the analysis and evaluation of the available data, it can be concluded that the high incidence of measles cases in Mureș and Brașov counties is the result of a complex set of local-specific social, demographic, population, and economic factors. These factors include insufficient healthcare service coverage, limited access to healthcare services, a shortage of human resources in primary healthcare services, ethnic diversity, level of economic development, and a dramatic decline in vaccination coverage rates. Therefore, a detailed qualitative study is essential to better understand these variables and to develop effective intervention strategies aimed at improving vaccination rates and population health.

Brașov County

Located in central Romania, within the Central Development Region, Brașov is one of the largest counties in the country, comprising 10 cities and municipalities, 48 communes, and 149 villages, with a population of 552,793 in 2023 (Regional Development Agency – Center). In terms of residence, 68.2% of the county's population lives in urban areas (377,087 inhabitants) and 31.8% in rural areas (175,706 inhabitants) (National Institute of Statistics).

Economically, Brașov has a GDP per capita of 24,787 euros in PPS (Purchasing Power Standard, 2020) and a development structure distributed as follows: services 61.8%, industry 28.9%, construction 6.9%, and agriculture 2.4%. Due to its location, Brașov has a diverse ethnic composition. The 2021 Census identified the ethnic structure as follows: Romanians 76.2%, Hungarians 5.2%, Roma 4.3%, Germans 0.3%, and other ethnicities 0.2% (National Institute of Statistics, 2021).

Demographically, in 2023, there were 5,003 births recorded in the county, placing Brașov among the counties with the highest number of monthly births in healthcare facilities. In 2020, Brașov recorded a birth rate of 11.5‰, an increase from previous years (2000 – 9.2‰ and 2010 – 10.4‰) and higher than the national average (10.3‰) and the European average (9.1‰) (National Institute of Statistics).

Mureș County

Located in central Romania, within the Central Development Region, Mureș is one of the most important counties in Romania. The county includes 11 cities and municipalities, 91 communes, and 464 villages, with a population of 519,344 as of 2023 (Regional Development Agency – Center). In terms of residence, 47.5% of the county's population lives in urban areas (246,510 inhabitants) and 52.5% in rural areas (272,834 inhabitants) (National Institute of Statistics).

Economically, Mureș County has a GDP per capita of 17,294 euros in PPS (Purchasing Power Standard, 2020) and a development structure distributed as follows: services 60.2%, industry 28.1%, construction 5.9%, and agriculture 5.8%. Due to its location, Mureș has a diverse ethnic composition. The 2021 Census identified the ethnic structure as follows: Romanians 48.7%, Hungarians 31.8%, Roma 8.7%, Germans 0.2%, and other ethnicities 0.1% (Regional Development Agency – Center).

Demographically, in 2023, there were 4,667 births recorded in the county, placing Mureș among the counties with the highest number of monthly births in healthcare facilities. In 2020, Mureș recorded a birth rate of 11.0‰, above the national average (10.3‰) and the European average (9.1‰) (National Institute of Statistics).

4. METHODOLOGY

METHODOLOGY

4.1. Research Design

This research is a **qualitative study** aimed at understanding the factors that contribute to vaccination no-show among caregivers of children aged 0-5 in Romania. The study will focus on caregivers who did not attend their children's vaccination appointments according to the NVP calendar, with particular attention to their attitudes, beliefs, and perceived barriers. The primary goal is to gather data that will inform the development of effective strategies to increase vaccine uptake and address the concerns of caregivers.

The objectives of the study are:

- To identify the primary reasons for caregivers' failure to attend their children's vaccination appointments.
- To explore the barriers perceived by caregivers, including misinformation, cultural beliefs, and access to healthcare services.
- To assess caregivers' attitudes toward vaccination and their trusted sources of information.
- To investigate the psychological, motivational, social, and economic factors that influence caregivers' vaccination behaviors.

4.2. Study population and sampling

The target population for this research consists of **caregivers of children aged 0-5 years** who have not vaccinated their children. Caregivers were selected from both urban and rural areas in **Brașov** and **Mureș counties**.

The sampling method is **purposive sampling**, with a cross-section of participants based on:

- **Level of education**: low (no formal education or primary school), medium/high (high school and university education).
- **Area of residence**: urban or rural.

The study included **62 in-depth interviews**, with caregivers distributed across four groups for each county:

COUNTY	AREA OF RESIDENCE	LOW EDUCATIONAL LEVEL	MEDIUM AND HIGH EDUCATIONAL LEVEL	TOTAL
BRAȘOV	Urban	7	7	**14**
	Rural	11	7	**18**
MUREȘ	Urban	7	9	**16**
	Rural	7	7	**14**
TOTAL		**32**	**30**	**62**

Data were collected through **face-to-face in-depth interviews**. A semi-structured interview guide was used to facilitate discussions, focusing on: a) Risk perceptions; b) Knowledge of vaccines; c) Attitudes toward vaccination; d) Trusted sources of information; e) Decision-making processes, and f) Perceived barriers to accessing vaccination services.

The interview guide included open-ended questions to allow participants to express their views freely. The interviews took place in settings where participants felt comfortable, such as their homes or neutral locations.

The data were analyzed using **thematic analysis**, which involves identifying, analyzing, and reporting patterns (themes) within the data. Thematic analysis will provide insights into the underlying reasons for vaccine hesitancy, as well as potential solutions.

4.3. Data analysis

Thematic analysis involved coding interview transcripts to identify recurring themes. The methodological framework that guided our data analysis was the COM-B model, adapted for this particular study. The COM-B (Capability, Opportunity, Motivation- Behavior) framework was used to understand the complex interaction of factors that influence vaccination behavior, particularly in the context of vaccination no-show.

4.4. Overview of the COM-B Framework

The COM-B framework is a behavioral framework designed to understand the determinants of human behavior. The framework was developed by Susan Michie, Maartje van Stralen and Robert West (2011) and starts with the assumption that a certain behavior can occur only when a person has the capabilities and opportunities to engage in and is motivated to enact that certain behavior in preference to others. The COM-B framework categorizes the factors that influence behavior into three core components:

- **Capability**: The individual's ability to engage in the behavior, including physical and psychological capacity.
- **Opportunity**: External factors that make the behavior possible or prompt it, such as social and environmental influences.
- **Motivation**: The mental processes that direct behavior, including both reflective (deliberate) and automatic (emotional) responses.

In this study, the COM-B framework was applied to identify the specific factors that influence caregivers' decisions about vaccinating their children. Each component will be explored through the following dimensions:

Capability

- **Physical Capability**: Whether caregivers can physically access vaccination services, such as their ability to reach vaccination clinics.
- **Psychological Capability**: Whether caregivers have the knowledge and understanding the benefits and risks of vaccination. This includes their ability to process and act on information about vaccination.

Opportunity

- **Physical Opportunity**: The availability and accessibility of vaccination services in both urban and rural areas. This includes proximity to healthcare facilities, the availability of vaccines, and the presence of healthcare providers.
- **Social Opportunity**: The social influences that affect caregivers' decisions, including community norms, cultural beliefs, and the opinions of family and friends. Social support or pressure may either encourage or deter vaccination.

Motivation

- **Reflective Motivation**: Deliberate decisions based on the perceived risks and benefits of vaccination. Caregivers may weigh the potential side effects of vaccines against the risks of disease.

- **Automatic Motivation**: Emotional responses such as fear of needles, anxiety about vaccine side effects, or mistrust of healthcare providers. These automatic responses can be powerful drivers of behavior.

4.5. Ethical considerations

The study adhered to strict ethical standards to ensure the confidentiality and comfort of all participants. Informed consent was obtained from all participants before the interviews. The interviews were conducted in a manner that ensured participants felt safe and comfortable expressing their views, as vaccination is often seen as a sensitive topic.

5. RESULTS

RESULTS

5.1 Information About Study Participants/Participants Profile

The interviews were designed to include both men and women. Although some men were recruited, they either declined participation or redirected the interview to mothers. Most of the participants recommended by family doctors were women, particularly mothers and grandmothers, reflecting the societal norm where women predominantly manage caregiving responsibilities, including decisions related to children's vaccination (International Labor Organization 2024). Consequently, the final sample consisted exclusively of women aged between 20 and 61 years, many of whom were housewives. The urban-rural and education level (low, medium and high) distribution of respondents was respected to ensure the inclusion of a diverse range of situations.

5.2. Factors Influencing Vaccine No-show

This section considers previous experiences with vaccination, whether positive or negative, as well as the reasons why the caregivers delayed or refused vaccination. It also addresses whether the child has an immunization card and its current location, and the likelihood that caregivers will ensure their children are vaccinated according to the schedule.

5.2.1. Caregivers' Previous Positive or Negative Experiences with Vaccination

Even though the respondents were referred by general practitioners as part of the group who failed to adhere to their children's vaccination schedule, it was possible to identify caregivers who reported positive experiences with vaccines. The reasons for not showing up or delaying vaccination vary. Some caregivers, including those who intend to complete their child's vaccinations according to the National Calendar, had valid reasons for delaying vaccination. Others have changed their minds about the benefits of the vaccines and are yet to openly admit their decision to an unknown third party (general practitioner).

Positive experience

Caregivers expressed satisfaction with the absence of vaccine-related side effects.

> *Interview 12: "I had no side effects. Basically, that means that you're happy with the vaccine because you have unexpected effects. I haven't had any problems either, fever, other situations, redness or.... No. I haven't."*

Caregivers understand the benefits of the vaccines that protect their children from life-threatening diseases, ensuring their health and well-being.

> *Interviewee 6: "Yes, but I think vaccines are very important for children, because there are all kinds of diseases and vaccines help them."*

Caregivers explain the health benefits of vaccination to their children, encouraging them to overcome vaccine fears.

> *Interview 19: "I have always explained to M [her child] that doctors are there to help you... we get a vaccine because that vaccine helps you, it protects you, it's good for you..."*

Many caregivers have friends who have shared positive experiences with vaccines, demonstrating their effectiveness and reliability in protecting children's health.

Interview 3: "...there are definitely some positive stories... we have a lot of friends who have had their children vaccinated and there have been no problems."

Negative experiences

Caregivers who have declined or postponed vaccination report previous negative experiences, either personal or observed in their community. Some caregivers are reluctant to vaccinate their children due to their personal knowledge of individuals who have experienced adverse effects following vaccination. Such attitudes are frequently amplified by misinformation or conflicting opinions within the community. It is important to note that there are instances where caregivers have acknowledged that they have overcome these negative experiences and have proceeded with vaccinating of their children.

Interview 6. "With the little girl, I was a bit scared at the time, honestly, but I saw that she was OK [the baby was crying and stopped breathing because she was crying so loudly], I blew in her face and she recovered. That was my biggest fear, that she would pass out in my arms from crying so loudly and stop breathing. [but continued with the vaccination]".

There have been reports of serious adverse effects following the administration of the MMR vaccine in children.

Interview 29. „After the MMR vaccine at 1 year of age, M. had a series of adverse effects, of the neurological type: motor tics, hyperactivity, which he has been left with to this day. ... I have met parents of children with autism and other autoimmune diseases, and they regret the MMR vaccination with tears in their eyes, but too late."

Some caregivers mentioned the development of complications, mobility problems or autism following a child's vaccination.

Interview 38. Honestly, someone told me that she had vaccinated her child and that she got sicker, she had a very high fever. I explained that, when the child has a fever after the vaccine and so on, it's because the body reacts and it's OK and so on, but she didn't understand and said that she had a fever higher than 37, she said that it was somewhere around 39 and so on and she went to the hospital and the child started to flare up or something like that. Honestly, I don't necessarily know whether to believe that person or not, because she doesn't seem a very trustworthy person.

Interview 19. "I have met parents with children who have developed autism and other autoimmune diseases from the vaccine, and they tearfully regret the MMR vaccination, but too late."

5.2.2. Children's Access to an Immunization Card

As one of the mothers notes, the immunization card is a valuable tool for monitoring the immunization schedule as outlined in the National Calendar. However, not all caregivers have the card at home. Some cards have been misplaced, while one was destroyed in a fire. In other cases, the card is retained by the family physician. Furthermore, caregivers have stated that they do not have cards for all their children.

Interview 15. "For the other, older children, I don't know if they have a card, maybe the husband has it, with his papers. I have these vaccinations, the ones on the card, I have them for these little ones, but I don't know where my husband put the cards for the older ones."

Interview 29. "Yes, we have the immunization card, and it is kept in the child's medical file."

Interview 06. "She has [an immunization card], but our house caught fire, everything burned down, but the nurse at the doctor's office has it."

Interview 59. "Only one, the older girl, has it with her name. [...] The others don't have immunization cards."

Interview 18. "I remember from the maternity that I got the immunization card. I got it from the maternity and that card says when the child should be vaccinated at each stage."

5.2.3. Probability of Administering All Recommended Vaccines as per the National Immunization Schedule

To gain a comprehensive understanding of the situation, we inquired of caregivers whether they intend to adhere to the recommended immunization schedule and, if not, whether they intend to administer any missed vaccines. Concurrently, we sought to gain insight into the immunization status of the children of the caregivers we consulted. These data were deemed to be a reliable indicator of caregivers' future attitudes towards vaccination. A variety of circumstances were identified.

In some cases, one child in a family may experience a delay in receiving a vaccine, while the remaining siblings are vaccinated according to the full schedule. In other instances, one or more children may receive an additional vaccine outside the established vaccination schedule, with the delay directly related to their health status. In such cases, it can be reasonably assumed that the likelihood of continuing the immunization schedule is very high.

In some cases, the eldest child, whether an adolescent or an older child, has received all the scheduled vaccinations, while the younger siblings have only been vaccinated, at birth, in the maternity. The mothers expressed a desire to continue the vaccination schedule for all children, but their statements cannot be taken at face value. This represents a shift in attitude towards vaccination, characterized by a certain reluctance.

There are cases where the influence of the grandparents prompts parents to resume and continue the vaccination schedule. We have identified a case where a child aged approximately one year who had only been vaccinated at birth in a maternity ward was scheduled to be taken to a medical professional to resume the immunization schedule. This was due to the grandmother, a proponent of vaccination, who, having returned to the country, expressed a strong desire to have the grandchild protected. It is crucial to highlight that, in a considerable number of instances, grandparents represent pro-vaccination generations and frequently exert pressure on younger household members to vaccinate their children. Such individuals may also serve as partners in vaccination campaigns.

5.3 Capabilities

Capability refers to whether a person has the knowledge, skills, and abilities to engage in a certain behavior. The capability dimension is operationalized into two sub-components: a) physical capability- whether caregivers can physically access vaccination services, such as reaching vaccination clinics and b) psychological capability- whether caregivers have the knowledge and understanding of vaccines' benefits and risks. This includes their ability to process and act on information about vaccination.

5.3.1 Physical Capabilities

The Romanian healthcare system is facing a significant shortage of GPs, compounded by an ageing workforce and a lack of new professionals entering the field. The issue of primary health care services, particularly in rural areas, has been acknowledged by the Ministry of Health. It is unsurprising that the primary reason cited by our respondents, particularly those residing in rural areas with low living standards, is the distance to the general practitioner's office.

Access to healthcare services – GPs

Caregivers, especially those from rural areas and on low income, express concern regarding the cost of the transportation to and from the GP's office. While it might be assumed that only vulnerable families in rural areas face difficulties accessing healthcare, it is important to recognize that many vulnerable families reside in urban areas, particularly on the outskirts of cities. In these locations, public transportation can be challenging to navigate, and the distance to a GP's office can be considerable, especially for a mother with young children.

Lack of reliable transportation, long travel distances, and limited clinic hours can make it difficult to attend vaccination appointments. For some caregivers, these barriers result in missed or delayed vaccinations, particularly when healthcare providers do not offer flexible appointment options. Some caregivers report difficulties in finding transportation or in managing logistics to bring their children to clinics, especially when they have multiple young children at home.

It is important to note that some families cannot afford the costs associated with traveling to healthcare centers or taking time off work. Although vaccines are provided free of charge, the indirect costs of accessing healthcare create a barrier for low-income families.

> *Interview 17. "If you find a car, yes. But if you can't find a car and I'm on my way out... You drive me there and I'll pay you" (the distance is 4km to the GP's surgery).*

> *Interview 04. "It takes about half an hour. It takes half an hour if I go in the cart, because I have a horse and cart, I go to the back... There, my husband is waiting for me and I go with the children to the polyclinic. I stay there until it's my turn to go in, I go in, he consults them, he gives me the prescriptions, I go to the pharmacy, I take them and that's it" (clarification: this is an urban mother).*

> *Interview 38. "Honestly, for people who live a little bit further away, poor people who live in a village further away, no transportation, nothing. I guess it's a bit harder to come here for the vaccine. But people from this community are really very close, I mean somewhere around 700 meters something like that, it's really close, they don't have a specific excuse that they can't, but people from the remote villages I say they do. And they don't have transportation."*

> *Interview 62. "We have a bus here at the station, but how can I walk with the baby in my arms to the station? [...] From there I have to walk a long way to get to the doctor."*

Access to the vaccine

The results of the interviews indicate that the caregivers did not report any issues with immunization due to a lack of vaccines at the GPs' office, if they scheduled an appointment. One respondent mentioned that she had visited the GP with the intention of vaccinating her youngest child, but the GP did not have the vaccine in stock. Subsequently, the mother conceded that she had arrived at the physician's office without prior notification, unaware that the GP was scheduled to receive the vaccine. Otherwise, the caregivers interviewed stated that GPs typically demonstrate interest and have the necessary vaccines for children, provided that all requisite procedures are completed in a timely manner. Furthermore, some caregivers clarified that upon arriving at the GPs' office with their child for vaccination, they were promptly consulted by the GP.

> *Interview 01. "...I went and there were not, there were no vaccines... When I went, he didn't have the vaccine. And he told me to come back another time and, that's the truth, I didn't go".*

> *Interview 06. "...they do as I tell you; they order the vaccines and we have to wait until the vaccines arrive at the clinics. We have no way of knowing when they arrive. The family doctor tells us when to go for the vaccine".*

5.3.2 Psychological Capability

The analysis considered the following factors: caregivers' knowledge of how vaccines work, the effects of delaying or refusing vaccination, the consequences for the child's health if not vaccinated, the importance of vaccination for the child and the community, and the safety and effectiveness of vaccines. Furthermore, the analysis examined *whether caregivers were aware of the vaccines their children needed, the* number of doses for complete immunity, and the timeframe for the next doses.

Awareness and information about vaccination and National Vaccination Program (NVP)
During our interviews with caregivers of low, medium and high education levels from rural and urban areas, we came to identify several categories.

The first category comprises caregivers who acknowledge their lack of knowledge regarding vaccines and the diseases they can prevent in children. These caregivers demonstrated limited awareness of the national immunization schedule. However, some expressed interest in acquiring further information on the subject, including more detailed explanations of the schedule's details. Some respondents noted that their lack of information contributes to feelings of uncertainty and apprehension regarding the decision to vaccinate their child. Others indicated that they sought counsel from their general practitioner or pediatrician prior to making the decision to vaccinate or to decline vaccination. Not all families acted on the their GP's advice, which raises questions about the quality of the communication between GPs and caregivers, the ease with which information is understood, and the persuasiveness of the message.

> *Interview 15. „I didn't know, the doctor didn't tell me what's next, how it's done," [states a parent who had not received explanations about what vaccines involve, which created fear and uncertainty about the vaccination process."*
>
> *Interview 23. „No one told me."*
>
> *Interview 10. „I went to the family doctor to have the vaccine when he called me, and I asked him if he could give me a written guarantee that my child would not be harmed by the vaccine, and he told us that he could not do that."*
>
> *Interview 29 „We consulted with the family doctor, who insisted that we should have the vaccine, but he couldn't convince us."*

The second category comprises individuals who have some knowledge about vaccines and the diseases they prevent, as well as an awareness of the existence of a vaccination program. The participants in this category expressed interest in receiving further information, including the provision of a community point of contact to address queries pertaining to vaccination and child health.

> *Interview 18. "No, he told me, look, you need to get these vaccines. I recommend them. I'm telling you it's safe, it's okay and..."*
>
> *Interview 20. "Yes, the doctor also told us. Yes, indeed, the family doctor told us to go and vaccinate him, that it was for his own good and.... We thought and we brought him [in for vaccination]."*

The third category comprises individuals who possess extensive knowledge about vaccines and conduct rigorous research, including the utilization of scientific sources, with the objective of making an informed decision that optimizes the future health of their child. However, even those with the most extensive knowledge of vaccines express frustration at the lack of official and reliable sources of information on the subject.

> *Interview 28. "I don't know what could influence me to decide about vaccination, I have no idea. At least for this vaccination schedule, maybe some extraordinarily well-done research studies that would be made available to us that could be evaluated and that would be scrutinized and that would be looked at by other specialists and discussed and over-discussed. Perhaps that would persuade me to reconsider vaccination, but it is almost impossible."*

Thus, caregivers, regardless of their level of education, express a wish for more information about vaccines. As the level of education increases, the requirements become more specific, clear and well formulated. While those with lower levels of education require basic information about vaccines, those with higher levels of education seek information from official, reliable sources, with pros and cons and details about side effects.

Risk perceptions related to vaccination no-show

Asking caregivers about the effects of failing to vaccinate their children on time in accordance with the recommended immunization schedule revealed a wide range of responses. For some, the decision not to vaccinate on time may result in the child being unable to access the education system. For others, the lack of vaccination is not perceived as a risk to the health of the unvaccinated child alone, but also to the health of other vaccinated children. In other instances, the vaccination no-show may be an indication of postponement rather than refusal. The caregiver in question indicated that once the child's condition improved, they would resume the immunization schedule. Furthermore, some caregivers are aware that failure to vaccinate their children in time may increase the likelihood of the child contracting a disease from their kindergarten classmates.

> *Interview 19. „If you don't have your immunization card, they don't accept them [in kindergarten]".*
>
> *Interview 29. „It doesn't affect the child's health [because] a healthy immunity is a naturally acquired immunity, that is, by going through illness."*
>
> *Interview 3. „I got scarlet fever.... and I don't find it ok that in a community...I can't let him go knowing that he is sick ."*

The analysis of these responses lends further support to the initial observation that caregivers, irrespective of their level of education, lack the required information to gain a deeper understanding of the effects of vaccination.

The importance of vaccination for the child and the community

The research indicated that there are respondents who consider vaccination to be not only an individual protective measure, but also an essential contribution to community health and safety. This is because they believe that vaccination prevents outbreaks and epidemics, and thus protects their own child.

> *Interview 29. "Yes, in the sense that herd immunity is achieved, and we don't end up with outbreaks and epidemics."*
> *Interview 31. "It's also important for the health of the community, not just them. If all children are vaccinated, the risk of them getting sick and transmitting diseases is lower".*
>
> *Interview 1. "It would be good to be immunized and receive all these vaccines. That would keep them away from these diseases."*
>
> *Interview 18. "Yes, I think it's important to the community as well... It's a responsibility".*

Safety and effectiveness of vaccines

Regarding the safety and efficacy of vaccines, caregivers can be classified into two distinct groups. Those with a positive outlook on the safety and efficacy of vaccines tend to base their views on personal experiences and trust in medical authority.

> *Interview 18. "They are very effective. Since they have stopped epidemics, and we live in good conditions... I think it's a very important discovery".*
>
> *Interview 29. "We live in an era of highly allergic children, some even from birth, autism and other autoimmune diseases.... There are some question marks..."*
>
> *Interview 29. "I refused vaccination as it is a controversial vaccine. The list of side effects is long and scary, some of them very serious."*

Interview 35. "I choose to believe the doctor and my experience with my first child, that the vaccine didn't hurt him, so I'm going to give it to the little one".

Interview 30. "All children should be vaccinated. That way we don't risk spreading diseases and endangering those who don't have very good immunity".

Additionally, there are caregivers who hold negative views on vaccination, reflecting significant concerns about vaccine safety. These caregivers tend to emphasize both the fear of adverse reactions and the perception that there is insufficient research and transparency to guarantee the safety of vaccines.

Interview 29. "A weapon in the hands of the pharmaceutical industry and the elites of this world. [...] I do not agree with mass vaccination and there are no studies done to determine the immune status of the population for these diseases".

Interview 18. "There are adverse reactions" [and the issue is treated as a] "taboo subject, [...] no doctor knows how to handle the discussion about vaccination".

Interview 41. "I would like the human body.... to be tested first, whether it can cope with the substances in vaccines or not, so that adverse effects don't occur".

Knowledge about how a child can be immunized and the timeframe for the immunization according to NVP

The responses received to the question of whether caregivers are aware of the procedure for vaccinating their children demonstrate the diversity of parental experiences in seeking information and organizing their children's vaccinations. This highlights the importance of the involvement of health professionals and of ensuring access to clear information. Additionally, a considerable proportion of caregivers are familiar with the general vaccination procedure, including the location where they should go and the fact that they can depend on their GP for comprehensive information. Medical staff also typically specify the number of doses required and remind caregivers when it is time for the next vaccine. However, some caregivers indicated that they had not been informed about the vaccination.

Interview 15. "We still always call the mediator and ask if the child needs to be vaccinated.... but we trust the doctor the most."

Interview 31. "The lady doctor lets us know when a vaccination is due, i.e. the nurse calls us."

Interview 6. "The family doctor lets us know when to go for the vaccine... they order the vaccine and we have to wait".

Interview 17. "So, I don't know when should I go, but I know where to go for the vaccine".

Knowledge about the number of doses for complete immunity

The research identified caregivers who were aware of the number of doses required, and it was observed that this awareness was not necessarily limited to those with higher levels of education. No clear correlation between level of education and awareness was found among the caregivers who understood the need to administer the required doses to ensure effective immunity. However, some caregivers were uncertain about the number of doses required or the full immunization schedule. It is evident that a similar observation can be made in this case: individuals either lack the necessary information or are not provided with it in an accessible manner.

Interview 20. "For good immunity, it has to be a complete schedule. I mean all the doses have to be administered".

Interview 21. "You need three doses... the second for the pneumococcal vaccine and then two doses".

Interview 28. "The family doctor explained to me that... we are to see each other in two months and then in another two months. And there is the one-year vaccine".

Interview 35. "I don't know exactly how many doses there are or what else is needed".

Interview 23. "I haven't refused the vaccine for any of them... but I don't know how many more would be needed".

5.4 Opportunities

Opportunities refer to the external factors (e.g. rules, laws, social and cultural norms) which make the enactment of a particular behavior possible. Opportunities are subdivided into two sub-components: a) **Physical Opportunity**: The availability and accessibility of vaccination services in both urban and rural areas. This includes proximity to healthcare facilities, the availability of vaccines, and the presence of healthcare providers and b) **Social Opportunity**: the social influences that affect caregivers' decisions, including community norms, cultural beliefs, and the opinions of family and friends. Social support or pressure may either encourage or discourage vaccination.

5.4.1 Physical opportunity

In Romania, there is a lack of comprehensive primary healthcare services, particularly in rural areas. Travelling to a GP often imposes a significant financial burden on individuals in both rural and urban settings, as well as on members of marginalized communities. However, the current situation in the two counties under examination raises no concerns about the accessibility of the necessary doses of vaccine.

Access to a healthcare facility or vaccination service is not divided by area of residence for those with "decent" standards of living. Parents, especially those with small income from rural areas, express concern regarding the cost of the transportation to and from the GPs office (they have to travel by public transportation or cab). Although it might be assumed that only vulnerable families in rural areas have difficulties accessing healthcare, it is important to also consider vulnerable families residing in urban areas, particularly on the outskirts of cities. In these locations, public transportation can be challenging to navigate, and the distance to a family doctor's office can be considerable, especially for a mother with young children. To get to the first public transport stop, they have to walk a long way carrying their child or children. The significant distance to the GP's or vaccination center requires not only financial resources (money) but also intangible resources, since such a visit usually takes the caregiver multiple hours away from the household activities.

Interview 17: "I didn't have time for that. Because I stay more at home with them [the children] and... with the traveling, that it's hard to get there."

Interview 23: "Well, yes, but who knows how long I stay there [at the GP]. Maybe there is a queue, and I have to stand in line. And at 11:50, my daughter finishes school, and at 11:30 my son finishes school. Who will take them?"

In most cases, caregivers keep in touch with GPs and nurses to follow the vaccination schedule in the NVP. GPs use an appointment system, and caregivers have to call their GP's office to schedule their children for vaccination. However, cases were reported when caregivers could visit their GP without a prior appointment. In vulnerable Roma communities, GP appointments are arranged through the health mediator, who serves as a *liaison* between GPs and caregivers. Accessibility to vaccines was not considered a problem by the caregivers that wanted to follow the vaccination schedule, with only one caregiver reporting that she could not vaccinate her child for lack of vaccines at the GP's office.

Another aspect refers to the caregivers' frustration that healthcare providers do not always take the time to discuss vaccine risks and benefits in detail, leaving them feeling unsupported in their decision-making.

Interview 28. "I have not met a single doctor so far who knows how to handle the vaccination discussion. Not a generalist, not a pediatrician, not an emergency physician, none, no physician of any kind, no physician knows how to handle this stuff. It's a tremendous, sensitive subject, there are side effects. [...] I understand that it's very hard both for doctors and for us, for parents and for everybody. It is a taboo subject and will remain taboo, especially after the pandemic. There is something tragic at the heart of it."

Furthermore, some caregivers from rural communities have highlighted the GPs lack of involvement and interest in vaccinating their children. Such attitudes of the medical staff serve only to alienate caregivers from the process of vaccinating their children.

Interview 02. "Lack of information about the vaccine from the doctor and his practice; she doesn't know anything, she is not called for the vaccine, there is no interest to vaccinate children from either side".

Interview 38. "We have 2 GPs who unfortunately don't get on so well and don't resonate as well as they should. But I noticed that they say ok go, go, tell the mother that she has to bring the child for the vaccine. I go and explain to the mom, but there are people who really don't want to vaccinate their children. [I go back] to the family doctor [and say] look, I've been to that family, they don't want to vaccinate their child, what can be done about it? [The doctor replies] 'Well it can't be done, take the child by the hand and the mother and bring them to the doctor's office'. [...], [but the doctor] doesn't go out to convince them."

5.4.2 Social opportunity

The term 'social opportunity' is used to describe the social norms, community support and interpersonal influences that encourage or discourage particular behaviors. In this study, we examined the social influences that shape the decisions of caregivers, including community norms, cultural beliefs, experiences of perceived discrimination and the opinions of family and friends. The provision of social support or the exertion of social pressure may serve to encourage or deter vaccination.

Influence of community and social validation

In some communities, caregivers may be subject to social pressure regarding their vaccination decisions, which can significantly influence their attitudes. In some cases, community norms lean towards skepticism, which may prompt caregivers to adopt a similar stance. This is fueled by the prevalence of accounts questioning the safety or necessity of vaccines. This social influence is of particular significance when caregivers have restricted access to alternative sources of evidence-based information. Furthermore, in communities where the prevailing sentiment is in favor of vaccination, caregivers are often influenced to continue vaccinating their children. Caregivers are frequently driven by a desire for social affirmation and a sense of belonging within their communities.

Interview 36. "I discussed for example in therapy, I made friends in therapy [...] with a lot of people because a lot of children with autism spectrum disorder come and I found a lot of parents who thought the same as me, to whom exactly the same thing happened, after they had the one-year vaccine the children totally changed"[they developed autism spectrum disorder].

Interview 19. "Yeah, a lot of times you know you go to one for the other... most of them tend to give more credence to the family, to the people close to them than to the doctor".

Interview 28. "I found out how many people are pro-vaccination... it's ingrained information that it's important to get vaccinated" (pro-vaccination still as a socially desirable in Romania).

Interview 29. "Most of them vaccinate their children properly.... with small exceptions for religious or medical reasons."

Family influencers

As mentioned before, family members, especially older generations like parents or grandparents, often influence caregivers' decisions on vaccination. In some cases, the advice of family members can reassure caregivers and prompt them to follow through with vaccinations. However, if family members hold negative views about vaccines, caregivers may be swayed toward hesitancy. In most cases, the older generation are supporting vaccination. It is important to point out that the older generation are very much pro-vaccine, so, our interviewees are fully vaccinated, according to the national schedule. Grandparents can become trusted allies in immunization campaigns.

> *Interview 38. "Yes, by my mother-in-law who said 'Look, it's been a month, go and vaccinate the child."*

Influence of authority figures

Individuals who have been entrusted with a certain degree of influence, such as GPs, community leaders, religious authorities, and others with a certain degree of social capital, can serve as powerful motivators for caregivers. When these figures promote vaccination, caregivers may perceive an enhanced sense of obligation or even social pressure to comply. Conversely, if these authorities are perceived as indifferent or opposed to vaccination, caregivers may be similarly motivated to avoid vaccination.

The majority of caregivers interviewed, even those who appear opposed to vaccination (they have refused or significantly delayed vaccination), indicate that they trust the advice of healthcare providers, particularly their GP, medical staff (nurses) or community health mediator. In numerous cases, caregivers acknowledged that medical personnel are transparent in their discourse regarding vaccination. It must though be acknowledged that a significant number of caregivers chose to decline or postpone vaccination, despite GPs efforts to encourage them otherwise (for reasons lack of empathy, discrimination, lack of supporting materials, lack of knowledge regarding the most appropriate way to explain, etc.).

> *Interview 1. [Who do you trust the most to talk about vaccines?] "The family doctor, because she knows."*
>
> *Interview 18. "I'm a little skeptical [...] but because I trust the family doctor, I go with him".*
>
> *Interview 6. "Most definitely from the family doctor and Mrs. Dr. V., because she helped me a lot".*
>
> *Interview 14. [Whom do you trust the most when discussing vaccination]. "With Mrs. [health mediator]."*
>
> *Interview 38. "Honestly, I get along very well with the community nurse. [...] I can see that she is a very open, sociable person, she is smart, having 3 children and so I prefer to talk with her and very often she gives me a lot of advice, [...] I ask her about some things, even if I should ask the GP because I know she manages them better and I feel that it's not that thing of not knowing to be ashamed to ask a question that maybe sounds a bit strange."*
>
> *Interview 38. "I've noticed that people, even if they're Roma, as long as you talk to them nicely and explain it to them, they understand, whether they know what it's about or not, if you explain it nicely, they let it be like you and cheers to everybody."*

We identified instances where respondents stated that their behavior could be influenced by religious leaders. Some caregivers view religious or cultural leaders as highly trusted sources. Such figures could influence vaccination decisions through the information they disseminate to their congregations or even through the health advice they provide. If these leaders support views contrary to vaccination or fail to actively encourage it, caregivers may be less inclined to vaccinate their children. Conversely, caregivers in certain communities may demonstrate a favorable response to vaccination if endorsed by a trusted religious authority. In such cases, the endorsement of vaccination by these leaders can serve as a significant motivating factor in overcoming hesitancy.

Interview 15. [Can the priest influence you?] ... "Yes. If he says, he says, hey, vaccinate your child, it's for your own good, I vaccinate. If it's not for his own good, I don't vaccinate the child. And I, in a case, I tell him I vaccinate the child."

Interview 37. [Pastor?] "Yes... yes. If he would give me good advice, why not?"

Other caregivers referred to online vloggers and influencers, who are beginning to exert a growing influence across a wide range of domains. The fact that these individuals are perceived as authorities in the field despite lacking requisite training requires further attention from policymakers and health experts. The circulation of misinformation about vaccines is pervasive, facilitated by social networks and online media. Inaccurate information regarding vaccine side effects or efficacy can spread rapidly, frequently unchallenged, and social media can facilitate the amplification of these messages, creating echo chambers. Caregivers exposed to these networks may begin to view vaccines with skepticism and resist outside information from health professionals, thereby reinforcing hesitancy. Even in the case of low-income caregivers, it cannot be assumed that they do not have direct access to information on social media/internet (most people have a cell phone or even a smartphone), or indirect access, through other members of the community.

Misinformation about vaccines is widespread and perpetuated through social networks and online media. Caregivers exposed to these networks may begin to develop skepticism toward vaccines and resist external information from medical professionals, thus further reinforcing hesitancy.

Interview 12. "Yes, of course. Yes. Vloggers and influencers and can change [opinions], they can become more [authoritative] than doctors so to speak, the best doctors in some people's vision. They can influence."

Interview 28. "Yes, people believe the media. It's easy if you get some influential people to say something. That's very easy for the mass of people to accept the idea."

Interview 38. "But there are also people who don't want to vaccinate their children, because they've seen on social media mothers who were doing live streams and saying, look I vaccinated my child, I came home, he got a high fever, I went with him to the hospital, look what happened to him."

Interview 26: "Yeah, sometimes I think that I will vaccinate him, because I know in my heart that something wouldn't happen. I'm also thinking that, or I have that fear that, I hope that something doesn't happen to him, but I think I'm telling myself that. All because I've seen other cases where some moms say that some things happened to their children because of the vaccine. [...] From what I've seen on social media."

Interview 40. [Who does she trust to discuss the vaccine, besides the family?] "On the phone... [...] Google."

Interview 18. „I think that nowadays everyone believes more what is written on the internet than what certain doctors tell them."

Interview 19. „Yes, they are very important. The media is very important. Negative. And positive sometimes. That you can say good things. Because most of our time is spent on our phones and social media when we have a moment to relax."

Experiences of perceived discrimination by GPs and nurses

It was not surprising to find that several parents had experienced discriminatory practices in accessing the health system. Some parents reported feeling patronized by the medical staff, while others indicated that they did not receive the attention and medical care they required.

Interview 06. "I prefer not to answer here ... [about the relationship with the GP], I don't really like the attitude of Mrs. Dr. E."

Interview 16. "She scolds me ... I would like [the doctor] to be more communicative, more ... To speak in a different tone of voice [more polite]."

5.5 Motivation

Motivation refers to an individual's internal processes (e.g. desires, impulses, inhibitions, making plans, evaluating past and present behaviors) that influence decision making and behavior. Motivation can be subdivided in two sub-components: a) **Reflective Motivation:** Deliberate decisions based on the perceived risks and benefits of vaccination. Caregivers may weigh the potential side effects of vaccines against the risks of disease; and b) **Automatic Motivation:** Emotional responses such as fear of needles, anxiety about vaccine side effects, or mistrust of healthcare providers. These automatic responses can be powerful drivers of behavior.

5.5.1 Reflective Motivation

The concept of reflective motivation encompasses the internal processes and mental mechanisms that cause an individual to select a specific behavioral response.

Risks of vaccination
It is a generally accepted premise that all caregivers wish for their children to experience happiness and good health. It is not uncommon for caregivers to consider the potential costs and risks associated with vaccination, including possible side effects and concerns about the composition of the vaccine.

The respondents cited adverse effects that they had either heard about, read about, or even experienced. Such side effects can be classified as "normal", such as fever or certain aches and pains, which typically subside rapidly and respond favorably to medication. However, there are instances where the side effects can be significant, as some caregivers have indicated. These can result in serious reactions within the body and may have long-term implications for the child's well-being. Additionally, some respondents voiced concerns regarding the composition and quality of vaccines, which can stem from a lack of information.

Typical adverse effects

Interview 30: "I am sometimes afraid that I will get a fever or have pain after the vaccine. I don't feel reassured."
Interview 29. "I refused vaccination, as it is a controversial vaccine. The list of side effects is long and scary, some of them very serious."

Major side effects

Interview 6: „After the MMR vaccine at 1 year old, M. experienced a series of side effects, including neurological ones: motor tics, hyperactivity, which have persisted to this day."
Interview 19. "I have met parents of children with autism and other autoimmune diseases who tearfully regret the MMR vaccination, but too late."
Interview 17: "When I first hear about vaccination, I think about the adverse effects, the cases I've seen [...] I'm not easily swayed by anyone's opinion."

Mistrust in vaccine composition and testing

Interview 16. "Uh, yeah. Uh-huh. I think it's not the same serum that we got. It could be something else, in my opinion. I don't know, since when it was, that's still where we're going back. Too many were, I don't know, vaccinating kids, dying. That's why I've come to this opinion."
Interview 18. "Most of them were saying that the vaccines that were made in our country were safer than the vaccines that are made in other countries."

Benefits of vaccination
Even among those who declined or postponed vaccination, the benefits of vaccination are recognized.

> *Interview 3. „Vaccines are good because they protect us from serious diseases."*
> *Interview 7. „We vaccinate children, so they don't get preventable diseases."*
> *Interview 12. „I think vaccines help keep the public healthy."*

Communication about possible side effects
A significant issue highlighted by respondents is the absence of a clear, accessible, and straightforward communication strategy during the immunization process. This includes the provision of comprehensive information in language that caregivers can easily understand, including an open discussion about potential adverse effects. The uncertainty inherent in pediatric treatment is a source of concern for caregivers, regardless of their educational background. The respondents also highlighted instances where medical personnel lacked the training required to effectively communicate with caregivers.

A further issue is that, in some cases, caregivers note a lack of transparency and preparedness from the GPs and health personnel to communicate and explain adverse effects.

> *Interview 19. "Because it's unknown, it's something that's introduced to an organism. Do you know what the vaccination phase is? I would agree if this vaccination campaign provided more information, if we got more information about the product. In other words, I would have liked the family doctor, for example, to set aside 45 minutes for a consultation, during which he would consult the child and talk to the mother and give her more details about the adverse effects, what it contains, more details. We don't talk about that."*

> *Interview 40. "I spoke to the GP who could not give me a guarantee that there would be no adverse effects. Nor could they make such claims as long as the adverse effects are on the vaccine package inserts. [...] When I first hear about vaccination I think about the adverse effects, the cases I have seen, the indifference of medical professionals to the possible problems that may occur."*

> *Interview 29. "Yes, there is a justifiable fear of the adverse reactions, given the lack of transparency. They are not communicated to the patient at the time of vaccination, except as "possible fever for a few days(!)". But if you read the list of adverse reactions to the MMR vaccine, you are in for a real head-scratching."*

5.5.2 Automatic Motivation

Automatic motivation includes emotional responses such as fear of needles, anxiety about vaccine side effects, or mistrust of healthcare providers. These automatic responses can be powerful drivers of behavior.

Fear of diseases
The fear of child illness is a universal among caregivers who fervently hope that their child will remain free from illness (except for pathological cases). Caregivers are acutely aware that the child's immune system is not yet fully developed and therefore unable to combat disease effectively. In this context, respondents acknowledge vaccines as effective means of protecting children against a range of diseases, some of which are severe and often untreatable. Nevertheless, there are caregivers who perceive the vaccine as a potential threat to their children's health, leading them to exercise caution and even refuse vaccination. (Additionally, there is a lack of information).

Respondents who believe that vaccines are a means of preventing disease.

> *Interview 30. "Children's health comes to mind. I know that vaccines are good for them, they keep them away from diseases. But sometimes I'm afraid that they may get a fever or be in pain after the vaccine, and I don't feel reassured."*

Interview 31. "I think all children should be vaccinated. That way we don't risk spreading diseases and endangering those who don't have very good immunity. It's good for them, and for all of us."

Interview 33. "I think it's also important for all the children in the neighborhood. If everyone is vaccinated, the diseases don't spread and there is no risk of them making others sick. It's good for everyone."

Respondents who believe that vaccines that can cause disease

Interview 1. "Why didn't I take them [to get the vaccine]? Because I was afraid to take them, I was afraid they would get sick from that vaccine. Because there have been cases like that, who got sick from these vaccines."

Guilt associated with the decision to vaccinate

The participants in the interviews who had either refused or avoided vaccination were also asked whether they experienced a sense of guilt in relation to their vaccination decisions. Two distinct categories of responses emerged: those in which caregivers assumed guilt for one decision or another, and those who externalized it, attributing it to the expectations of others.

Interview 4. "Well yes, if he tells you later 'see, they got sick' [because they weren't vaccinated], he blames me."

Free association

Additionally, the interview guide included a question about the respondent's feelings when contemplating vaccination. The aim was to identify caregivers' feelings, values, attitudes and perceptions associated with vaccination. The relatively broad spectrum of feelings, beliefs, attitudes, and perceptions evinces that vaccination is regarded through a multitude of emotional and social lenses, ranging from trepidation and skepticism to accountability and safeguarding. These issues can be addressed through the provision of specific information.

6. DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

The qualitative research revealed the diversity of attitudes, behaviors, values and social norms surrounding vaccination. Conducted in diverse settings, the study highlights the capabilities, opportunities, motivations and behaviors behind caregivers' decisions not to bring their children aged 0-5 years to be vaccinated.

The objective of the research was to identify the reasons for vaccination no-show, to ascertain the barriers perceived by caregivers, to evaluate their attitudes towards vaccination, to determine the sources of information, and to examine the psychological, motivational, social and economic factors that may influence their behavior and their decision not to bring their children to be vaccinated. The analysis also encompassed the health system, with its inherent shortcomings and problems.

The COM-B analytic method was employed with the specific objective of identifying the facilitative and limiting factors associated with each of the three components (capability, opportunity and motivation). This approach facilitated the recommendation of targeted interventions to enhance immunization uptake. The findings of this research can inform strategies that prioritize the enhancement of capacity, optimization of opportunities, and elevation of motivation.

Based on the interviews conducted for this report and the findings presented in the previous chapter, we were able to make a general observation about the importance of social media. In the current context, it is no longer accurate to suggest that individuals without direct access to social media remain unaffected by it. As a component of mass media, social media continues to serve as a conduit for the dissemination of both authentic and, in some cases, false information throughout society. It also serves as a medium for spreading rumors. The assumption that social media is inherently malevolent is flawed and reductionist. Instead of viewing social media as an adversarial entity, it is imperative to adopt an objective stance and use the platforms' functionalities to disseminate reliable information.

Improving vaccination rates in Romania requires a multifaceted approach that addresses both structural and attitudinal barriers. Interventions should focus on improving healthcare access, particularly in rural areas, and increasing the availability of reliable information about vaccine safety and efficacy. Public health campaigns must be culturally sensitive and tailored to the specific concerns of different communities, while healthcare professionals should receive training to effectively communicate with hesitant caregivers.

The results of the COM_B analysis are as follows:

	Facilitating factors	**Limiting factors**
Capability		
Physical		Lack of accessible healthcare and the necessity to travel long distances are significant obstacles for many individuals in rural and peri-urban areas. - The combination of lengthy travel times and high transportation costs makes it challenging for caregivers to reach healthcare facilities, particularly in rural areas. The financial and time-related costs are particularly burdensome for low-income families, acting as a significant deterrent to the utilization of healthcare services. In certain instances, accessing medical facilities is almost impossible without personal transportation. - Limited opening hours and shortage of medical personnel - The shortage of family physicians and restricted clinic operating hours impede consistent access to immunization, particularly in rural areas. In the absence of flexibility in vaccination scheduling, caregivers may be dissuaded from seeking medical advice and may even refrain from visiting the GP for vaccination.

	Facilitating factors	Limiting factors
Psychological	Access to Information and Education. - The presence of community health mediators plays a significant role in facilitating access to immunization information in vulnerable communities. The health mediators help caregivers to understand the advantages and potential hazards of vaccines in a manner that is both readily comprehensible and tailored to their individual circumstances. The mediators respond to caregivers' queries and clarify issues pertaining to vaccine safety, scheduling doses, and mitigating apprehension and distrust. - A significant proportion of caregivers expressed a willingness to engage with more comprehensive information about vaccines, including details on vaccine-preventable diseases, the number of doses required, and the scientific principles underlying vaccine efficacy. This desire for information can be addressed through the implementation of accessible educational programs tailored to each level of education. - Clinician-led information sessions. In communities where GPs dedicate time to discussing vaccines with caregivers and providing information about their safety and efficacy, caregivers tend to exhibit greater confidence and willingness to having their children vaccinated.	Lack of adequate information and education is a significant factor contributing to the current situation. - There is insufficient public information about the safety and potential side effects of vaccines. Many caregivers do not receive detailed and clear information about the possible side effects of vaccines, which fuels uncertainty and fear. In the absence of effective communication, caregivers remain distrustful and delay vaccinating their children due to concerns about serious potential side effects. Dissemination of misinformation and negative influence of social media. - Caregivers hold disparate views on vaccination, shaped by personal experiences, information from their living environment, and consultations with GPs. - Caregivers are frequently exposed misinformation about vaccines on social networks and online, where myths about negative effects of vaccines are prevalent. The dissemination of misinformation has a detrimental impact on caregivers' perceptions of vaccination, thereby reinforcing their distrust of medical advice.
Opportunities		
Physical	Availability of vaccines and the accessibility of health services are of great importance in the context of child immunization. - The availability of vaccines at doctors' offices is a key factor in this regard. In communities where family doctors have vaccines in stock and notify parents in advance of the need for vaccination, easy access increases the likelihood of caregivers following their child's immunization schedule. Furthermore, when parents are aware that schedules are being maintained and that they do not have to wait, the immunization experience becomes more convenient and predictable. - Mobile vaccination caravans are a further strategy for improving vaccine access. In some areas, such initiatives, organized by non-governmental organizations (NGOs) and supported by local authorities, facilitate access to vaccines, particularly in rural areas where transportation and long distances pose significant challenges.	
Social	Social and cultural support. - The influence of social and cultural factors on vaccination decisions among young parents is a significant area of interest in public health. Research highlights the positive impact of grandparents and other family members in this regard. In particular, the input of grandparents and other older relatives with experience and a supportive stance on immunization can be a key factor influencing young parents' vaccination decisions of. Such support can be pivotal in reducing hesitancy and motivating parents to adhere to immunization schedules. - Pro-vaccination community norms: In communities where immunization is seen as an essential public health measure, caregivers are more inclined to vaccinate their children. In such cases, vaccination is perceived as a responsibility not only to the child but also to the wider community. This serves to reinforce a sense of belonging and solidarity.	Negative social influences. - Discriminatory practices in accessing the health system. Some caregivers report feeling patronized by the medical staff, while others indicate that they do not receive the attention and medical care they required. - Anti-vaccination community norms. - Anti-discrimination norms for GPs. - In some communities, skepticism about vaccination is widespread and caregivers tend to align themselves with the prevailing opinion and adopt a negative stance on vaccines, thereby avoiding being perceived as deviant or as failing to adhere to the established norms of their social group. The influence of religious leaders and anti-vaccination influencers is also a factor. Some religious leaders and social media influencers express anti-vaccination views, which may discourage caregivers from vaccinating their children. Moreover, when religious leaders refrain from actively endorsing vaccination, caregivers may perceive this as a lack of support or even an indication that vaccination is unnecessary.
Motivation		
Automatic		Fear of side effects and guilt. - The primary reasons for hesitancy are fear of adverse effects and mistrust of vaccines, intensified by media influences and stories on the internet. Fear of side effects and the associated guilt are significant factors influencing caregivers' vaccination decisions. Many caregivers express concern about the potential for serious side effects, particularly fueled by anecdotal reports or rumors of adverse reactions. These anxieties or fears are heightened by personal or second-hand negative experiences, leading some caregivers to forgo vaccination to protect their child from perceived risks. Guilt associated with the decision to vaccinate. - Caregivers who are undecided about vaccination often experience feelings of guilt regardless of their decision. If they choose not to vaccinate and the child becomes ill, they experience guilt for having „exposed" the child to disease. Conversely, if they do proceed with vaccination and adverse reactions occur, they feel responsible for the consequences. This ambivalence is a significant factor in the development of vaccine hesitancy.

It is not possible to differentiate between groups in terms of vaccination based on geographical location or education level. Our analysis shows that the determining factor is the standard of living (economic capital), rather than the level of education (educational capital). It was observed that the residential environment does not affect access to the healthcare system for those with a decent standard of living, even if they live in rural areas. It is accurate to conclude that the lack of adequate health services in rural areas is a significant challenge. However, this barrier can be readily addressed by families with the financial means to travel to urban centers. However, equitable access to public health services in rural areas or marginalized communities remains a bottleneck in ensuring access to healthcare for all citizens.

Significant disparities in access to vaccination services exist, particularly among low-income households in marginalized rural areas and very poor urban families living on city outskirts. Barriers such as the lack of nearby facilities, high travel costs, limited public transportation, and the demands of caregiving responsibilities disproportionately affect these groups. These challenges contribute to inequitable access to immunization services and reduce the likelihood of consistent vaccination.

Disparities in awareness about the National Vaccination Program (NVP) persist, particularly among rural caregivers and those with lower education levels. While some caregivers in these groups are well-informed, others are affected by limited interaction with medical personnel or the absence of community health mediators. Furthermore, widespread misinformation and mistrust about vaccine safety, often fueled by social media and anti-vaccine influencers, amplify hesitancy and skepticism, despite caregivers' general acknowledgement of vaccination benefits.

Social dynamics play a pivotal role in vaccination decisions. Pro-vaccination views among grandparents or community leaders positively influence young parents' decisions, whereas negative social influences discourage vaccination. Caregivers carefully weigh the perceived risks and benefits of vaccines, but concerns about adverse effects, such as autism and other long-term health issues, persist. The lack of open dialogue and critical discussion about these concerns exacerbates mistrust and contributes to vaccination no-shows.

The data indicate that caregivers' decisions not to show up for vaccination are influenced by a multifaceted interaction of knowledge, accessibility, and both rational and emotional factors. The existence of structural barriers, particularly in rural areas, indicates the need for policy interventions aimed at enhancing physical access to vaccination services. Moreover, the implementation of tailored communication strategies directly addressing common concerns and misconceptions surrounding vaccination could enhance caregivers' psychological capability and reflective motivation to vaccinate their children. Addressing misinformation in digital and social media is critical to counteract the negative impacts on caregivers' trust and confidence in vaccines.

Policy recommendations target the specific challenges identified across the capability, opportunity, and motivation dimensions of the COM-B model. Through a combination of increased physical access to vaccination services, greater coverage of GPs in (marginalized) rural areas, enhanced educational outreach, support for community-based vaccination initiatives, and strategies to combat misinformation, these recommendations aim to reduce logistical, informational, and psychological barriers, thereby promoting greater vaccination uptake among caregivers in both rural and urban areas:

1. It is of the utmost importance to identify solutions to enhance accessibility of healthcare services, especially when it comes to vaccination. To address the shortage of family doctors in rural areas and to eliminate inconveniences such as transportation costs to family medicine office where the vaccine can be administered, local public health authorities should take action or support local authorities' efforts to set up vaccination centers within integrated community centers.

2. Considering the encouraging vaccination rates observed in communities served by health mediators, the expansion of the network of health mediators in remote areas would undoubtedly result in enhanced accessibility to vaccines and other healthcare services for families residing in rural, economically disadvantaged, and isolated regions. This would, in turn, contribute to reducing health disparities. In this regard, local public health authorities must work together with local authorities to develop mechanisms that support the hiring, motivation, and retention of health mediators and community nurses, by ensuring salaries aligned to their responsibilities.

3. A new, appropriate pro-vaccination communication strategy is required to provide health professionals with the tools required to disseminate pro-vaccination information and support vaccinated individuals. As part of this new strategy, education and information campaigns must be tailored to different levels of education and accessibility. This approach has the potential to address misinformation and provide parents with accurate information regarding the benefits and risks of vaccines.

It is recommended to increase the involvement of social workers and community nurses in individual counseling conducted at the homes of families who have delayed, hesitated, or otherwise avoided vaccination, to provide clearer information and promote the benefits of vaccination. This approach could help build public confidence in the long-term positive effects of vaccines. These informational sessions can be conducted during social surveys or home visits, while distributing social aid by local authorities, or through short, impactful messages delivered by priests at the conclusion of religious services.

4. In Romania, the social environment remains favorable to vaccination, with family members, general practitioners (GPs) and other key figures reinforcing the practice. To increase vaccination uptake, promotional campaigns involving local public health authorities and community leaders would be beneficial and facilitate the transmission of key messages in convincing language and understandable language tailored to the respective community. Also, local health authorities could organize and carry out extensive and credible campaigns to promote the benefits of vaccination by intensifying collaboration with NGOs, other organizations (such as UNICEF), and local media.

5. It is recommended that misinformation in the media be addressed by working together with social media platforms to limit misinformation and promote official and verified sources of vaccine information.

6. Transforming the immunization experience for children from one perceived as painful to one regarded as exciting can be achieved by offering small incentives (toys, pro-vaccination educational materials, etc.) to vaccinated children.

The most important aspect, however, is ensuring that decision-makers are fully aware of the situation and take a definitive stance on whether vaccination is regarded as a top priority for the harmonious and healthy development of children in Romania. Many vaccination-related challenges can be gradually addressed through the step-by-step implementation of the National Vaccination Strategy.

REFERENCES

REFERENCES

———. 2023a. 'A 30-Fold Rise of Measles Cases in 2023 in the WHO European Region Warrants Urgent Action'. 2023. https://www.who.int/europe/news/item/14-12-2023-a-30-fold-rise-of-measles-cases-in-2023-in-the-who-european-region-warrants-urgent-action.

———. 2023b. 'Childhood Immunization Begins Recovery after COVID-19 Backslide'. 2023. https://www.who.int/news/item/18-07-2023-childhood-immunization-begins-recovery-after-covid-19-backslide.

———. 2023b. 'The State of the World's Children 2023. For Every Child, Vaccination'. Florence: UNICEF. https://www.vaccineconfidence.org/our-work/reports/the-state-of-the-worlds-children-2023/#:~:text=The%20State%20of%20the%20World's%20Children%202023%20was%20developed%20in,out%20of%2055%20countries%20studied.

———. 2024b. 'Measles on the Rise in the EU/EEA: Considerations for Public Health Response.' LU: Publications Office. https://data.europa.eu/doi/10.2900/064162.

A Stanescu, SM Ruta, C Cernescu, A Pistol. Suboptimal MMR Vaccination Coverages—A Constant Challenge for Measles Elimination in Romania Vaccines 2024w, 12(1), 107; https://doi.org/10.3390/vaccines12010107

Brenzel, Logan, Lara J. Wolfson, Julia Fox-Rushby, Mark Miller, and Neal A. Halsey. 2006. 'Vaccine-Preventable Diseases'. In Disease Control Priorities in Developing Countries, edited by Dean T. Jamison, Joel G. Breman, Anthony R. Measham, George Alleyne, Mariam Claeson, David B. Evans, Prabhat Jha, Anne Mills, and Philip Musgrove, 2nd ed. Washington (DC): The International Bank for Reconstruction and Development / The World Bank. http://www.ncbi.nlm.nih.gov/books/NBK11768/.

Dubé, Eve, Dominique Gagnon, Emily Nickels, Stanley Jeram, and Melanie Schuster. 2014. 'Mapping Vaccine Hesitancy—Country-Specific Characteristics of a Global Phenomenon'. Vaccine 32 (49): 6649. https://doi.org/10.1016/j.vaccine.2014.09.039.

European Centre for Disease Prevention and Control. 2024a. Increase of Pertussis Cases in the EU/EEA: 8 May 2024. LU: Publications Office. https://data.europa.eu/doi/10.2900/831122.

European Immunization Agenda 2030. Copenhagen:WHO Regional Office for Europe; 2021. Licence: CC BY-NC-SA 3.0 IGO. ISBN: 978-92-890-5605-2

Gessner, Bradford D., David Kaslow, Jacques Louis, Kathleen Neuzil, Katherine L. O'Brien, Valentina Picot, Tikki Pang, Umesh D. Parashar, Mitra Saadatian-Elahi, and Christopher B. Nelson. 2017. 'Estimating the Full Public Health Value of Vaccination'. Vaccine 35 (46): 6255–63. https://doi.org/10.1016/j.vaccine.2017.09.048.

Guerra FM, Bolotin S, Lim G, Heffernan J, Deeks SL, Li Y, Crowcroft NS. The basic reproduction number (R0) of measles: a systematic review. Lancet Infect Dis. 2017;17(12):e420-e428.

Habersaat KB, Pistol A, Stanescu A, Hewitt C, Grbic M, Butu C, Jackson C. Measles outbreak in Romania: understanding factors related to suboptimal vaccination uptake. Eur J Public Health. 2020, 30(5):986-992.

Hotez, Peter, and Marietta Vázquez. 2024. 'Immunization Agenda 2030: A Global Strategy to Leave No One Behind'. Vaccine, The Immunization Agenda 2030, 42 (April):S5–14. https://doi.org/10.1016/j.vaccine.2022.11.042.

Immunization Regional Snapshot 2023. WHO/UNICEF estimates of national immunization coverages, 2023 revision, published 15 July 2024 https://public.tableau.com/shared/DXZ58S4GS?:display_count=y&:origin=viz_share_link&:embed=y

Institutul Național de Sănătate Publică. 2024. 'Vaccinarea. Analiză de Situație Campania de Promovare a Vaccinării "Spune NU Rujeolei, Spune DA Vaccinării"'. Bucuresti: Institutul Național de Sănătate Publică. https://insp.gov.ro/wp-content/uploads/2024/04/Analiza-de-situatie-VACCINARE-2024.pdf.

International Labour Organization. 2024. 'The Impact of Care Responsibilities on Women's Labour Force Participation'. Geneva: International Labour Organization. https://www.ilo.org/sites/default/files/2024-10/GEDI-STAT%20brief_formatted_28.10.24_final.pdf.

Larson HJ, Gakidou E, Murray CJL. The Vaccine-Hesitant Moment. N Engl J Med. 2022 Jul 7;387(1):58-65. doi: 10.1056/NEJMra2106441. Epub 2022 Jun 29. PMID: 35767527; PMCID: PMC9258752.

Michie, Susan, Maartje M. van Stralen, and Robert West. 2011. 'The Behaviour Change Wheel: A New Method for Characterising and Designing Behaviour Change Interventions'. Implementation Science 6 (1): 42. https://doi.org/10.1186/1748-5908-6-42.

Ministry of Health. 2023. 'Strategia Națională de Vaccinare În România Pentru Perioada 2023 – 2030 [National Strategy for Vaccination for the Period 2023-2030]'. Bucharest: Ministry of Health. https://www.ms.ro/ro/transparenta-decizionala/acte-normative-in-transparenta/hot%C4%83r%C3%A2re-a-guvernului-privind-aprobarea-strategiei-na%C8%9Bionale-de-vaccinare-%C3%AEn-rom%C3%A2nia-pentru-perioada-2023-2030/.

Ordinul Ministrului Sănătății nr. 964 din 31 martie 2022, privind aprobarea Normelor tehnice de realizare a programelor naționale de sănătate publică, cu modificările și completările ulterioare: https://legislatie.just.ro/Public/DetaliiDocument/253543

Raport de analiză a mecanismelor de urmărire a imunizării copiilor în 11 județe din România | UNICEF Romania https://www.unicef.org/romania/ro/rapoarte/raport-de-analiz%C4%83-mecanismelor-de-urm%C4%83rire-imuniz%C4%83rii-copiilor-%C3%AEn-11-jude%C8%9Be-din-rom%C3%A2nia

Tickner, Sarah, Patrick J. Leman, and Alison Woodcock. 2006. 'Factors Underlying Suboptimal Childhood Immunisation'. Vaccine 24 (49): 7030–36. https://doi.org/10.1016/j.vaccine.2006.06.060.

UNICEF. 2023a. 'Measles Cases in Europe and Central Asia Skyrocket by 3000 per Cent This Year Compared to Last'. 2023. https://www.unicef.org/eca/press-releases/measles-cases-europe-and-central-asia-skyrocket-3000-cent-year-compared-last.

West, Robert, and Susan Michie. 2020. 'A Brief Introduction to the COM-B Model of Behaviour and the PRIME Theory of Motivation'. Qeios, 1–6. https://doi.org/10.32388/WW04E6.2.

Wicker, Sabine, and Helena C Maltezou. 2014. 'Vaccine-Preventable Diseases in Europe: Where Do We Stand?' Expert Review of Vaccines 13 (8): 979–87. https://doi.org/10.1586/14760584.2014.933077.

World Health Organization. 2022. 'Global Vaccine Market Report. A Shared Understanding for Equitable Access to Vaccines'. Geneva: World Health Organization. https://cdn.who.int/media/docs/default-source/immunization/vaccine_access_market/global-vaccine-market-report-2022-template-final2.pdf.

APPENDICES

A. Tables

Table 1. *Measles Incidence and Number of Confirmed Deaths at the National Level, from January 1, 2023 to September 1, 2024*

NR. CRT.	COUNTY	NO. OF CASES	INCIDENCE PER 100,000	DEATHS
1.	Brașov	2112	383.33	4
2.	Alba	984	302.55	1
3.	Călărași	777	277.04	
4.	Giurgiu	673	260.22	3
5.	Mureș	1271	245.52	
6.	Covasna	484	243.13	1
7.	Ialomița	571	228.72	1
8.	Sibiu	795	203.74	1
9.	Argeș	1119	197.97	2
10.	Prahova	1353	196.00	
11.	Arad	741	180.34	
12.	Suceava	1142	177.30	
13.	Constanța	1156	176.28	1
14.	Dâmbovița	800	167.72	
15.	Caraș-Severin	397	161.97	
16.	Ilfov	837	150.73	
17.	Neamț	636	140.92	
18.	Timiș	922	140.43	
19.	Hunedoara	386	107.82	
20.	Buzău	431	107.49	1
21.	Municipiul București	1814	104.79	5
22.	Sălaj	209	99.25	
23.	Harghita	285	98.10	
24.	Teleorman	297	92.97	
25.	Bistrița-Năsăud	266	89.43	
26.	Vâlcea	244	71.61	
27.	Iași	532	68.82	1
28.	Dolj	401	67.09	

NR. CRT.	COUNTY	NO. OF CASES	INCIDENCE PER 100,000	DEATHS
29.	Brăila	186	66.92	
30.	Satu Mare	217	65.60	
31.	Cluj	427	62.25	
32.	Bacău	353	58.94	
33.	Galați	249	50.36	
34.	Vrancea	162	48.53	
35.	Botoșani	181	45.98	
36.	Olt	111	29.31	
37.	Maramureș	117	25.90	
38.	Bihor	139	25.16	
39.	Gorj	77	24.77	
40.	Tulcea	46	23.99	
41.	Mehedinți	29	12.50	
42.	Vaslui	43	11.52	
	Total number of cases	23 972	-	

Source: https://insp.gov.ro/download/situatia-rujeolei-in-romania-la-data-de-01-09-2024/

Table 2. *Vaccination Coverage at 18 Months of Age, by Antigen Type and by County (%)*

COUNTY	BCG at 18 months	4 doses Hep B at 18 months	3 doses DTaP at 18 months	3 doses Hib at 18 months	3 doses IPV at 18 months	3 doses Pneumococcal at 18 months	1 dose MMR at 18 months
Alba	93.1	66.1	67.7	67.7	67.7	67.7	70.4
Arad	91.4	52.5	52.5	52.5	52.5	54.5	63.9
Arges	96.6	78.2	78.2	78.2	78.2	78.2	76.8
Bacău	96.6	80.9	83.6	83.6	83.6	83.6	83.3
Bihor	93.7	19.0	78.2	78.2	78.2	76.7	86.8
Bistrița	94.3	75.8	79.5	79.5	79.5	79.5	86.9
Botoșani	95.9	8.1	69.9	69.9	69.9	68.7	79.3
Brașov	95.9	71.5	73.6	73.6	73.6	74.1	79.5
Brăila	95.9	77.5	83.4	83.4	83.4	82.2	91.7
Bacău	96.6	72.1	72.1	72.1	72.1	72.1	84.2
Caraș-Severin	93.3	63.3	63.3	63.3	63.3	63.3	65.0
Călărași	85.1	55.9	61.2	61.2	61.2	58.0	71.3
Cluj	94.1	82.7	83.7	83.7	83.7	83.4	87.0
Constanța	96.9	85.5	86.3	86.3	86.3	85.5	87.0
Covasna	98.6	85.0	85.0	85.0	85.0	85.0	90.5
Dâmbovița	94.7	88.9	88.9	88.9	88.9	88.9	87.9
Dolj	94.1	81.0	82.2	82.2	82.2	81.0	79.6
Galați	93.2	67.3	69.9	69.9	69.9	69.9	77.0
Giurgiu	100.0	88.1	88.1	88.1	88.1	88.1	91.8
Gorj	96.7	84.7	85.2	85.2	85.2	85.2	83.1
Harghita	98.5	85.7	86.4	86.4	86.4	87.1	91.9
Hunedoara	95.6	64.1	65.5	65.5	65.5	65.5	68.0
Ialomița	85.1	33.8	69.5	69.5	69.5	70.8	81.2
Iași	94.7	75.4	78.6	78.6	78.6	80.9	85.6
Maramureș	95.0	79.0	79.6	79.6	79.6	79.3	75.8
Mehedinți	85.6	73.6	81.6	81.6	81.6	79.2	87.2
Mureș	94.3	69.7	72.4	72.4	72.4	72.7	73.2
Neamț	91.3	61.9	65.0	65.0	65.0	60.8	63.3
Olt	96.6	84.4	87.3	87.3	87.3	88.3	91.2
Prahova	98.3	65.4	70.7	70.7	70.7	74.5	77.6
Satu mare	89.1	62.5	62.5	62.5	62.5	61.4	73.9
Sălaj	98.8	71.3	92.5	92.5	92.5	92.5	91.9
Sibiu	96.9	78.1	83.7	83.7	83.7	83.7	88.1
Suceava	89.7	43.1	45.0	45.0	45.0	47.3	63.7
Teleorman	95.4	73.6	82.2	82.2	82.2	79.9	85.1
Timiș	94.5	72.3	73.2	73.2	73.2	71.5	75.7
Tulcea	95.9	84.4	85.2	85.2	85.2	84.4	91.8
Vaslui	92.3	66.4	68.4	68.4	68.4	68.4	83.4
Vâlcea	96.4	81.7	83.4	83.4	83.4	81.7	87.6
Vrancea	89.7	39.1	77.3	77.3	77.3	74.7	77.7
București	99.9	85.5	85.5	85.5	85.5	85.7	83.6
Ilfov	100.0	94.3	94.3	94.3	94.3	94.3	92.0

Source: https://insp.gov.ro/centrul-national-de-supraveghere-si-control-al-bolilor-transmisibile-cnscbt/analiza-date-supraveghere/ Analiza rezultatelor estimării acoperirii vaccinale la vârsta de 18 luni Februarie 2024

Table 3. *Vaccination Coverage for the Second Dose of MMR and Tdap, by County (%)*

COUNTY	Second Dose MMR at 5 Years	*Tdap* at 14 Years
Alba	56.8	58.3
Arad	54.5	63.0
Argeș	71.8	76.9
Bacău	58.5	71.1
Bihor	78.5	77.6
Bistrița	82.6	81.1
Botoșani	63.5	64.9
Brașov	63.8	59.2
Brăila	68.1	69.4
Buzău	77.0	83.5
Caraș-Severin	53.3	39.9
Călărași	66.1	61.1
Cluj	76.7	70.3
Constanța	75.0	73.6
Covasna	84.5	80.6
Dâmbovița	76.8	76.6
Dolj	84.2	89.3
Galați	70.4	65.5
Giurgiu	97.5	98.7
Gorj	78.6	80.2
Harghita	87.5	87.2
Hunedoara	48.6	49.2
Ialomița	61.8	71.8
Iași	70.8	71.4
Maramureș	78.0	78.2
Mehedinți	77.6	71.9
Mureș	67.8	69.5
Neamț	44.9	47.8
Olt	75.4	79.9
Prahova	69.3	67.4
Satu Mare	56.3	82.9
Sălaj	88.3	83.8
Sibiu	77.2	80.1
Suceava	53.3	57.1
Teleorman	80.0	80.6
Timiș	56.3	56.0
Tulcea	84.5	92.6
Vaslui	74.4	66.3
Vâlcea	74.1	79.5
Vrancea	61.5	65.8
București	71.3	79.2
Ilfov	60.7	58.8

Source: https://insp.gov.ro/centrul-national-de-supraveghere-si-control-al-bolilor-transmisibile-cnscbt/analiza-date-supraveghere/ Analiza rezultatelor estimării acoperirii vaccinale cu 2 doze RRO la 5 ani și cu 1 doză dTtpa la 14 ani Februarie 2024

Table 4. *Demographic and Population Data at the National Level, as of January 1, 2024*

COUNTY	Total Resident Population January 2024 (INS)		Population of Children Aged 0-5 Years January 2024 (INS)		Number of Births January 2024 (INS)	
	Urban	Rural	Urban	Rural	Urban	Rural
Alba	189312	136525	10572	7593	1376	1092
Arad	221835	188612	13125	12076	1793	1604
Argeș	257269	309093	14317	16846	1688	2225
Bacău	250437	348163	15945	21878	1974	2877
Bihor	263315	289778	15826	20433	2219	2943
Bistrița	112340	183514	8220	12279	1030	1751
Botoșani	149990	240415	8774	14573	1204	2110
Brașov	376978	173639	23168	15018	2912	2091
Brăila	170298	108394	7853	5972	920	830
Buzău	154433	247941	8074	13243	1004	1731
Caraș-Severin	128671	117029	6818	5871	887	719
Călărași	99798	181530	6089	11096	737	1494
Cluj	414711	271368	25287	18671	3595	2538
Constanța	432547	224084	25728	15394	3300	2114
Covasna	91930	108002	5279	7845	637	1058
Dâmbovița	129950	348058	7351	20670	897	2684
Dolj	300827	298838	18075	18101	2236	2381
Galați	258030	236726	14822	14410	1879	1859
Giurgiu	74661	184899	4245	10687	517	1389
Gorj	136536	175728	7511	8259	999	1153
Harghita	118985	172805	7003	12173	976	1741
Hunedoara	264819	94395	13385	4282	1665	559
Ialomița	109692	140552	7454	8846	913	1207
Iași	340989	428954	26165	33306	3018	4604
Maramureș	253065	198595	15205	12281	1904	1695
Mehedinți	105716	126907	5328	6581	736	932
Mureș	247288	271982	14312	19663	2039	2628
Neamț	159486	291292	9370	16931	1209	2232
Olt	151309	228922	8879	10181	1186	1409
Prahova	329103	363852	16804	20011	2156	2745
Satu Mare	145131	185432	8018	12522	1022	1648
Sălaj	83612	127486	5704	8332	812	1344
Sibiu	247330	142927	15151	11417	1952	1580
Suceava	251495	390077	18064	31185	2666	4719
Teleorman	103881	216346	5160	10248	626	1318
Timiș	344630	310888	20142	23587	2667	2952
Tulcea	88939	102944	4971	5254	648	650
Vaslui	154729	217585	11689	12966	1236	1902
Vâlcea	153363	187991	8714	8535	1007	1036
Vrancea	109539	224110	6562	13456	809	1725
București	1724115	0	107170	0	14848	0
Ilfov	250977	304255	19394	21671	1998	2252

Source: INS

Table 5. *Medical Personnel Available Nationally, by County, as of January 1, 2024*

COUNTY	Number of GPs		Number of GP Nurses		Number of Community Health Workers		Number of Health Mediators	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Alba	128	75	128	75	25	40	3	1
Arad	164	118	164	118	11	11	5	2
Argeș	178	175	178	175	3	10	1	7
Bacău	144	116	144	116	6	41	4	5
Bihor	194	182	194	182	6	19	3	8
Bistrița	60	72	60	72	4	26	2	7
Botoșani	75	88	75	88	17	90	7	8
Brașov	273	64	273	64	3	1	3	6
Brăila	104	41	104	41	2	27	4	6
Buzău	93	97	93	97	3	57	6	8
Caraș-Severin	92	51	92	51	0	5	6	0
Călărași	50	66	50	66	14	21	2	12
Cluj	275	97	275	97	0	8	5	3
Constanța	291	103	291	103	8	14	6	4
Covasna	54	43	54	43	1	4	3	7
Dâmbovița	81	132	81	132	9	28	3	3
Dolj	225	220	225	220	9	90	2	15
Galați	144	74	144	74	22	23	5	13
Giurgiu	38	70	38	70	8	22	10	14
Gorj	100	96	100	96	32	106	9	6
Harghita	65	78	65	78	20	29	6	12
Hunedoara	175	45	175	45	10	11	2	0
Ialomița	53	58	53	58	13	26	3	3
Iași	246	204	246	204	2	40	4	12
Maramureș	132	94	132	94	22	26	4	2
Mehedinți	71	61	71	61	12	70	4	15
Mureș	160	129	160	129	6	49	9	19
Neamț	111	135	111	135	5	51	3	3
Olt	100	135	100	135	24	84	9	1
Prahova	205	156	205	156	4	8	10	9
Satu Mare	108	86	108	86	0	7	1	3
Sălaj	59	54	59	54	3	30	0	5
Sibiu	192	71	192	71	19	42	7	18
Suceava	132	137	132	137	6	68	4	2
Teleorman	71	93	71	93	6	47	1	0
Timiș	317	143	317	143	0	9	1	1
Tulcea	53	36	53	36	11	63	8	5
Vaslui	71	80	71	80	10	60	9	13
Vâlcea	97	97	97	97	0	58	4	4
Vrancea	66	80	66	80	4	51	2	6
București	1104	0	1104	0	3	0	2	0
Ilfov	86	102	86	102	3	10	6	10

Source: INS

Table 6. *Healthcare Personnel Relative to the 0-5 Age Group, National Level*

COUNTY	Proportion of GPs per Population of Children Aged 0-5 Years		Proportion of Community Health Workers per Population of Children Aged 0-5 Years	
	Urban	Rural	Urban	Rural
Brașov	1,178%	0,426%	0,103%	0,048%
Prahova	1,220%	0,780%	0,186%	0,291%
Timiș	1,574%	0,606%	0,000%	0,305%
Cluj	1,088%	0,520%	0,000%	0,315%
Covasna	1,023%	0,548%	0,157%	0,378%
Satu Mare	1,347%	0,687%	0,000%	0,425%
Ilfov	0,443%	0,471%	0,150%	0,444%
Argeș	1,243%	1,039%	0,178%	0,449%
Bihor	1,226%	0,891%	0,270%	0,646%
Constanța	1,131%	0,669%	0,242%	0,662%
Arad	1,250%	0,977%	0,613%	0,686%
Caraș-Severin	1,349%	0,869%	0,000%	0,695%
Iași	0,940%	0,613%	0,066%	0,869%
Dâmbovița	1,102%	0,639%	1,003%	1,043%
Galați	0,972%	0,514%	1,171%	1,237%
Călărași	0,821%	0,595%	1,900%	1,406%
Bacău	0,903%	0,530%	0,304%	1,425%
Suceava	0,731%	0,439%	0,225%	1,441%
Bistrița	0,730%	0,586%	0,388%	1,485%
Maramureș	0,868%	0,765%	1,155%	1,534%
Giurgiu	0,895%	0,655%	1,547%	1,584%
Harghita	0,928%	0,641%	2,049%	1,666%
Mureș	1,118%	0,656%	0,294%	1,865%
Hunedoara	1,307%	1,051%	0,601%	1,968%
Ialomița	0,711%	0,656%	1,424%	2,154%
Sălaj	1,034%	0,648%	0,369%	2,232%
Neamț	1,185%	0,797%	0,414%	2,285%
Sibiu	1,267%	0,622%	0,973%	2,658%
Vrancea	1,006%	0,595%	0,494%	2,957%
Vaslui	0,607%	0,617%	0,809%	3,155%
Brăila	1,324%	0,687%	0,217%	3,253%
Buzău	1,152%	0,732%	0,299%	3,293%
Teleorman	1,376%	0,907%	0,958%	3,566%
Alba	1,211%	0,988%	1,817%	3,663%
Dolj	1,245%	1,215%	0,403%	3,780%
Botoșani	0,855%	0,604%	1,412%	4,265%
Vâlcea	1,113%	1,136%	0,000%	5,598%
Olt	1,126%	1,326%	2,024%	5,962%
Mehedinți	1,333%	0,927%	1,630%	7,511%
Gorj	1,331%	1,162%	3,203%	9,193%
Tulcea	1,066%	0,685%	1,698%	9,692%
București	1,030%	-	0,020%	-

Source: INS

B. Participants list

Interview code	Name	Age	Locality	County	Area of residency	Educational level
1	B.L.	36	Târnăveni	Mureș	Urban	Medium-High
2	F.B.	25	Târnăveni	Mureș	Urban	Low
3	S.A.	23	Sighișoara	Mureș	Urban	Medium-High
4	S.D.	24	Săcele	Brașov	Urban	Low
5	G.A.	27	Săcele	Brașov	Urban	Low
6	G.M.	29	Sighișoara	Mureș	Urban	Medium-High
7	D.E.	36	Sighișoara	Mureș	Urban	Low
8	F.A.	30	Sighișoara	Mureș	Urban	Low
9	G.R.	27	Măieruș	Brașov	Rural	Low
10	D.A.	28	Racoș	Brașov	Rural	Medium-High
11	Ș.A.	31	Măieruș	Brașov	Rural	Low
12	C.C.	39	Brașov	Brașov	Urban	Medium-High
13	P.N.	22	Mercheașa, Homorod	Brașov	Rural	Low
14	B.E.	28	Mercheașa, Homorod	Brașov	Rural	Low – fără studii
15	I.E.	20	Mercheașa, Homorod	Brașov	Rural	Low
16	M.A.	27	Mercheașa, Homorod	Brașov	Rural	Low
17	M.E.	25	Mercheașa, Homorod	Brașov	Rural	Low
18	S.M.	32	Brașov	Brașov	Urban	Medium-High
19	T.A.	39	Ghimbav	Brașov	Urban	Medium-High
20	F.A.	37	Rora	Mureș	Rural	Medium-High
21	L.M.	38	Târnăveni	Mureș	Urban	Medium-High
22	V.A.	30	Târnăveni	Mureș	Urban	Low
23	T.E.	31	Târnăveni	Mureș	Urban	Low
24	B.M.	40	Mercheașa, Homorod	Brașov	Rural	Low
25	M.G.	22	Mercheașa, Homorod	Brașov	Rural	Low
26	M.R.	24	Mercheașa, Homorod	Brașov	Rural	Low
27	M.E.	36	Mercheașa, Homorod	Brașov	Rural	Low
28	B.A.	37	Brașov	Brașov	Urban	Medium-High
29	B.R.	43	Sighișoara	Mureș	Urban	Medium-High
30	M.F.	38	Măieruș	Brașov	Rural	Medium-High
31	B.G.	40	Sighișoara	Mureș	Urban	Medium-High
32	C.N.	31	Cerghid	Mureș	Rural	Medium-High
33	P.D.	27	Cerghid	Mureș	Rural	Medium-High
34	O.R.	35	Sighișoara	Mureș	Urban	Medium-High
35	O.G.	61	Ogra	Mureș	Rural	Low
36	A.Ș.	31	Brașov	Brașov	Urban	Medium-High
37	D.Ș.	36	Ogra	Mureș	Rural	Low
38	D.L.	24	Ogra	Mureș	Rural	Low
39	L.L.	29	Ogra	Mureș	Rural	Low
40	C.A.	32	Brașov	Brașov	Urban	Medium-High
41	B.B.	28	Ogra	Mureș	Rural	Low
42	A.G.	38	Bogata	Mureș	Rural	Low
43	P.N.	27	Zărnești	Brașov	Urban	Low
44	M.B.	28	Săcele	Brașov	Urban	Medium-High

Interview code	Name	Age	Locality	County	Area of residency	Educational level
45	T.N.	44	Sântana de Mureș	Mureș	Rural	Medium-High
46	L.C.	22	Ungheni	Mureș	Urban	Low
47	R.P.	31	Budilă	Brașov	Rural	Medium-High
48	I.F.	24	Zărnești	Brașov	Urban	Low
49	C.D.	22	Zărnești	Brașov	Urban	Low
50	O.G.	24	Budilă	Brașov	Rural	Medium-High
51	I.N.	43	Săcele	Brașov	Urban	Medium-High
52	M.M.	25	Vama Buzăului	Brașov	Rural	Medium-High
53	L.A.	28	Săcele	Brașov	Urban	Medium-High
54	B.S.	24	Sântana de Mureș	Mureș	Rural	Low
55	A.A.	20	Săcele	Brașov	Urban	Low
56	S.A.	33	Bogata	Mureș	Rural	Low
57	A.V.	27	Vama Buzăului	Brașov	Rural	Medium-High
58	A.N.	19	Ungheni	Mureș	Urban	Low
59	C.M.	30	Săcele	Brașov	Urban	Low
60	A.D.	32	Sântana de Mureș	Mureș	Rural	Medium-High
61	G.I.	27	Bogata	Mureș	Rural	Medium-High
62	I.P.	28	Vama Buzăului	Brașov	Rural	Medium-High

C. Interview guide

INTRODUCTION

Hello,

My name is ....., I represent the Romanian Association for Health Promotion, partner of UNICEF Romania.

We are currently conducting qualitative research to find out about parents' knowledge, attitudes and practices related to vaccination. We invite you to discuss this topic.

*Please be assured that everything we discuss will remain strictly **confidential** (the same questions will be asked of other interviewees and the data will be presented in aggregate). You have been invited to participate in this research because you are a parent/guardian and we need your opinion. There are no 'right answers' or 'wrong answers', this is an open discussion in which you are free to express your opinion. Your views are very important for us to better understand how things are currently working and to find out your solutions and recommendations to solve any problems.*

*What we discuss is very important for the research report, which is why **I ask your permission to record our discussion.** The recording will be used only for the purpose of further analysis of the information collected and will be deleted when the research report is finalized. No information relating to personal data will be mentioned in the report, and no link will be made in any way between the interviewees and the views of each research participant. If you agree, I will start the recording.*

Thank you.

I expect our meeting to last between 90-120 minutes.

A. PARTICIPANT INFORMATION

So, with your help we would like to understand what your perceptions are on vaccines. I suggest that we start the discussion with a brief introduction of yourself.

1. **Please tell me a few words about yourself - what is your name, how old are you, what do you do?** Data about the respondent: sex, age of respondent, occupation.
2. **Are you married or in a relationship?** Can you tell me how old your spouse/partner is and what your spouse/partner does?
3. **How many children do you have and how old are they?** Can you tell me their names?
4. **Can you tell me about a typical day in the life of your family?** How does the day start in your family? What activities do you usually do in the morning? Who gets your children ready for school/kindergarten? How do children spend their free time after school or kindergarten?
5. **What activities do children do during the day?** (e.g. school, kindergarten, after-school activities) What about you and your spouse? (e.g. work, housework, hobbies) How do you share responsibilities around the house and children?
6. **How do evenings run in your family?** Do you have certain family rituals or activities (e.g. dinner together, bedtime stories)? How do you spend time together before going to bed?
7. **How is a weekend day or a day off different from a normal day?** What activities do you usually do on these days? Do you have special activities/outings that you do regularly during the weekend?
8. **How does your family interact with friends and neighbors?** Do you have joint meetings or activities? How do children integrate into the community and interact with other children?

B. IMMUNIZATION BEHAVIORS

You said that you have .... children. I would now like to discuss immunizations for your last child. You said it is a little girl/boy aged... years.

1. **To the best of your knowledge, has your child had the following vaccines in the immunization schedule?** (ask for each vaccine separately):

    a) Hepatitis B vaccine (HepB)
    b) Calmette Guerrin-type vaccine (BCG)
    c) Diphtheria-tetanus-tetanus-pertussis acellular-polio-Haemophilus-hepatitis B vaccine (DTaP-IPV-Hib-Hep B) Dose 1
    d) Dippertussis-tetanus-tetanus-acellular-pertussis acellular-polio-Haemophilus-hepatitis B vaccine (DTaP DTa-PVPI-Hib-Hep B) Dose 2

    e) Diphthertetan-tetan-tetan-tetan-pertussis acellular-polio-Haemophilus-hepatitis B vaccine (DTaP DTa-PPI-Hib-Hib-Hep B) Dose 3
    f) Pneumococcal conjugate vaccine Dose 1
    g) Pneumococcal conjugate vaccine Dose 2
    h) Pneumococcal conjugate vaccine Dose 3
    i) Rubella-rubeola-rubeola- (MMR) vaccine Doza 1
    j) Rubella-rubeola-rubeola- (MMR) vaccine, dose 2

2. **Is there one or more of the listed vaccines for which you have <u>delayed immunization?</u>**

    → *Aim to focus the discussion on specific vaccines and understand the reasons behind the respondent's decision.*

3. **What are the reasons for <u>delaying immunization</u>** [with this vaccine] **for your child?**

    → *To be necessarily explored - lack of confidence in the vaccine, fear of adverse reactions, religious concerns, vaccine availability, etc.*

4. **Is there one or more of the listed vaccines for which you have refused vaccination?**

   → *Aim to focus the discussion on specific vaccines and understand the reasons behind the respondent's decision.*

5. **What are your reasons for refusing** [this vaccine] **for your child?**

   → *Explore - lack of confidence in the vaccine, fear of adverse reactions, religious concerns, availability of vaccine, etc.*

6. **Before making this decision, have you consulted/discussed with your family doctor/pediatrician?**

   → *The aim is to identify potential shortcomings in the parent's communication with a medical professional.*

7. **Does your child have an immunization card?** Do you know where it is kept- is it at your home or at your family doctor's?

8. **How likely are you to give/not give your child all the immunizations according to the National Immunization Schedule?** Why do you say this? Please explain your reasoning, please elaborate.

You said you have .... children. I would now like to discuss the immunization for your penultimate child. You said it is a girl/boy aged... years.

Take the questions in this section one by one for each child.

C. DETERMINANTS OF IMMUNIZATION HESITANCY, REFUSAL AND NO-SHOW

Capability

1. **When you hear the word *immunization*, what is the first thing you think of?** Why do you say this? Could you elaborate, please?

2. **How did you come to these opinions/perceptions/conclusions?** Could you elaborate, please?

3. **Can you tell me if you know which diseases in children can be prevented by vaccination/are said to be preventable by vaccination?** Of these diseases you have listed- do you know how exactly they manifest themselves? What are the symptoms of these diseases? What exactly do they cause? How serious do you think they are?

4. **How do you know these things or information?** Could you elaborate, please?

5. **What do you know about vaccines in general?** Can you tell us how you think vaccines work?

6. **But what exactly do you know about vaccines for children?** What do you know about recommended childhood vaccines? Do you know what diseases these vaccines prevent?

7. **Do you think vaccines are good and can protect your child from vaccine-preventable diseases?** What do you think are the benefits of vaccinating children? What about the risks to your child's health if your child is not vaccinated? What would they be? How serious/severe could they be? Why do you think so? Please explain.

8. **Do you think vaccines are generally safe?** What about children under six years of age? Why do you think so? Where did you get this information?

9. **Are you aware of the National Immunization Schedule?** If so, where? From whom? Who informed you about it? What do you think about it?

10. **Are you familiar with the immunization schedule in the National Immunization Schedule?** If so, where do you have or have you received this information? Please elaborate.

11. **Did you know these details of the National Immunization Schedule?** What did you know for sure? What exactly did you not know? Have you ever talked to anyone about this scheme? Who did you talk to? About what?

12. **Have you been informed or do you know that these vaccines included in the National Immunization Schedule are free of charge from your family doctor?** If so, who told you? How do you feel about the fact that these vaccines for children are free?

13. **What do you think can happen to your child if the vaccination is delayed/not vaccinated?** Do you think there is any risk? What would it be? Why do you think so?

14. **Do you think that vaccinating a child is beneficial for the child and others in the community?** Why do you think so? Please explain.

15. **Do you think that an unvaccinated child may pose a danger to other children?** What risks could there be? What would they be? How serious/severe could they be? Why do you think so? Argue

16. **Do you know if some vaccines require more than one dose for complete immunity?** Can you tell me how many doses of vaccine are needed? How do you know this? Why do you think so?

Opportunity

17. **Do you have extended family or close friends who support you in raising children?** How do they support you?

18. **If you wanted to have your child immunized, do you know how to go about it?** Where would you go? How would you get there? When should you go? Why do you think so? Please explain.

19. **What is the average monthly income in your household?**

    → *Explain that household refers to all the people living together in the same dwelling, sharing a common budget and all using the goods they have acquired through their labor - make sure you take into account the income of the whole household.*

20. **To your knowledge, does your family doctor/vaccination center have an appointment system?** How do you think parents cope with using vaccination appointment systems? How about you? Do you know how to use these systems?

21. **How do you think parents remember to bring their child for all the necessary doses of vaccine?** How about you? Can you give me some examples?

22. **Has it ever happened that you want to vaccinate your child and the vaccine is not available at your family doctor/vaccination center?** When did this happen? How did you proceed? How many times did it happen?

23. **Has it ever happened that you wanted to vaccinate your child and did not have time to do so?** When did it happen? How did you do it? How many times did it happen?

24. **Nowadays, if you were to go and vaccinate your child, would you have time?** If not, what solutions do you have to go for the vaccination anyway? How would you proceed?

25. **If you wanted to go with your child for the vaccination, do you think you would get a day off/leave from your current job so that you could fit it into the schedule at the practice?** Has this ever happened? When did it happen? How did you do it? How many times did it happen?

26. **How far is this vaccination center/family doctor's office?** Can you walk, take a bus, drive or use other means of transportation to get to the vaccination center/family doctor's office?

27. **But how do you know the opening hours of the family doctor's office/vaccination center?** Is it convenient for you? Why isn't it? How should it be? What about for other parents?

28. **Have you ever wanted to have your child immunized and were unable to do so because of the office hours?** When did it happen? What did you do?

29. Do you feel that you can talk openly about your concerns about vaccines and vaccinating your child with your family doctor/pediatrician?

→ *The aim is to identify existing barriers to open communication and potential sources for improving the relationship between parents and health care providers.*

30. Are you satisfied with the way medical staff at your child's family doctor's office handle your questions and concerns about vaccines? Why do you think so? Please explain, please elaborate.

31. In the last year, how many times have you talked to your family doctor about immunization? What exactly did you discuss? Give details.

Motivation

32. Are there any positive or negative experiences you have had that have influenced your opinion about vaccines? Can you give examples? Please elaborate.

→ *The aim is to understand personal context and past experiences and to adapt communication to build confidence.*

33. Do you know of or have you heard any positive/negative stories or experiences from people you know about vaccines that might influence your opinion? Can you give examples? Please elaborate.

34. What are your main concerns about vaccinating your child?

→ *Aim to personalize the discussion and directly address the parent's fears.*

35. What do other parents in your community/friends group generally think about vaccination?

36. In your community/group of friends, how is it customary to talk about vaccination - is there a leaning towards refusal, acceptance, is it perceived or understood as a good, right thing or rather as something bad? How do you know these things? Do you usually talk to other parents about vaccination? Can you give some examples of opinions and motivations?

→ *The aim is to assess social norms and attitudes about vaccination within personal and community networks.*

37. How do they view vaccines in terms of safety and effectiveness? Why do you think so? Please explain.

38. Do you know if other parents in your community/friend group vaccinate their children? How do you know this? Can you give examples of other parents in your community who vaccinate their children? But who do not vaccinate their children? What are their arguments? Do you share their beliefs/ideas?

39. Do you remember or do you think there have been times when you felt pressured by those around you to vaccinate your child? Do you know other parents who have chosen not to vaccinate their child?

→ *The aim is to understand the social context and identify possible alternative sources of support for the parent.*

40. Are there any issues related to your religion that you feel have a bearing on your vaccination decisions? If so, what does your religion stipulates? How does your religion relate to vaccination, medical interventions or other investigations? What are they? Please elaborate.

41. What factors/criteria do you think would help you to make an informed decision about vaccinating your child?

→ *Aim to tailor communication and provide relevant and personalized information to answer specific questions.*

42. Do you consider that vaccinating your child poses a serious risk to their health? What do you think might happen? Why do you think so? Please give details, give reasons.

43. At this moment, are you decided not to vaccinate your child? Do you think this is good for your child's health? Why do you think so? Please explain.

44. **Do you feel that not vaccinating your child is good for your child, your family and/or the community?** Why do you think so? Please explain.

45. **Do you think not vaccinating will protect your child from vaccine-induced illnesses?** What about from its side effects? Do you think that if you vaccinate your child, he/she will suffer negative effects from the vaccine? Why? Please explain.

46. **How do you think at this point to avoid vaccinating your child as much as possible, whatever the consequences?** What exactly have you thought about? Do you have a plan? What is it?

47. **How do you think you would feel if you chose to vaccinate your child?**

    → *The aim is to explore the emotions associated with deciding whether to vaccinate your child, and to validate the parent's feelings in the process of a potentially difficult decision.*

48. **Do you think there have been or can you recall if there have been times when you have felt overwhelmed by the amount of conflicting information about vaccines and childhood immunizations?** How do you deal with conflicting information about vaccines and childhood immunizations?

49. **In the past year have you ever heard anything about vaccination?** What about? What do you think about this information? Is it true or not? How did you determine this?

50. **When you hear a piece of information about vaccination or immunization - how do you know if it is correct or not?** How do you determine if it is misinformation or if it is real?

51. **When it comes to vaccinating your child, who do you trust the most to talk to about it?** Why?

    → *The aim is to understand the social dynamics and sources of influence in the decision making process regarding your child's immunization.*

52. **What are your main sources of information about vaccines and childhood immunization?**

    → *Test: family doctor, pediatrician, family, public persons, etc. The aim is to understand how parents inform themselves about vaccination and to assess the channels/platforms they use to obtain information on the topic.*

53. **Which of these sources do you consider to be the most important or trustworthy?** How do you assess the credibility of each source? Why do you consider them to be the most reliable? Can you give us some reasons or tell us more/an experience?

    → *The aim is to identify the factors that contribute to the perceived credibility of immunization information.*

54. **Do you consider that recommendations from family, friends or close associates may influence your decision to vaccinate your child?**

55. **Do you consider that the recommendation of a health professional (family doctor, pediatrician, nurse) may influence your decision to vaccinate your child?**

    → *The aim is to understand the role of the trust given by the respondent to the medical system and to assess their influence on vaccination decisions.*

56. **What about recommendation from a representative of the Church/religious clergy?**

    → *It aims to understand the role of religious values in relation to childhood immunization as well as to assess the influence of religious leaders in parents' decisions on the subject.*

57. **To what extent do you feel that posts/comments by people on social networks (Instagram, TikTok, Facebook, Reddit) have influenced your decision not to vaccinate your child?**

    → *It aims to understand the role of misinformation and unverified information in parental hesitancy to vaccinate.*

58. In your locality, who are the people, and from which field do they come, that you personally trust the most on the issue of vaccinating your children?

→ *The aim is to understand the dynamics of trust at the local level and how information on the topic circulates in the community, as well as to identify local opinion leaders.*

59. Do you think that if a message comes from a public figure (artists, influencers, politicians, religious representatives), people will believe more or less in the need for vaccination?

→ *The aim is to understand the potential of communication strategies involving public persons to increase the uptake of vaccination and to assess the impact of public persons in promoting vaccination.*

60. In the past year how many times have you talked to your community nurse/health mediator about vaccination? What exactly did you discuss? Please elaborate.

61. What are your vaccination needs? What else would you like to know?

→ *The aim is to tailor communication strategies and educational interventions to meet the specific needs of parents and to address hesitancy about vaccination.*

F. CONCLUSION

In closing, do you have any recommendations or identify possible solutions to the issues discussed?

Do you think there is anything that can be done at the community, local or even national level to decrease no-show, hesitancy or even refusal of parents to vaccinate their children?

Thank you for your participation in this discussion and for your help!

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STUDY REPORT, 2024