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Sociocultural and psychological determinants of vaccine resistance in adults aged 19 to 64 years

Determinantes socioculturales y psicológicos de la resistencia a las vacunas en adultos de 19 a 64 años

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Abstract

The article analyzes the sociocultural and psychological determinants of vaccine resistance in adults aged 19 to 64 years, through a literature review, with a qualitative-descriptive approach. Important aspects that influence reluctance to immunization in adults of this age range were identified. Among the sociocultural determinants, religion, education, beliefs and cultural traditions were noted; on the other hand, among the psychological factors, fear, misinformation and the perception of the risk of the side effects of vaccines were identified with great predominance. The findings showed that, despite the scientific information supporting the effectiveness and safety of vaccines provided by governments, agencies and health institutions , there are barriers to acceptance, motivated by lack of confidence in the safety of vaccines and fear, especially among young adults, of side

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effects, who even underestimate the risks of diseases. The review also showed that the influence of family, social groups and friends has a high impact on the decision of adults towards immunization. The literature analysis and interpretation highlighted the importance of addressing and understanding the sociocultural and psychological determinants of the adult population aged 19 to 64 years and understanding that the acceptance of immunization varies according to the age range, where adults older than 40 years showed greater awareness; and those younger than this age present greater doubts and fears.

Key words: determinants, psychological, resistance, sociocultural, vaccines.

Resumen

El artículo analiza los determinantes socioculturales y psicológicos de la resistencia a las vacunas en adultos de 19 a 64 años, a través de una revisión bibliográfica de la literatura, con un enfoque cualitativo-descriptivo. Se identificaron aspectos importantes que influyen en la reticencia a la inmunización en adultos de este rango de edad. Entre los determinantes socioculturales, denotaron la religión, educación, creencias y tradiciones culturales; por otro lado, en los factores psicológicos se identificó con gran predominancia al miedo, la desinformación y la percepción del riesgo de los efectos secundarios de las vacunas. Los hallazgos permitieron constatar que, a pesar de la información científica que avala la efectividad y la seguridad de las vacunas proporcionada por los gobiernos, organismos e instituciones de salud, existen barreras de aceptación, motivadas por la falta de confianza en la seguridad de las vacunas y el temor, especialmente de los adultos jóvenes, a los efectos secundarios, que incluso subestiman los riesgos de las enfermedades. La revisión también mostró que la influencia de la familia, grupos sociales y amistades tiene un alto impacto en la decisión de los adultos hacia la inmunización. El análisis e interpretación literaria permitió resaltar la importancia de abordar y entender los determinantes socioculturales y psicológicos de la población adulta de 19 a 64 años y comprender

que la aceptación de la inmunización varía de acuerdo con el rango de edad, donde los adultos mayores a 40 años mostraron tener mayor concienciación; y los menores a esta edad presentan mayores dudas y temores.

Palabras clave: determinantes, psicológicos, resistencia, socioculturales, vacunas.

Introduction

Immunization is an essential process in preventive medicine, whereby people acquire resistance to infectious diseases through the administration of vaccines. This procedure not only prevents a wide range of serious diseases and disabilities, but also significantly reduces mortality from preventable pathologies, such as cervical cancer, hepatitis B, measles, polio, rubella and tetanus, among others (Tagle and Urbina, 2023). Over time, immunization has gained greater acceptance in the population, and its constant evolution has demonstrated high effectiveness. Vaccines stimulate the immune system, providing long-lasting protection against pathogens and ensuring effective prevention of these diseases (Eroza and Carrasco, 2020).

Despite these benefits, lack of knowledge about how vaccines work and are handled remains a major obstacle, particularly among adults aged 18 to 64 years. The complexity of vaccine production processes and their characteristics generates difficulties in their understanding and appreciation by the population (Villagrán et al., 2024). In addition, the erroneous perception of safety, influenced by the reduction in the incidence of diseases due to immunization, can lead to a false sense of protection and underestimation of the risks of infectious diseases (Maximiliano, 2021).

A study conducted by Caycho et al. (2022) with adults with an average age of 34.67 years revealed that a considerable percentage of respondents held conspiratorial beliefs about vaccines, especially related to COVID-19. While some participants did not express a clear position, a large majority believed that information about the effectiveness and safety of these vaccines was fabricated. These results underline the influence of sociocultural and psychological factors on the perception of vaccines. From a sociocultural point of

view, erroneous beliefs generate mistrust towards health institutions and even international organizations. From a psychological approach, fear and anxiety associated with conspiracy ideas contribute to resistance to immunization.

In a different context, a study in the province of Cotopaxi, Ecuador, analyzed vaccine resistance in adults from indigenous communities, with a mean age of 50 years. The findings showed that erroneous beliefs and low educational level were determining factors in vaccine refusal. However, those adults who participated in educational talks about immunization changed their perspectives and accepted vaccination, in contrast to those who did not receive this training (Hernández et al., 2022). These results highlight the importance of education as a key factor in vaccine acceptance by counteracting misinformation and correcting erroneous beliefs.

Resistance to immunization continues to be a global phenomenon of concern to health systems. Despite scientific evidence supporting the safety and efficacy of vaccines, a part of the adult population persists in their refusal, which puts at risk not only their health, but also the collective immunity needed to prevent pandemics, such as occurred with COVID-19, . It is essential to understand the sociocultural and psychological determinants that foster this resistance, in order to develop evidence-based strategies that promote confidence in immunization and health institutions.

The purpose of this article is to analyze the sociocultural and psychological determinants that influence vaccine resistance in adults aged 19 to 64 years, through a literature review. The aim is to identify how these factors are manifested in different cultural, demographic and educational contexts, and to provide relevant information to design effective interventions to promote vaccine acceptance.

Methodology

A literature review was conducted with the purpose of analyzing the sociocultural and psychological determinants that contribute to vaccine resistance in adults aged 19 to 64 years. The search was limited to publications from the last 5 years, using keywords and Boolean operators, such as "sociocultural determinants" AND "vaccine resistance" AND "adults aged 19 to 64 years", and other

operators such as OR and NOT. Scientific articles, theses, books and agency reports were included, consulting databases such as PubMed Central, Scielo, Elsevier, Scopus, Taylor & Francis, and national and international university repositories. To ensure broad and diverse coverage, the search was conducted in English and Spanish, ensuring the inclusion of relevant publications both globally and in the Latin American region.

Inclusion and exclusion criteria

To ensure the thoroughness of the analysis, the following criteria were applied:

Inclusion criteria:

Target population: Studies focused on adults aged 19 to 64 years.

Type of studies: Original research, indexed in academic databases, addressing vaccine resistance from sociocultural and psychological contexts.

Period of publication: Studies published within the last 5 years to ensure relevance and timeliness of information.

Language: Publications in English and Spanish.

Exclusion criteria:

Non-relevant population: Studies focused on children or older adults.

Non-academic sources: Non-indexed popular articles, publications with no empirical basis, theses and documents from non-accredited websites.

Outdated data: Studies published before the established period.

During the process, 132 initial articles were reviewed. Of these, 82 were excluded because they did not meet the criteria, mainly for dealing with populations outside the defined age range or for coming from non-academic sources.

Methods of analysis

The qualitative analysis adopted focused on identifying patterns, trends and perspectives present in the literature. The thematic

analysis method was used to examine sociocultural and psychological determinants. This method allowed us to categorize and synthesize relevant information on factors such as religion, education, trust in health institutions, misinformation, fear and social identity, among others.

To support this process, NVivo software was used, which facilitated the coding and grouping of key topics. The main technique used was the systematic document review, following the guidelines of the PRISMA-P model (Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols) as shown in Figure 1. This protocol made it possible to structure the review in a transparent and reproducible manner, from the selection of sources to data analysis, .

Qualitative approach

The qualitative approach sought to interpret, understand and systematize previous findings related to the sociocultural and psychological determinants that influence vaccine resistance. This approach allowed us to delve deeper into the meanings attributed by the authors of the studies reviewed, as well as the methodologies and theories employed. In addition, the qualitative analysis not only identified general trends, but also the particularities present in different cultural and demographic contexts.

The qualitative methodology offered a comprehensive perspective to interpret how social and psychological perceptions affect adults' attitudes towards immunization. This approach, combined with a thematic analysis supported by digital tools, ensured the validity and reliability of the results obtained, providing a solid basis for future research and intervention strategies.

Figure 1: Literature review-PRISMA method

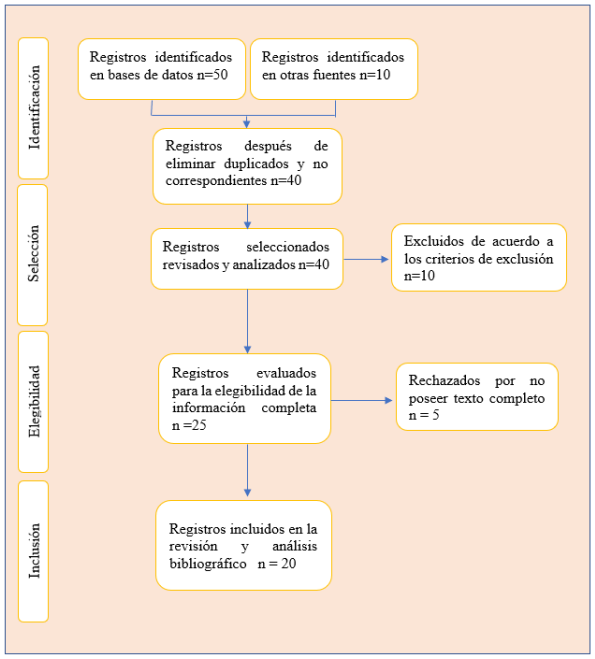


Figure 1 shows the flow diagram of the PRISMA process used in this study to identify, select, evaluate and include the articles used in the literature review.

The literature review was structured chronologically with the aim of illustrating the evolution of knowledge on the sociocultural and psychological determinants that contribute to vaccine resistance in adults aged 19-64 years. This organization allows us to identify how perspectives and approaches have changed over time, highlighting major contributions in different periods.

It began with older studies within the time range considered, which focused on fundamental sociocultural determinants, such as the influence of factors like education, religious beliefs and trust in health institutions. These studies laid the groundwork by identifying early patterns of distrust of immunization and their links to specific sociocultural characteristics.

Over the years, research began to incorporate deeper psychological approaches, exploring aspects such as fear, anxiety and the influence of conspiracy theories. This shift marked a significant advance by

integrating cognitive and emotional dimensions that complemented the initial findings focused exclusively on sociocultural factors.

Finally, in more recent studies, a trend toward the intersection of multiple determinants was observed. More current research has highlighted the interplay between sociocultural and psychological aspects, such as the combined impact of media misinformation and cultural beliefs, as well as the importance of health literacy in addressing these barriers. This comprehensive approach has led to the development of more effective strategies to mitigate vaccine resistance.

Taken together, this review evidences (Table 1) how the understanding of the determinants of vaccine resistance has evolved from isolated approaches to interdisciplinary perspectives that consider the complex interactions between social, cultural, and psychological factors. This progress has laid the groundwork for future research and the implementation of evidence-based public policies.

Table 1. *Articles used in the literature review*

Author	Title	Magazine	DOI or URL	Year
Aquino Canchari Christian Renzo, Karla Guillen Macedo	Vaccine reluctance as an increasingly common practice worldwide	Cuban Journal of Biomedical Research	http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-0300202000100002	2020
Martha Carnalla, Ana Basto-Abreu, Dalia Stern, Sergio Bautista Arredondo, Teresa Shamah-Levy, Celia M Alpuche Aranda,	Acceptance, refusal and hesitancy of COVID-19 vaccination in Mexico: Ensanut 2020 COVID-19.	Public Health Mex	DOI: 10.21149/12696	2020

Juan Rivera Dommarco , Tonatiuh Barrientos Gutiérrez				
Michael Daly, Eric Robinson	Longitudinal changes in psychological distress in the UK from 2019 to September 2020 during the COVID-19 pandemic: Evidence from a large nationally representative study.	Research in psychiatry	https://doi.org/10.1016/j.psychres.2021.113920	2021
Michael Eder, Haris Omic, Jana Gorges, Florian Badt, Zeljko Kikic, Marcus D. Saemann, Allison Tong, David Bauer, Georg Semmler, Thomas Reiberger, Heimo Lagler, Bernhard Scheiner	Influenza vaccination uptake and factors influencing vaccination decision among patients with chronic kidney or liver disease	PLOS ONE	https://doi.org/10.1371/journal.pone.0249785	2021
Justin Gatwood,	Factors influencing	American Journal of	https://doi.org/10.1093/	2021

Madison McKnight, Michelle Fiscus, Kenneth C Hohmeier, Marie Chisholm Burns	likelihood of COVID-19 vaccination: A survey of Tennessee adults.	Health-System Pharmacy	ajhp/zxab099	
Bernal Vaquera Bruno Michel, Morales-Jinez Alejandro, Moreno-Pérez Norma Elvira	Vaccine hesitancy: a systematic review to address the phenomenon in Latin America	Sanus	https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2448-6094202100100201	2021
Simin Wen, Icon, Zhengyu Wu, Shuyi Zhong, Mao Li, Yuelong Shu	Factors influencing the immunogenicity of influenza vaccines.	Human Vaccines & Immunotherapeutics	https://doi.org/10.1080/21645515.2021.1875761	2021
S.E. Kreps, D.L. Kriner	Factors influencing Covid-19 vaccine acceptance across subgroups in the United States: Evidence from a conjoint experiment.	Vaccine	https://doi.org/10.1016/j.vaccine.2021.04.044	2021
Halimat Adedeji-Adenola, Olubusola	Factors influencing COVID-19 vaccine uptake	PLoS ONE	https://doi.org/10.1371/journal.pone.0264371	2021

A. Olugbake, Shakirat A. Adeosun	among adults in Nigeria.			
Tomás Caycho Rodríguez, Miguel Gallegos, Pablo D. Valencia and Lindsey W. Vilca	How much do Peruvians support conspiracy beliefs about COVID-19 vaccines?	Primary Care	https://www.sciencedirect.com/science/article/pii/S0212656722000385	2022
Gleb Donin, Erfanyukovto Anna, Ilya Ivlev	Factors Affecting Young Adults' Decision Making to Undergo COVID-19 Vaccination: A Patient Preference Study.	Vaccines	https://www.mdpi.com/2076-393X/10/2/265	2022
Erwin Hernando Hernández Rincón, Francisco Lamus Lemus, Diana Marcela Díaz Quijano, Karen Nathaly Rojas Alarcón, Juan José Torres Segura, Luisa	Population resistance to immunization in times of epidemics: a review of Covid 19	Rev Panam Public Health	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9553013/	2022

Fernanda Acevedo				
Andria Papazachariou, Constantinos Tsioutis, Theodore Lytras, Onoufrios Malikides, Maria Stamatelatou, Nektaria Vasilaki, Athanasia Milioni, Maria Dasenaki, Nikolaos Spernovasilis	The impact of seasonal influenza vaccination uptake on COVID-19 vaccination attitudes in a rural area in Greece	Vaccine	https://www.sciencedirect.com/science/article/pii/S0264410X22015390?via%3Dihub	2022
Gi Yon Kim, Taeksoo Shin, Youn-Jung Son, Jihea Choi	Psycho-behavioural factors influencing COVID-19 vaccine hesitancy among Korean adults: The moderating role of age.	Journal of Advanced Nursing	https://doi.org/10.1111/jan.15273	2022
Francisco Puche Louzán, María Lourdes Cantero González	Nursing diagnosis proposal: risk of refusal of vaccination.	Global Nursing	https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1695-61412023000100018	2023
Julio César Tagle	Sociocultural Factors	Ciencia Latina	https://doi.org/10.37811	2023

Arcos, Irasema Isabel Urbina Aranda	Influencing Vaccine Reluctance Against Covid-19 in the Population Assigned to the U.M.F. No. 9 of the IMSS in Acapulco, Gro.	Multidisciplinary Scientific Journal	/cl_rcm.v7i6.9385

Note: The table summarizes the articles included in the literature review on vaccination, vaccine reluctance, and factors associated with vaccine decision making. Authors, titles, sources, and relevant links to the articles are presented, which vary among studies and analyses of attitudes toward vaccines in different countries.

Results

Social perception of vaccines

Immunization differs from other preventive health methods due to its conceptual complexity and the nature that it does not tend to offer immediately visible results. For this reason it generates a lot of uncertainty in people and leads to a limited understanding of its relevance, especially when grasping or understanding the idea of receiving vaccines that contain microorganisms that have been weakened or inactivated so that they do not cause serious diseases in healthy people. Lack of knowledge about how vaccines work and their purpose leads people to not value or have an adequate perspective on their important role in disease prevention .

When talking about perception towards immunization, mention can be made of a study conducted in Costa Rica at the Hospital "Dr. Rafael Ángel Calderón Guardia", in which the coverage of vaccination against influenza among nursing personnel was analyzed. The study revealed that resistance to influenza immunization is influenced by misinformation, fear of side effects, availability of the vaccine and unawareness of the dangers of non-immunization. It was found that significant percentages of adult workers in the age range of 20 to 40 years, among men and women, who, despite belonging to the health

personnel within the hospital, presented resistance to immunization. The myths and negative attitudes towards the vaccine showed a high level of misinformation and demonstrated that, although the workers have the knowledge and preparation in health, the appreciation towards immunization contradicts their training, revealing the greater weight of other determinants such as psychological, social and cultural, over the scientific and educational ones .

Resistance to vaccination is widespread among young adults, where they determine that vaccination is not necessary because they are at an age when they perceive themselves to be in good health; or if they feel they are not at risk of disease, they are less likely to receive the vaccine. However, despite the reach of immunization, significant challenges persist that affect the effectiveness of immunization globally. Another major barrier identified within this adult age group is the fear of side effects, which raises concerns and impacts immunization . Other challenges include lack of access to vaccines, geographic location and increased skepticism in certain segments of the population .

Knowledge, attitudes and behaviors towards immunization.

The level of knowledge about vaccines in the population is necessary to shape attitudes toward vaccine acceptance. Clear and accessible information not only educates people about the safety and effectiveness of vaccines, but also helps to diminish erroneous beliefs about vaccines. With respect to attitudes, these directly influence behaviors, which determine whether people are motivated to get vaccinated or are simply undecided or reluctant . It is important to highlight how the social and family environment plays a crucial role in the appreciation or perception towards vaccines; the influences of peers or loved ones can reinforce or challenge each person's decisions towards immunization.

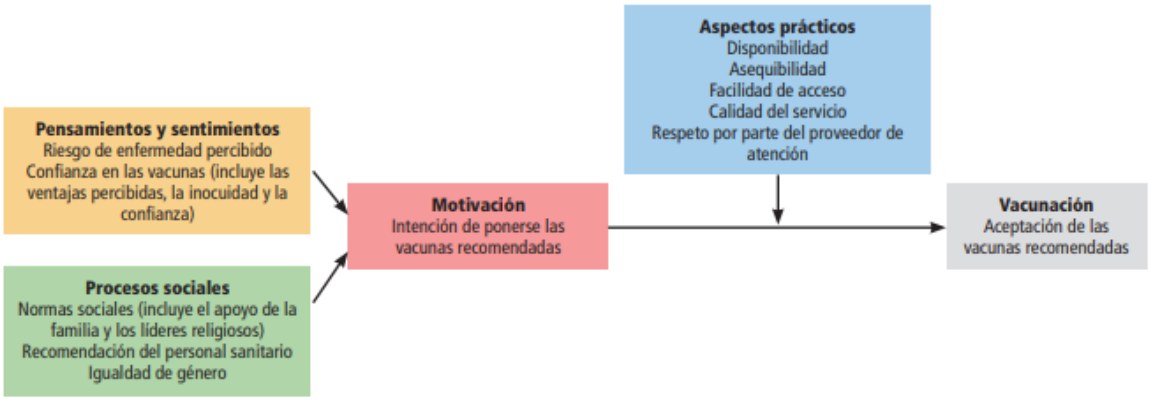
In the case of COVID-19, young adults are less likely to accept the vaccine compared to older people. The vaccination rate in this group of adults shows that, although they are hesitant about the vaccine, they focus more on the risks of side effects, while those who do choose to be vaccinated focus on the efficacy of the vaccine. In general, adults with an average age of 24 years tend to be reluctant

or unsure about immunization, because they prioritize the risk of side effects, a central determinant for the acceptance of immunization .

Vaccine immunization may be influenced by age, educational level and income. Adults from 50 to 64 years of age tend to be more likely to be vaccinated than younger people. In this same age group, adults with health problems are more willing to be vaccinated than those in good health .

Therefore, it is essential to promote education about vaccines and to create an environment that supports and values immunization as a responsible and preventive act for personal and community health . Knowledge, attitudes and behaviors combine theories of social learning and models related to health beliefs, which allow demonstrating the relevance of maintaining a favorable attitude in a well-founded way to health decisions and to be vaccinated. These aspects suggest that knowledge and attitude are determinants in behavior modification. In this sense, determinants such as personal experience, the impact of social and family relationships and the acquisition of reliable information are essential (Figure 2) to promote a responsible attitude towards immunization and its benefits .

Figure 2: Behavioral and social determinants of immunization.



Note: The figure shows the factors influencing the decision to vaccinate, according to the model proposed by Brewer et al. (2019) in their review published in Psychological Science in the Public Interest.

To improve immunization coverage, it is essential to identify the reasons behind low vaccine uptake. Training programs should gather information on the perceptions, motivations and feelings of the population. In addition, the social and practical determinants that facilitate or complicate the decision to vaccinate should be known. This allows the development of strategies based on reliable evidence that promote self-acceptance of vaccination . As can be seen, the coverage of immunization schedules not only has the objective of compliance, but also contributes to the wellbeing of the population and its prevention.

Vaccine reluctance is known as a stance between acceptance and total rejection of vaccines. It is established as a phenomenon with many implications and complications. According to the Strategic Advisory Group of Experts on Vaccine Hesitancy (SAGE), which is a group of experts in charge of advising the World Health Organization (WHO) on policies and strategies regarding vaccines, they indicate that reluctance is a delay in the acceptance or rejection of vaccines, even if they are accessible and available. This type of behavior is influenced by various personal, cultural and community determinants and is directly related to the health system, which tends to diversify with the times and the reality of the population .

The World Health Organization (WHO) has developed models that allow a better understanding of reluctance, such as the 3Cs model, which refers to competence, confidence and convenience, which have been evolving and adapting towards the 5s, where communication and context are incorporated. This model provides confidence, through the exposure of safety and effectiveness of vaccines, informing and clarifying the different perceptions about the risk associated with diseases, as well as the accessibility and ease of vaccination. These models seek to assess the quality and impact of the information received within the sociocultural and political environment that encompasses the topic of vaccines . Sociocultural determinants (Table 2) play an important role in the acceptance of or resistance to immunization. Perceptions about health and vaccines are especially influenced by cultural beliefs and practices, where in some cultures, traditional medicine or home remedies have greater acceptance than modern vaccines by some communities .

Social influences on adults play an important role in the decision to vaccinate, as they outweigh the scientific knowledge they have. In the study by Adedeji et al. (2022), they state that adults with an average age of 40 years have a high level of awareness and are willing to receive vaccines. However, distrust in vaccines and concerns of, whether they are safe or not are evident in the population. Despite showing a moderate disposition and perception towards the efficacy of immunization, many of them show doubts due to aspects external to the scientific context. Among the factors influencing immunization awareness, religion, occupations, education and, in most of the cases, they look for previous diagnoses of whether they suffer from any disease to do so .

Acceptance or rejection of vaccines may be influenced by social pressure and the opinions of peers, family members, public figures, and pro- and anti-immunization movements. Resistance to immunization may increase due to the presence of anti-vaccine movements that are currently the most influential factor within the world population . Among other socio-cultural determinants, negative stereotypes about vaccines caused by misinformation, where they are perceived as dangerous or ineffective, affect the non-acceptance of immunization and contribute to the misunderstanding of the benefits of immunization. Resistance to immunization can also derive from lack of access to vaccines due to geographic location and lack of adequate medical resources in health centers, which limits the population's capacity to receive vaccines and influences as another cause of resistance .

The perceived risk of vaccine-preventable diseases may be underestimated if people do not experience outbreaks, conditions or serious health complications, which leads to a lower priority for immunization. Among the most relevant determinants is the fear caused by the side effects of vaccines, which are usually amplified by misinformation and provoke significant resistance in the population. On the other hand, there is anxiety, caused by insecurity about the effectiveness of vaccines . The effects of misinformation and conspiracy theories and lack of trust in health institutions often incur in the thinking of a population; where constant exposure to incorrect or alarmist information about vaccines can distort public perception and also impact resistance .

Psychological determinants that influence people's behavior, thinking and emotions include elements such as beliefs about the safety of vaccines, emotions associated with health and previous experiences with the health system, which can influence the decision to be vaccinated or not. Also, the perception and motivation to protect oneself and others are determinants in the willingness to receive the vaccine. For this reason, all these psychological aspects are understood as essential in the process of information, communication and the increase of immunization coverage in the population, framing how people process information about vaccines, including emotional and rational cognition and their response to immunization .

Antivaccine movements and their impact on immunization resistance

The anti-vaccine movement can be defined as different groups of people who, for religious, philosophical, political, scientific or health reasons, establish and propose risks in vaccines. These people aim to spread unverified and unverified information with no identified basis regarding immunization. These movements have achieved a great resistance in immunization rates in large populations in several countries and even increased the number of these followers . In 1796, since the English physician Edward Jenner introduced a method to prevent smallpox through the inoculation of secretions from the pustules of sick people, the first criticisms and, over the years, movements against immunization began to emerge for the aforementioned reasons.

From the above, it can be established that resistance to vaccines is as old as immunization itself . It is important to note that antivaccine movements started by transmitting messages in familiar contexts and close to their environments, but their reception and acceptance by the populations, prompted them to expand their messages throughout the world, addressing different media. However, at the end of the 20th century, with the arrival of the Internet, these movements found a way to disseminate their ideas globally and directly. This led to greater resistance and uncertainty to the processes and objectives of the health system .

Table 2 presents the main sociocultural and psychological determinants that influence resistance to vaccination. They are

divided into three categories: contextual determinants, behavioral and peer influences, and factors directly related to the vaccine.

Table 2: *Main sociocultural and psychological determinants of vaccine resistance.*

DETERMINANTS	DESCRIPTION
Contextual	- Education - Antivaccine and pro-vaccine movements - Religion, philosophy, culture, gender and socioeconomic status - Geographic barriers - Perception of the health care system and pharmaceuticals.
Behavioral and peer influences	- Personal, family or community experiences regarding vaccination - Beliefs, attitudes about health and prevention - Knowledge and information - Trust in the health system - Relationship between risk and benefit - Views of vaccination as a social norm or an unnecessary or harmful process
In relation to the vaccine	- Vaccine campaigns - Vaccine knowledge and attitudes.

Rejection of immunization

In recent years, there has been an increase in the number of people expressing doubts and resistance to vaccines, especially in terms of safety, side effects and effectiveness . These refusals present an obstacle to immunization programs, since they affect disease control

levels and can lead to increased morbidity and lack of control in epidemic outbreaks. Vaccine refusal, according to the World Health Organization (WHO), was identified in 2019 as one of the top ten health challenges . Different studies and research have pointed out that income level, socio-cultural determinants and socioeconomic status influence the acceptance of immunization; however, it has not been possible to specifically differentiate which of these determinants are the main reasons for the presence of resistance .

Regarding information and educational level on immunization, the findings have shown great volatility, which establishes that the individual determinants of each person should not be analyzed in isolation, since there are different contextual influences in each part of the world and in each community . In the case of diseases that have been almost eradicated, a large part of the population has given less importance to their seriousness and possible complications, which leads to underestimating the need for prevention. According to the World Health Organization (WHO), due to this conformism, complacency appears, indicating that people decide to be vaccinated only if they consider the disease or pathogen to be a present and visible risk to their health .

In this same context, it is observable how philosophical and religious exemptions in the population have been influencing and increasing, which has contributed to significant outbreaks of diseases that could be prevented with immunization . An example that corroborates the aforementioned is the increase in measles cases in the United States, where from 63 people in 2010 with the pathology went to 1282 in 2019 in mainly unvaccinated people. International organizations such as the World Health Organization (WHO) and the Pan American Health Organization (PAHO) indicate that important disease outbreaks have originated in countries and communities with low immunization coverage and lack of education about them.

The World Health Organization (WHO) and the Pan American Health Organization (PAHO) point out that a clear case is that of the Americas region, where measles coverage is lower compared to other regions of the world, such as African communities that present exorbitant amounts of measles. It concludes that geographic barriers and limited

access to immunization campaigns are relevant determinants affecting the immunization process . In general, the consequence of an evident growth in resistance to immunization is the increase in mortality and morbidity caused by the increase of infectious diseases or pathogens not fully eliminated and identified as epidemic outbreaks appearing in various parts of the world .

Table 3: *Vaccines targeted to adults aged 19 to 64 years.*

Age range	Vaccines you need	Other Vaccines
19 to 26 years old	- Varicella vaccine - COVID-19 vaccine - Influenza (flu) vaccine - Hepatitis B vaccine - HPV (human papillomavirus) vaccine - MMR (measles, mumps and rubella) vaccine - Tdap (tetanus, diphtheria and pertussis) or Td (tetanus and diphtheria) vaccine	- MenB vaccine (meningococcal disease) for adults up to 23 years old. - Others depending on individual factors.
27 to 49 years old	- COVID-19 vaccine - Influenza (flu) vaccine - Hepatitis B vaccine - MMR (measles, mumps, and	- Varicella (chickenpox) vaccination if born in 1980 or later - HPV (human papillomavirus) vaccination

	rubella) vaccine - Tdap (tetanus, diphtheria and pertussis) or Td (tetanus and diphtheria) vaccine	
50 to 64 years old	- COVID-19 vaccine - Influenza (flu) vaccine - Shingles (herpes zoster) vaccine - Tdap (tetanus, diphtheria and pertussis) or Td (tetanus and diphtheria) vaccine	- Hepatitis B vaccine (recommended up to age 59 years) - MMR (measles, mumps, and rubella) vaccine if born in 1957 or later - RSV (respiratory syncytial virus) vaccine for adults age 60 and older

Table 3 shows the recommended vaccines for adults between 19 and 64 years of age, dividing the needs by age range. This vaccination schedule reflects the evolving immunologic needs of the adult population and underscores the importance of maintaining immunization throughout life, especially for preventable diseases such as COVID-19, influenza, and HPV. This information was obtained from .

Table 4: *Changes in influenza immunization in the United States.*

Change in Influenza Vaccination Coverage between 2024-2025 and 2023-2024 Seasons by Age (2024-2025 minus 2023-2024)

Demographic Group	2024-2025 Season Percentage Vaccinated	2023-2024 Season Percentage Vaccinated	Difference in Coverage Between Seasons (%) (current minus previous)	95 CI (%) of the Difference	Statistical Significanc
18-29 years	25,3	22,3	3,0	0.6 to 5.3	*
18-49 years	28,3	26,4	2,0	0.3 to 3.7	*
30-39 years	28,6	25,9	2,7	0.0 to 5.3	
40-49 years	30,9	31,8	-0,9	-4.7 to 2.9	
50-64 years	39,1	40,0	-0,9	-4.0 to 2.1	

Table 4 presents changes in the influenza vaccination rate in the United States by different age ranges. The percentage of vaccination increases significantly with age, being highest among persons aged 60 years and older, which may reflect a higher perceived risk of serious influenza-associated complications in older persons. The difference in vaccination percentage between age ranges highlights how vaccine uptake tends to increase with age, with a notable increase in older adults. Retrieved from .

Figure 3: Influenza vaccination coverage, overall and by selected demographic groups and jurisdictions, among adults aged 18 years and older, 2021-22 through 2024-2025.

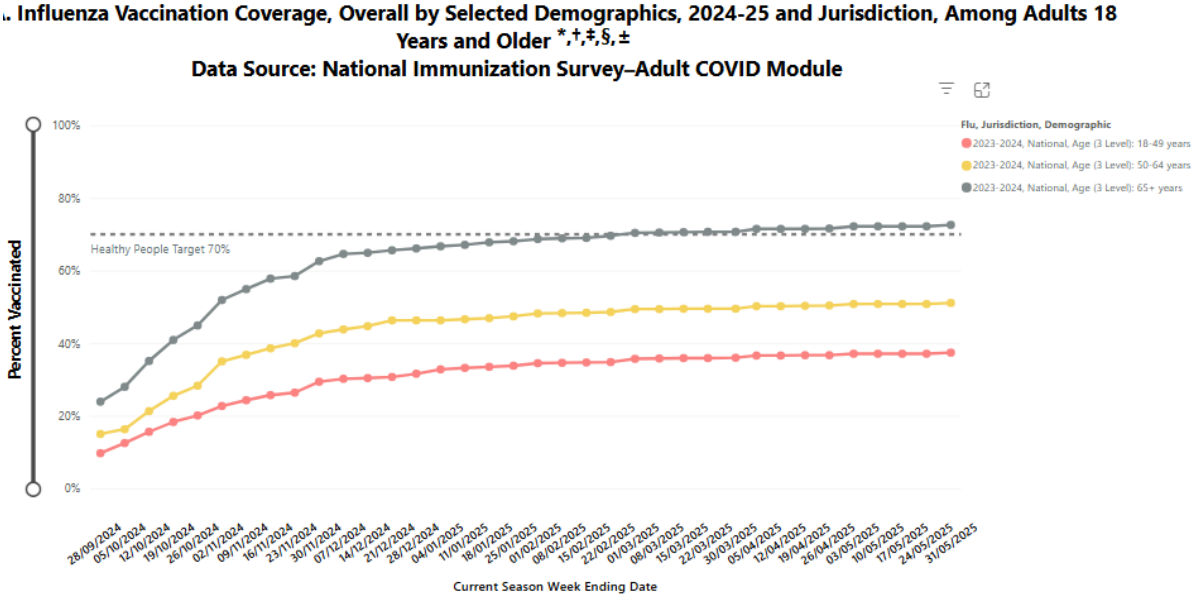


Figure 3 presents influenza vaccination rates for three age ranges: 18-49 years, 50-64 years, and 65 years and older, during the period 2021-2022 to 2024-2025. The data provide an overview of vaccination coverage, reflecting how vaccination rates vary by age group. Retrieved from (CDC, 2023).

Thus, resistance to immunization manifests itself alarmingly through the persistence of cases of preventable diseases, such as influenza and even COVID-19. Despite global efforts to increase immunization,

the data show that the group with the highest resistance to influenza and COVID-19 vaccines are young and middle-aged adults between 18 and 49 years of age, with only 37% coverage, reaffirming the findings of several studies included in this review.

Immunization has been considered one of the most widely used tools to prevent diseases and avoid their spread. Despite the advantages and effective results that immunization provides, its acceptance has faced many challenges in adult populations. According to the literature review worldwide, immunization rates have increased considerably in the last decades and gaps in coverage exist, due to the great skepticism towards vaccines. These challenges have demonstrated the evident problem between knowledge, attitude and behavior of the population.

Within the immunization process, it is important to recognize that resistance to vaccines is not a recent phenomenon, but has been passed from generation to generation for many years, which has been fed by erroneous beliefs and misinformation. However, today resistance has changed with technological advances and the globalization of information. The emergence of the internet and social networks has allowed anti-vaccine movements to make themselves heard in all parts of the world and to misinform and create fear and mistrust of vaccines.

Many people do not understand that, although the effects of vaccines are not immediate or visible, their advantages and benefits are long-term. The idea that a vaccine contains weakened or inactive microorganisms generates a natural rejection in those who do not have a deep knowledge about its safety and benefits. According to several studies such as those by Perez and Campos (2023), erroneous beliefs about the side effects and risks of vaccines continue to be one of the main obstacles to increasing acceptance.

In addition, the influence of sociocultural determinants on attitudes toward immunization cannot be ignored. In many communities, traditional beliefs or experiences with the health system play a key role in immunization-related decisions. Risk perception is also a determining factor; when a disease has been controlled or eradicated in many parts of the world, people tend to underestimate its threat potential. This phenomenon, known as complacency, is clearly

observable in countries where diseases such as measles have almost completely disappeared thanks to immunization. In this context, populations do not perceive the need to protect themselves, and are therefore less motivated to get vaccinated.

The COVID-19 pandemic has been a clear example of how epidemic outbreaks can expose the fragilities of immunization systems. Despite advances in science and the availability of vaccines, skepticism persisted and even increased in some quarters. In this regard, it is important to note that misinformation comes not only from anti-vaccine groups, but also from a lack of trust in health institutions. In many cases, people feel insecure due to the amount of contradictory information, where fear and anxiety towards the unknown are two of the biggest psychological obstacles facing immunization programs.

Despite the challenges presented by immunization, positive progress has been observed in some regions where more effective educational strategies have been implemented. Interventions that not only inform, but also seek to create an environment of trust in vaccines have proven to be more successful. The inclusion of community leaders and authority figures to convey clear and confident messages can make a significant difference. Campaigns should be designed not only to inform about vaccine safety, but also to connect emotionally with people's concerns and fears.

Throughout the review, it has been determined that vaccine resistance is multifaceted and varies according to the context, since in some countries the main barrier is misinformation, in others, such as in certain rural or impoverished areas, limited access to vaccines remains a critical problem. In this sense, social determinants, such as geographic location, socioeconomic status and access to medical care, are determinants that must be considered in any immunization strategy.

The findings have also established that fear and mistrust continue to be key elements in the resistance to immunization, but so is the lack of continuing education and the adaptation of messages to the cultural and social realities of each population. Future immunization campaigns should take these determinants into account and offer not only scientific facts, but also empathy and understanding of different groups such as adults aged 19-64 years. In addition, it is essential not

to underestimate the importance of trust in information sources, as growing skepticism towards official institutions can undermine any immunization effort.

It is clear that immunization is not only a public health issue, but also an issue of education and social trust. To combat resistance, a more holistic approach is needed that not only addresses the technical aspects of immunization, but also recognizes the emotions, beliefs and values that influence vaccine acceptance.

Conclusions

Cultural beliefs and traditional values are key factors in vaccine acceptance, underscoring the importance of designing culturally sensitive immunization strategies tailored to the particularities of each community. To improve the effectiveness of these interventions, it is essential to engage community leaders and respect local cultural practices, fostering open and collaborative dialogue.

Social pressure and the influence of community groups also play a significant role in immunization decisions. Harnessing these social dynamics can be an effective strategy to promote positive messages about vaccines and counter resistance through the normalization of vaccination practices within communities.

The misperception of disease risk, coupled with fear of vaccine side effects, reinforces the need for evidence-based health education campaigns. These campaigns should directly address population concerns, provide clear information about the benefits of vaccines, and minimize unfounded fears.

In addition, misinformation continues to be a critical challenge affecting public perception of immunization. To combat this phenomenon, it is recommended to implement effective communication strategies that use accessible and reliable means to disseminate accurate information. Collaboration with digital platforms to monitor and mitigate the spread of false information is an essential measure in this context.

Recommendations include the development of educational materials that integrate specific cultural aspects and are distributed in local languages.

Involve community leaders and organizations in immunization campaigns to increase confidence and participation.

Establish educational programs aimed at correcting misconceptions about disease risk and vaccine side effects.

Collaborate with digital platforms and media outlets to counter misinformation and ensure the availability of reliable sources.

Evaluate the impact of interventions through measurable indicators, such as vaccine uptake rates and confidence levels in immunization.

These actions will not only contribute to improving vaccination rates, but will also strengthen trust in health institutions, reducing socio-cultural and psychological barriers that affect vaccine acceptance.

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