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Mapping the continuum of COVID-19 vaccine acceptance and hesitancy in Chile: Insights from qualitative research among nationals and migrants

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ABSTRACT

Introduction: The COVID-19 vaccination significantly mitigated the global health crisis, demonstrating the impact of scientific innovation and international collaboration. However, vaccination uptake remained uneven due to complex psychological, cultural, and structural factors. This study explored adult experiences and perceptions along the COVID-19 vaccine acceptance–hesitancy continuum in Chile, identifying barriers and facilitators among both Chilean nationals and international migrants.

Methods: A multiple case study design was conducted. Using snowball sampling, 67 adult participants (31 Chileans and 36 international migrants) were recruited across three large urban settings in the country. Semi-structured online interviews (60–90 min) were audio-recorded, transcribed verbatim, and analyzed using thematic approach. Fieldwork spanned from January 2023 and April 2024 with institutional ethical approval.

Results: Findings revealed generally positive views of the national vaccination plan, though levels of health literacy varied notably. Five key drivers of hesitancy emerged: perceived experimental nature of the vaccine, side effect concerns, preference for natural prevention, government distrust, and conspiracy beliefs. Many participants initiated the vaccination series but did not complete the full schedule. Barriers included misinformation, logistical challenges, and institutional mistrust. Conversely, facilitators involved workplace access, community responsibility, and inclusive practices for migrants.

Discussion: Addressing the diverse explanatory frameworks behind vaccine reluctance requires targeted communication strategies tailored to socioeconomic profiles, informational needs, and cultural contexts. Culturally responsive education, improved provider-patient communication, and structural reforms are critical to ensure equitable vaccine access, particularly for marginalized populations. Tackling the identified barriers demands a multifaceted strategy—one that integrates health education, respectful clinical interactions, and structural reforms aimed at guaranteeing universal access to immunization services.

1. Introduction

As one of the most transformative interventions in medicine, immunization plays a pivotal role in reducing mortality and morbidity across the lifespan and mitigating the transmission of infectious diseases (1). Between 2010 and 2015, global immunization initiatives are estimated to have averted over five million deaths annually (2). Despite these achievements, significant disparities in vaccination coverage persist, underscoring the importance of investigating the modifiable determinants and systemic dynamics that perpetuate such inequities (3).

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The development of COVID-19 vaccines during the pandemic marked a major milestone in global health, showcasing the power of scientific innovation, international collaboration, and public investment. Within weeks of the SARS-CoV-2 genome being sequenced in early 2020, vaccine candidates—particularly those utilizing messenger RNA (mRNA) platforms—entered preclinical and clinical trials (4). The Pfizer-BioNTech (BNT162b2) and Moderna (mRNA-1273) vaccines were among the first to receive emergency use authorization (5). This rapid progress was underpinned by decades of foundational research in mRNA technology, lipid nanoparticle delivery systems, and spike protein biology (6). A retrospective cohort study estimated that the U.S. government invested approximately $31.9 billion in mRNA vaccine development, including $337 million in pre-pandemic research, which significantly facilitate vaccine uptake and enabled rapid scale-up (7). The urgency of the pandemic also led to adaptive trial designs, concurrent regulatory reviews, and global data sharing, which collectively compressed the traditional vaccine development timeline from years to mere months (4). Despite these achievements, challenges persist like variants of concern have reduced vaccine effectiveness, prompting ongoing research into booster strategies and variant-specific formulations (8,9). Moreover, global disparities in vaccine access remain a pressing issue, as unequal distribution threatens to prolong the pandemic and deepen existing health inequities (9).

The global response to COVID-19 vaccination has revealed a nuanced continuum of hesitancy and acceptance, shaped by diverse psychological, cultural, and structural factors. A comprehensive scoping review of 60 studies identified key global determinants of vaccine attitudes, including risk perception, trust in health systems, political ideology, misinformation, and previous vaccination experiences (10). These factors vary across contexts, with solidarity and the desire to return to normalcy driving acceptance, while concerns about side effects and institutional distrust fuel hesitancy. In Latin America (LATAM), systematic reviews have shown that vaccine acceptance is more prevalent among individuals with higher education-income, and comorbidities, whereas hesitancy is associated with lower education levels, fear of adverse effects, and exposure to misinformation—particularly via social media (11,12). Additionally, a regional analysis in LATAM and the Caribbean emphasized the role of historical marginalization and structural inequities in shaping vaccination attitudes, calling for culturally tailored interventions and community-based strategies (13). Collectively, these studies highlighted that vaccine hesitancy is not a binary phenomenon but a dynamic continuum requiring multifaceted, context-sensitive public health responses.

Chile also faced growing hesitancy toward vaccination during and after the pandemic, an outstanding phenomenon, given the long-standing history of vaccination coverage in the country. Established in 1978, Chile's *Programa Nacional de Inmunizaciones* (PNI) has long served as a keystone of the country's public health infrastructure, offering universal and cost-free access to vaccines for all residents, irrespective of their health insurance status, migratory background, or socioeconomic position, contributing to major public health achievements (14). Although PNI's most notable strengths lies in its consistently high national coverage rates, fortified by a well-integrated logistical framework, strong institutional backing, and a clearly articulated immunization schedule (15), as a high-income nation with a mixed public-private healthcare system, Chile faces persistent socioeconomic and health disparities that pose challenges to equitable vaccine access among certain population subgroups (16,17).

These access difficulties underscore the pandemic's impact not only on public health but also on the broader living conditions of the population. Although the adversity experienced during the pandemic is not exclusive to the migrant population (18), the border closures intended to curb COVID-19 transmission led many individuals from countries in social and political crisis to enter Chilean territory via unauthorized routes. This irregular status has created significant barriers to formal employment, housing, education, and healthcare (19). International migrants now represent roughly 12% of Chile's population (20), primarily coming from Venezuela, Haiti, Peru, Colombia, and Bolivia. (21). Despite Chile's public health system formally guarantees access to COVID-19 vaccination regardless of migratory status, migrants often face practical barriers such as lack of information, discrimination, bureaucratic hurdles fear of deportation, and further complicated access to health services (22), setting vaccine hesitancy as a significant obstacle to maintaining high coverage in some communities (23–25).

Addressing these gaps is essential for strengthening Chile's preparedness for future public health emergencies and ensuring equitable vaccine uptake. Chile's COVID-19 vaccination campaign has been internationally recognized for its rapid rollout and high coverage. While the country achieved over 90% coverage among adults with primary and booster doses (26,27), studies have identified persistent cluster of vaccine hesitancy, particularly among younger populations and those exposed to misinformation (28). Contributing factors include inconsistent communication strategies and limited engagement from healthcare providers, which have led to gaps in public understanding and trust (14,24). A population-based seroprevalence survey found that although acceptance was generally high, factors such as geographic location, socioeconomic status, and trust in institutions significantly influenced vaccine uptake (27). Another study analyzing Chilean social media discourse revealed that online misinformation played a critical role in shaping public perceptions and fueling hesitancy (29,30). Further research examining predictors of vaccine intention in Chile identified conspiracy beliefs, fear of side effects, and social influence as key determinants of hesitancy, especially among individuals with lower trust in government and health authorities (31,32). A growing body of qualitative evidence in Chile has begun to document the factors driving COVID-19 vaccine hesitancy. Cerda and García, using the Health Belief Model, found that perceived severity, trust in authorities, and social influences shaped vaccination attitudes, with safety concerns often outweighing effectiveness preferences (33). Similarly, research on parental views revealed that concerns about long-term effects and inconsistent messaging contributed to hesitancy, while trust in healthcare providers facilitated acceptance (34). These findings align with broader evidence linking vaccine reluctance to historical inequities and poor public communication (12). However, there is still lack of research that explores how these experiences and perceptions translate into actual accessing COVID-19 vaccination, particularly among diverse adult groups. To address this gap, this study— secondary analysis of a larger research project—explored adult experiences and perceptions along the COVID-19 vaccine acceptance-hesitancy continuum in Chile, including barriers and facilitators perceived by both Chileans nationals and international migrants. By unveiling these dynamics, this research seeks to inform the development of culturally responsive strategies that promote more equitable vaccination access in Chile and throughout LATAM and other similar regions.

Methodology.

Study Design and Context. This research employed a multiple case study approach to investigate the dynamics of vaccine hesitancy within diverse urban settings in Chile, following the Standards for Reporting Qualitative Research (SRQR) (35). As a qualitative methodology, the case study design facilitates an in-depth exploration of bounded systems—referred to as cases—through the integration of varied data sources, enabling a rich and contextualized understanding of complex social phenomena (36). The study included Chilean-born and international migrants living in the country, considering the rapidly expanding migrant population in Chile and was situated in three geographically and socio-demographically distinct cities: Antofagasta, a northern city marked by its desert climate and substantial migrant population; Santiago, the centrally located capital and largest metropolitan area with a Mediterranean climate; and Osorno, a southern city characterized by its marine west coast climate and rural-urban mix. Each site was selected to capture regional variation in vaccination attitudes and public health infrastructure. The contextual characteristics of these cities are detailed

in Supplementary material 1.

Recruitment and Sample Composition. Participant recruitment was guided by both theoretical considerations and practical alignment with priority groups identified by Chile's COVID-19 Immunization Plan. The initial target sample size was set at 65 adult individuals, considering vaccinated and non-vaccinated people. A non-probabilistic snowball sampling was employed, beginning with eight identified community leaders across the three study sites who acted as initial contacts and gatekeepers. By leveraging their broader networks, they enabled recruitment to proceed through peer referrals. In total, 83 adults were invited to participate, with approximately 80% consenting to study. Non-participation was largely driven by time constraints or lack of interest, particularly among men. Recruitment ceased once the target was met, yielding a total sample of 67 participants (31 Chileans and 36 international migrants). This allowed a diverse range of perspectives relevant across the vaccine acceptance-hesitancy continuum.

Data Collection. Data was gathered through online semi-structured interviews guided by a pre-established protocol, with each session lasting between 60 and 90 min. Fieldwork spanned from 01 January 2023 and 30 April 2024, encompassing a diverse participant pool whose characteristics are summarized in Table 1. The interview guide, presented in Supplementary material 2, was designed to elicit nuanced perspectives on vaccine hesitancy and acceptance. All interviews were audio-recorded and transcribed verbatim by trained research assistants. To ensure transcription accuracy, a second team member conducted random quality checks on over one-third of the transcripts. Selected excerpts were translated into English for publication purposes and reviewed by an independent researcher fluent in academic English to ensure fidelity and clarity.

Data analysis. Thematic analysis was employed, using the predefined categories from the interview guide as an initial framework while remaining open to emergent themes arising from participants' narratives. Analysis was conducted manually first and then confirmed and refined using Atlas.ti. To enhance the study's credibility, several rigor strategies were implemented: (i) triangulation across participant responses was used to validate findings and enrich interpretive depth; (ii) reflexivity was embedded throughout the research process, with the team engaging in iterative discussions to refine thematic insights. Data saturation was reached after 67 interviews, particularly in relation to key dimensions such as general perceptions of the immunization program and identified barriers and facilitators to vaccine uptake. In qualitative research, data saturation indicates that further data collection is unlikely to yield new information. (37). Given the length of the quotes selected for this analysis, Table 2 contains all quotes describing the categories that are explained in the results section.

Table 1
Description of study's sample of adult population, both locals and international migrants, self-reported as adherent and non-adherent to the COVID-19 vaccine.

Total sample	N	Percent
	67	100%
City		
Antofagasta	24	36%
Santiago	23	34%
Osorno	20	30%
Sex		
Male	24	36%
Female	43	64%
Age		
20–30	18	27%
31–40	14	21%
41–50	11	16%
51–60	13	19%
61–70	10	15%
71 or more	1	1%
Nationality		
chileno	31	46%
migrant	36	54%
Healthcare Insurance Affiliation		
Public health system	53	79%
Private health system	8	12%
Unaffiliated/Doesn't know	6	9%

Ethical Considerations. This study was independently conducted by the Intercultural Global Health Center (CeSGI) at Universidad del Desarrollo, with financial support from the MSD Grant Global Health Equity Catalyst Fund. Ethical approval was obtained from the Scientific Ethics Committee of the Faculty of Medicine, Clínica Alemana, Universidad del Desarrollo.

2. Results

General perceptions about the COVID-19 vaccine and vaccination plan.

A gradient in knowledge regarding the COVID-19 vaccination plan was observed, ranging from a lack of detailed understanding to a high degree of familiarity with the information provided. Individuals who reported lower levels of knowledge tended to follow instructions or rely on guidance from acquaintances regarding when and where to be vaccinated, without actively seeking information themselves. Most participants possessed general knowledge of the vaccination system's organization, including age-based prioritization, dosing, and official vaccination schedules. In contrast, some individuals demonstrated a highly detailed understanding of the vaccination plan, including its phases, dosage regimens, and the specific manufacturers responsible for producing the vaccines (Quote #1/Table 2).

When interviewees were asked to evaluate the COVID-19 vaccination plan implemented in Chile, the vast majority assessed it very positively. Respondents highlighted the government's swift action in securing a sufficient stock of vaccines in a timely and cost-free manner for the population. The prioritization of specific population groups was also viewed favorably. Many noted that there was successful public awareness-raising regarding the importance and necessity of vaccination. Migrant interviewees emphasized and appreciated having been granted access to vaccination. Participants regarded the COVID-19 vaccination plan in Chile as significantly superior to those of other countries. This perspective was shared by both Chilean nationals and international migrants (Quote #2/Table 2).

Regarding the way information about the vaccination plan was communicated, some interviewees expressed that the strong emphasis on the importance of vaccination—presented as a mandatory measure—was beneficial for controlling the pandemic. Conversely, others viewed the measures adopted during the pandemic and the vaccination campaign as overly “extreme,” “strict,” or even “coercive.” This perspective was particularly prevalent among younger Chilean participants in the sample, as well as among individuals of all ages who generally oppose vaccination (not limited to COVID-19 vaccines). Additionally, many interviewees considered the number of required doses to be excessive (Quote #3/Table 2). Opinions on the information provided by the government during the COVID-19 vaccination campaign were mixed. Some interviewees felt the process was well-informed, while others described official communication as confusing—particularly regarding quarantine measures, but also aspects of the vaccination rollout. Some participants criticized the tone of communication as overly alarmist. This perception led some individuals to disengage from traditional media, especially television. Additional concerns included the lack of transparency about potential side effects (Quote #4/Table 2).

The acceptance-hesitancy continuum.

There were individuals who supported all vaccinations, demonstrating strong confidence in the scientific advancements that enabled their development and in the public health recommendations derived from them. These individuals perceived the COVID-19 vaccine as having provided protection and saved many lives (Quote #5/Table 2). For other participants, fear of death—driven by high early mortality rates and

Table 2
Verbatim quotes from participants illustrating the most prominent codes identified in this study.

Category	*Quote*
General knowledge about the vaccination system	Quote #1 "What I remember is that of course, when the vaccination process began, priority was given to the most at-risk population; older people, people who were going to work directly [with people with COVID-19] were the first people to be vaccinated and finally the stage opened for people of other age ranges, such as younger ones, but the first people in the process, they were people of an older age range and people with some underlying illness, which means being more risky for them, that more than anything." (Chilean woman, 30 years old, Antofagasta)
Evaluation of the COVID-19 vaccination plan implemented in Chile	Quote #2 "Well, for me it was quite efficient, it really was, because it reached everywhere. Those who didn't want to get vaccinated did so by choice, not because there weren't enough doses. Chile was prepared; I think it was buying its supplies before the crisis. So, for me, it was a very well-executed strategy by the Ministry of Health. I never felt helpless because of the possibility of not having vaccines. There was always confidence that the crisis management was good." (Migrant woman, 47 years old, Osorno)
Vaccination plan communication	Quote #3 "Perhaps too attached to it being mandatory, I mean, I understand the first dose, yes, that doesn't cause me any problem, but after the third, that they were like mandatory to continue having the mobility pass, I feel that maybe it wasn't carried out in the best way, perhaps, and it also raises doubts that so many different laboratories had gotten involved." (Chilean woman, 30 years old, Antofagasta) Quote #4 "I honestly believe—and I must confess—that we were quite accurate with the vaccination plan. I think we had vaccines that were properly validated, especially Pfizer, but the others weren't insignificant either, you know? At the very least, they had some degree of validation." *(Chilean woman, 34 years old, Antofagasta)*
Trust in COVID-19 vaccines	Quote #5 "I always go with the scientific side of things. I always thought I was in good hands when I was getting the vaccine. I never thought, I don't know if it was going to hurt me, strain me, make me sick—no, I never thought. I mean, the benefits always outweigh the risks, with this and other vaccines. I always thought about the benefits." (Migrant man, 61 years old, Osorno)
Fear of death	Quote #6 "All the fear and also a lot of anxiety while waiting, especially for my parents, who are already elderly, a lot of anxiety waiting for the vaccine, and when the vaccine arrived, they were among the first to be given priority because they are adults and have some underlying health conditions, and that already calmed things down a bit more." (Migrant woman, 29 years old, Santiago)
Pragmatic reasons for adhering to vaccination	Quote #7 "I believe there are many vaccines, but I think that vaccine saved many lives. If there hadn't been vaccines, I believe this country wouldn't have been left with any people alive, I really do." *(Migrant man, 42 years old, Antofagasta)*
COVID-19 vaccine *Too quick, too experimental*	Quote #8 "As I understand it, vaccines have a certification period—a necessary timeframe for evaluation and approval, right? I believe this usually takes several years. So, what was done here was to implement a vaccine that hadn't yet undergone the full study process. Therefore, as a measure, the vaccination plan implemented in Chile did involve a significant risk, because the process required for the vaccine to be scientifically validated hadn't yet been completed." (Chilean man, 25 years old, Santiago)
COVID-19 vaccine Too risky, too many side effects	Quote #9 "I saw that people were getting vaccinated and instead of giving them the right vaccine and all that, they were getting worse, they had side effects, they were putting them to sleep like that, they weren't even allowed to stand up or anything, so I said, no, I'm going to end up worse, so that's why I was scared to do it." (Migrant man, 20 years old, Antofagasta)
COVID-19 vaccine post-vaccination health worsened	Quote #10 "With the vaccine, I was left in pain, and I became weaker. I'm no longer the strong person I used to be. That's what happened to me with the vaccine. And for that same reason, if another vaccine came out, I wouldn't get vaccinated. Before, I could resist it more; now I get a bad cold with headaches and body aches. (…) Because you think and say: 'Why do I feel this way today if that didn't happen to me before?' (…) Maybe it's not that they don't work, but that they seem to further weaken the person's body. It's like it helped for one thing but harmed something else. "(Chilean woman, 69 years old, Osorno)
COVID-19 vaccine *To unnatural, natural prevention is better*	Quote #11 "Actually, I haven't been vaccinated. I've used homeopathic vaccines, and in some cases, they've worked much better for me than other vaccines. So, I have some doubts about that. I don't think it works until more details are known. And since it was so widespread, I said I wasn't going to get vaccinated; I wasn't a guinea pig experimenting with my body with something that hasn't been proven in detail yet. I prefer to eat healthy, nourish myself, and strengthen my immune system through other means." (Chilean woman, 51 years old, Santiago)
COVID-19 vaccine *Conspiracy theories*	Quote #12 (…) I am very critical of everything, to be honest, and at that point I said: 'No, I am not going to get vaccinated, I am not going to listen to them because I don't feel safe.' (…) So I think that in reality the governments did not want to take care of us, but rather they wanted to control us." (Chilean man, 30 years old, Santiago)
Initial doses of the COVID-19 vaccine but not completing the recommended subsequent doses	Quote #13 "I've seen that, over time, people started saying: 'I'm not getting vaccinated anymore.' In fact, I have classmates who

(*continued on next page*)

Table 2 (*continued*)

Category	*Quote*
	stopped at the second dose and haven't even mentioned a third. They didn't want a third dose. People started questioning: why a third, why a fourth, and why the flu vaccine? Actually, since I'm young, I hardly ever get sick. My mother has chronic illnesses. She's been to health centers, and there they see many people with leg problems, tachycardia, and skin rashes. So my mother talks to people, and they say: 'I think it's the vaccine.' Now there's a negative perception of the vaccine. (…) Many people say: 'I'm not getting vaccinated anymore, I'm done with it; I'll lose everything, but I'm not doing it again.'" (Chilean man, 28 years old, Osorno)
Barriers stemming from inadequate information and organization	Quote #14 "Last year, things got messed up again, because there's no clear information. It's not known how many people are infected, and little is known about vaccination sites, for example. You have to search a lot. You have to keep asking where they're vaccinating or what age group. Although they publish it on social media, since the third stage, so to speak, the information has sort of disappeared from the… It's less accessible, yes. (Chilean man, 50 years old, Osorno)
Barriers linked to conditions of social vulnerability	Quote #15 "For us migrants, I think it's a little more complicated because we don't have knowledge, maybe misinformation, or I don't know, maybe misunderstanding of us, I forgot the word now how to say it, but it's a completely different culture, it's not our country, maybe there are people who were very recent and don't know where they can get vaccinated and so on, those things, I think that maybe I don't know, with an advertising method or something like that they could reach a little more people who want to get vaccinated." (Migrant woman, 24 years old, Santiago)
Key facilitators for accessing the COVID-19 vaccine	Quote #16 "I feel like the anti-vaccine people and the people who made the process difficult were the exception, not the rule. And I feel like that was what made the system easier: that most people agreed, were concerned about others, and that many young people got vaccinated anyway. Almost always, the people I knew who were getting vaccinated were getting vaccinated for someone else. Like: 'I'm getting vaccinated because I don't want to get my grandpa sick.' Because young people were really affecting us so much, and I think that was what made the process better, that ordinary people were really concerned among you." (Migrant woman, 28 years old, Osorno)

limited information on transmission and prevention—was a key motivator for vaccination. The severity of the pandemic created urgency: "something had to be done" quickly. This was accompanied by a sense of social responsibility to protect family, community, and vulnerable groups, especially among those in close contact with at-risk individuals (Quote #6/Table 2).

Many participants also cited pragmatic reasons for adhering to vaccination. Numerous individuals reported getting vaccinated out of "obligation," primarily to obtain the mobility pass, despite personal doubts. This requirement was especially influential in workplaces and public venues, and adherence declined once the pass was no longer mandatory. Vaccination was also required for interregional and international travel, a factor particularly emphasized by migrant interviewees (Quote #7/Table 2).

Going deeper, existing explanations for COVID-19 vaccination hesitancy.

Among all the vaccines included in Chile's National Immunization Program, the COVID-19 vaccine generates the greatest apprehension. It is perceived as distinct from others, largely due to its association with a novel disease of unclear origin and the rapid timeline in which the vaccines were developed. This "speed" has led many to question their safety and efficacy. Participants mentioned five main explanations to support COVID-19 hesitancy: (i) Too quick, too experimental vaccine, (ii) Too risky, too many side effects, (iii) To unnatural, natural prevention is better, (iv) Too governmental, can't be trusted, (v) Conspiracy theories.

Too quick, too experimental. Many interviewees emphasized its rapid development, suggesting it lacked the full testing phases of traditional vaccines. This perceived haste raised concerns about unknown side effects and led some to view the vaccine as an ongoing experiment, with people serving as "guinea pigs." These apprehensions were reinforced by skepticism toward mRNA-based vaccines, which some participants felt lacked sufficient evidence to justify their use (Quote #8/Table 2).

Too risky, too many side effects. Fear of adverse effects was the primary factor driving skepticism toward the COVID-19 vaccine. This concern spanned all age groups and encompassed a wide range of potential reactions. It was most pronounced in the context of vaccinating infants and preschoolers. Among older adults, fears centered on immediate side effects, often based on personal or second-hand experiences. Additional concerns arouse when COVID-19 vaccines were administered alongside others, such as influenza or pneumococcal vaccines (Quote #9/Table 2).

A recurring concern across all interviewee profiles was the belief that post-vaccination health worsened, with chronic symptoms such as headaches, body aches, persistent colds, fatigue, or exacerbation of pre-existing conditions like allergies. While some individuals continued to adhere to vaccination schedules despite these concerns, others delayed recommended doses, discontinued the series, or rejected the vaccine entirely. References to post-vaccination health issues included Guillain-Barré syndrome, thrombosis, and cardiovascular events. Several interviewees also associated the COVID-19 vaccine with disruptions to the menstrual and reproductive cycles, including altered menstruation, concerns about future fertility, pregnancy loss, and fetal malformations. More extreme accounts—such as seizures, paralysis, and death—were commonly reported by individuals without higher education, both Chilean and migrant (Quote #10/Table 2).

To unnatural, natural prevention is better. While adherence to natural lifestyles or non-biomedical health systems influenced decisions across all vaccination stages, this tendency was notably stronger in the case of COVID-19. Some individuals who accepted other vaccines chose natural approaches exclusively—or primarily—for COVID-19. Some believed that contracting the virus would help build natural immunity and reported preparing physically to face the virus without vaccination. Among university-educated individuals, this view was often linked to adherence to "alternative" health practices and lifestyles perceived as more natural. In contrast, participants with lower educational levels who favored natural approaches typically grounded their choices in inherited cultural and rural traditions (Quote #11/Table 2).

Too governmental, can't be trusted. A distinct group of mostly younger participants (under 30, mostly locals) reported rejecting the COVID-19 vaccine as a form of protest against what they perceived as an excessively coercive government response. These individuals viewed vaccination mandates as mechanisms of population control rather than public health protection and chose non-vaccination as an act of resistance.

Conspiracy theories. Many interviewees referenced conspiracy

theories questioning the origins of COVID-19, suggesting it was artificially created for political, economic, or population control purposes. Others acknowledged the possibility of a natural origin but believed the virus was later exploited for such ends. This perspective frames the pandemic as a form of manipulation, often summarized by the term "plandemic," used by several participants. Key themes include the belief that the virus was artificially engineered, less lethal than portrayed, part of a pharmaceutical "business," and linked to genetic control (Quote #12/Table 2).

While conspiracy-related ideas were more frequently mentioned by participants with lower educational levels, they were also present among individuals with higher education and/or socioeconomic status. The latter group tended to provide more elaborate justifications, often citing authors from various disciplines or referencing scientists who have publicly questioned the pandemic and vaccination processes. In contrast, those with lower education levels typically referred to conspiracy theories in more abstract terms. As detailed in Table 3, these narratives vary in form, including: (a) COVID-19 does not exist; (b) it was artificially created; (c) the vaccine is a commercial enterprise; (d) both the virus and vaccine are tools for population reduction; (e) the vaccine enables genetic control or manipulation; and (f) both are mechanisms of control through fear.

The grey area: reasons for not completing the recommended vaccination schedule.

Many interviewees reported receiving the initial doses of the COVID-19 vaccine but not completing the recommended subsequent doses. As concerns about adverse effects grew over time—based on perceived health impacts observed in recent years—individuals began reassessing the importance of continued vaccination. While initial doses were widely accepted during the pandemic's peak, many now believe that two or three doses are "sufficient," especially given the perception that the virus has evolved into milder variants and that early doses provided adequate immunity. This shift was also influenced by the belief that the pandemic is now under control or no longer a pressing issue. Another barrier to completing the vaccination schedule was the unavailability of vaccines from the same manufacturer as previous doses, which led some to delay or reject further vaccination altogether (Quote #13/Table 2).

Barriers, facilitators, and recommendations for improvement.

At least six distinct types of barriers to COVID-19 vaccination were identified. First, fear of adverse effects associated with the vaccine. Second, distrust and anxiety fueled by misinformation and conspiracy theories. Third, perceived lack of sufficient information about the virus itself. Fourth, barriers stemming from inadequate communication and organizational shortcomings in the vaccination process. Fifth, obstacles to completing the recommended dosage schedule. Sixth, barriers linked to conditions of social vulnerability, which were particularly significant among migrant populations. The last three perceived barriers were particularly relevant to participants.

Barriers stemming from inadequate information and organization in the vaccination process included perceptions of overly complex and inaccessible information for older adults and individuals without digital literacy; confusion regarding where and when to get vaccinated; delays in the vaccination program or lack of vaccine stock; overcrowding and long waiting times at vaccination sites; and communication strategies that relied on fear and imposition. Barriers to completing the recommended COVID-19 vaccine doses included adverse effects from initial doses, lack of availability of vaccines from the same manufacturer, reduced vaccination requirements, and a general relaxation in public messaging and state-led efforts to promote vaccination (Quote #14/Table 2).

In relation to barriers linked to conditions of social vulnerability, participants reported the absence of targeted information for migrant populations, particularly those with an irregular migration status; language barriers—most notably among Haitian individuals who speak Creole; and fear of engaging with the health system due to concerns related to irregular residency. Participants also highlighted the

Table 3
Conspiracy theories – existing explanations described by study participants.

Theory	*Description*
COVID-19 Does Not Exist	One of the initial ideas mentioned by participants is the belief that COVID-19 does not exist—a notion that many interviewees had encountered and to which some subscribed. Among those who adhered to this belief, some argued that COVID-19 was not a novel virus but rather one that had already been circulating within the population. Others suggested that deaths attributed to COVID-19 were in fact caused by other illnesses. In certain accounts, this latter idea was framed as a "fabrication," wherein individuals suffering from unrelated conditions were intubated and subsequently died due to inadequate treatment or complications from intubation. Some even claimed that mannequins were used to stage COVID-related deaths. This notion of a "fabrication" was closely linked to perceptions of media manipulation, with several participants expressing the view that the pandemic was used as a tool to instill fear and control the population.
COVID-19 Was Artificially Created	For some participants, COVID-19 is acknowledged as a real phenomenon but is believed to have been artificially engineered. This perspective is often linked to suspicions of economic profiteering or population control, themes that are further elaborated in subsequent sections.
The Vaccine as a "Business"	A recurring theme among conspiracy-related narratives is the belief that economic interests underlie both the pandemic and the vaccination process. Whether the virus is perceived as artificially created or as having emerged naturally, some participants argued that it was used or manipulated to serve the financial interests of powerful groups. In certain interpretations, the vaccine itself was not necessarily designed for profit; rather, a "vaccine market" was constructed around it—suggesting that vaccination efforts were politically and economically instrumentalized.
COVID-19 and/or the Vaccine as Tools for Population Reduction	Another variant of conspiracy theories posits that COVID-19 and/or the vaccines were intentionally developed to cause the death of segments of the population. This alleged objective of "reducing," "lowering," or "cleansing" the population is believed to target groups perceived as economically non-contributory, such as older adults or individuals with chronic illnesses. Such narratives reflect broader concerns about biopolitical control and the instrumentalization of public health measures for exclusionary purposes.
COVID-19 Vaccination as a Tool for Genetic Control or Manipulation	Some participants reported having heard or subscribed to the belief that the COVID-19 vaccine contains components designed to enable tracking, access individuals' genetic information, or induce genetic modifications. Variations of this narrative include claims that the vaccine introduces "elements," "active agents," "chips," "microchips," or "magnetic substances" intended to monitor personal activities, conduct surveillance, and potentially alter DNA. These perceptions reflect broader concerns about biomedical interventions being used for biotechnological control under the guise of public health.
COVID-19 and the Vaccine as Instruments of Fear-Based Control	Some participants expressed the belief that the pandemic and vaccination campaign were orchestrated by global economic elites

(*continued on next page*)

Table 3 (*continued*)

Theory	*Description*
	to instill fear and exert social control. According to this narrative, fear was used to drive mass vaccine acceptance, which was perceived as serving economic, biological, or political agendas—such as profit generation, population reduction, or genetic manipulation. These views, often held by younger individuals with higher education, also included claims of suppressed scientific dissent and linked the pandemic response to efforts by the Chilean government to contain the 2019 social uprising through fear-based governance.

perception that migrants lacking a provisional national identification number (RUT) were ineligible for vaccination, alongside documented instances of individuals being denied vaccination on this basis. Further barriers encompassed limited awareness among healthcare personnel regarding the rights of migrants, experiences of mistreatment and discrimination within healthcare settings, difficulties in obtaining work permits to attend vaccination appointments—especially among those in informal employment—and challenges in validating vaccines received abroad (Quote #15/Table 2).

Participants identified six key facilitators for accessing the COVID-19 vaccine. These included: (1) effective communication campaigns; (2) accessibility, availability, and the free provision of vaccination services; (3) workplace-based vaccination initiatives and logistical support for receiving the vaccine during working hours; (4) a sense of community and social responsibility, as well as perceived obligations to vaccinate—such as fear of death or the requirement of a mobility pass contingent on vaccination status; and (5) specific facilitators for migrant populations. The latter encompassed access to vaccination regardless of migration status, respectful and non-discriminatory treatment (i.e., no differentiation between foreigners and Chilean nationals), support for continuing vaccination schedules initiated outside of Chile, and the provision of work permits to attend vaccination appointments (Quote #16/Table 2).

Recommendations for improvement are presented in Supplementary material 3. These focus on four key areas: (i) strengthening the quality and accessibility of information; (ii) enhancing organizational aspects of the vaccination process; (iii) critically reviewing coercive measures in light of individual freedom and autonomy; and (iv) improving vaccine access for international migrant populations.

3. Discussion

Main findings and general implications.

This qualitative study examined adult perspectives on COVID-19 vaccination across three major urban centers in Chile, with particular attention to the continuum of vaccine acceptance and hesitancy, as well as perceived barriers and facilitators to vaccine uptake. Participants revealed a spectrum of knowledge regarding the national vaccination plan, and a wide array of reasons was cited for vaccine hesitancy, outright rejection, and discontinuation after the second or third dose. Our findings underscore the critical need to enhance access to trustworthy and timely vaccine-related information for both local and international migrant populations. Addressing the diverse explanatory frameworks behind vaccine reluctance requires targeted communication strategies that are sensitive to the socioeconomic profiles, informational needs, and cultural contexts of specific subgroups. Tailored community-based campaigns are urgently needed to bridge these gaps. Moreover, culturally responsive, and inclusive communication approaches must be prioritized. Healthcare professionals should receive specialized training to better understand the rights, health needs, and access challenges faced by unique groups like migrant communities. Tackling the identified barriers demands a multifaceted strategy—one that integrates health education, respectful and equitable provider-patient interactions, and structural reforms aimed at guaranteeing universal access to immunization services.

Situating findings within broader literature.

The five core explanations for COVID-19 vaccine hesitancy identified in this study—perceptions of the vaccine as experimental, risky, unnatural, government-driven, and linked to conspiracy theories—align closely with findings from global and regional literature. A comprehensive scoping review of 60 studies worldwide revealed that concerns about side effects, distrust in health systems and authorities, and political ideology were among the most common drivers of hesitancy, mirroring the "too risky" and "too governmental" themes reported by participants (10). In LATAM, vaccine hesitancy has similarly been shaped by misinformation, lack of access to reliable information, and historical distrust in institutions, particularly among socially vulnerable groups (38). Conspiracy beliefs have emerged as a particularly potent barrier to vaccine uptake. A recent scoping review found that belief in vaccine-related conspiracy narratives significantly correlates with lower vaccination intention and uptake, with prevalence rates ranging from 2% to 77% across studies (39). These narratives often flourish in contexts of low institutional trust and are amplified by social media, making them resistant to conventional public health messaging. Qualitative methods have proven indispensable in capturing the complex, value-laden reasoning behind vaccine hesitancy. For example, a study involving interviews with vaccine-hesitant patients and clinicians in the United States revealed deep perception gaps that hinder effective communication and trust-building in healthcare settings (40). Such methods allow researchers to explore emotional, cultural, and relational dimensions that quantitative approaches may overlook, offering critical insights for designing empathetic and context-sensitive interventions. Qualitative research has proven especially valuable in capturing the nuanced beliefs, contextual factors, and lived experiences that shape vaccine decision-making, offering critical insights for designing interventions that are both empathetic and effective (41).

Previous research in Chile has provided valuable insights into the complex social and psychological dimensions of COVID-19 vaccine hesitancy and acceptance. A study by Cerda and García used the Health Belief Model to explore individual decision-making processes, revealing that perceived severity of COVID-19, trust in government and health authorities, and social cues—such as family influence and media messaging—played critical roles in shaping vaccine attitudes (33). Participants expressed a preference for vaccines with fewer side effects over those with higher efficacy, highlighting the importance of perceived safety in vaccine decision-making. This study also emphasized the role of conspiracy beliefs and institutional mistrust, particularly among undecided and hesitant individuals, suggesting the need for differentiated communication strategies tailored to specific subgroups (33). Another qualitative study focusing on parental attitudes toward pediatric COVID-19 vaccination found that concerns about long-term effects, misinformation, and conflicting messages from healthcare providers were central to hesitancy (34). Parents reported that trust in their child's doctor was a key factor in vaccine acceptance, underscoring the importance of personalized and culturally sensitive communication. Our findings also align with broader regional evidence showing that vaccine hesitancy in LATAM is often rooted in historical inequities, lack of transparency, and inconsistent public messaging (42).

The findings of this study resonate with a growing body of international and regional literature indicating that suboptimal adherence to COVID-19 vaccination schedules among adults remains a pressing public health issue (10). Vaccine hesitancy, compounded by limited access to reliable health information—particularly among marginalized groups such as migrants—continues to undermine immunization efforts worldwide (38). Structural impediments, including fragmented healthcare systems, inconsistent messaging from providers, and logistical constraints, have been widely documented as barriers to vaccine uptake

(39). In migrant populations, socioeconomic vulnerabilities such as poverty, multimorbidity, and transportation challenges further exacerbate missed opportunities for vaccination (40). Addressing these complex and interrelated barriers necessitates comprehensive strategies that integrate culturally responsive education, improved provider-patient communication, and systemic reforms aimed at promoting equitable access to vaccines (43). The WHO underscores the critical role of behavioral and social determinants in shaping vaccine uptake, advocating for context-specific interventions that address both demand-side and supply-side barriers (44). These insights highlight the necessity of developing regionally tailored strategies that integrate meaningful community engagement, strengthen communication between healthcare providers and patients, and implement systemic reforms.

Strengths, limitations, and recommendations for future research.

Our study offers novel insights into the complex and context-specific factors influencing adult COVID-19 vaccination experiences. As with other qualitative inquiries, its strength lies in capturing the depth and nuance of individual perspectives, particularly among socially vulnerable groups (10). However, the relatively small sample size and the use of snowball sampling through community networks may limit the generalizability of findings and introduce selection bias, as participants are likely to be more socially connected (43). Despite these limitations, the study contributes meaningfully to the understanding of vaccine acceptance and hesitancy in Chile, especially among marginalized populations such as migrants, who face compounded barriers to vaccine access (8). These findings align with international evidence, emphasizing the role of structural inequities, mistrust in institutions, and misinformation in shaping vaccine attitudes (45–47). The use of qualitative methods has proven particularly effective in uncovering these layered dynamics, offering a foundation for culturally responsive and community-engaged public health interventions (48). Future scientific investigation should adopt longitudinal and participatory designs to better inform inclusive vaccine strategies and policy development.

Authors' contribution

BC, AO, PM, AB & MS made substantial contributions to the conception, design of the work; the acquisition, analysis, and interpretation of data; have drafted the work or substantively revised it; have approved the submitted version (and any substantially modified version that involves the author's contribution to the study); and have agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature. AC, CC & EMH have drafted the work or substantively revised it; have approved the submitted version (and any substantially modified version that involves the author's contribution to the study); and have agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature.

CRediT authorship contribution statement

Báltica Cabieses: Writing – original draft, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Alexandra Obach:** Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Paula Madrid:** Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Alice Blukacz:** Writing – original draft, Methodology, Investigation, Formal analysis, Data curation. **Michelle Sadler:** Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Alejandra Carreño:** Writing – review & editing, Visualization, Validation. **Carla Campaña:** Writing – review & editing, Visualization, Validation. **Edward Mezones-Holguín:** Writing – review & editing, Visualization, Validation, Conceptualization.

Ethics approval and consent to participate

UDD's IRB revised and approved the study before its execution. All participants read and signed an online informed consent.

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Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Edward Mezones Holguin reports a relationship with Merck Sharp & Dohme Corp that includes: funding grants. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.vaccine.2026.128433.

Data availability

Semi-structured interview guide is available. Full transcripts of interviews can be provided upon request (all anonymized).

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