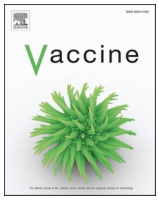
Vaccine 44 (2025) 126546

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine



Review

Determinants of COVID-19 and non-COVID-19 vaccine confidence in low- and middle-income countries: A systematic review of qualitative evidence and thematic synthesis

Alice Blukacz [a], Alexandra Obach [a], Paola Vásquez [a,b,c], Carla Campaña [a], Catalina Huerta [a], Yanara Bernal [d], Báltica Cabieses [a,*]

[a] Centro de Salud Global Intercultural, Facultad de Medicina Clínica Alemana y Facultad de Psicología, Universidad del Desarrollo, Santiago, Chile
[b] Ngangk Yira Institute for Change, Murdoch University, Perth, Australia
[c] Centre for Health Services Research, The University of Queensland, Brisbane, Australia
[d] Centro de Genética y Genómica, Instituto de Ciencias e Innovación en Medicina (ICIM), Facultad de Medicina Clínica Alemana, Universidad del Desarrollo, Santiago, Chile

ARTICLE INFO

Keywords:
Vaccine
Confidence
Low- and middle-income countries
Qualitative research
Global Health

ABSTRACT

Background: The COVID-19 pandemic has shown the immediate risk for global and public health posed by vaccination inequities worldwide. The regions most affected are low- and middle-income countries (LMICs). In addition to systemic challenges, vaccine hesitancy driven by low vaccine confidence has been identified as a threat to vaccine uptake. The aim of this systematic review of qualitative literature is to explore the determinants of COVID-19 and non-COVID-19 vaccine confidence in LMICs.

Methods: A systematic review was conducted following the PRISMA and ENTREQ guidelines. The electronic databases Cinahl, Embase, Pubmed, Scopus and Web of Science were searched for qualitative studies focusing on the topic of interest in LMICs published between 2013 and 2023. The quality of the studies was assessed using the Joanna Briggs Institute's Checklist for Qualitative Research. A thematic synthesis was conducted. The study was registered on the Open Science Framework platform.

Findings: 66 studies were included in the review. Three main determinants of vaccine confidence were identified: (1) General perceptions of the safety and efficacy of vaccines; (2) Information and experience; (3) Trust in healthcare providers, institutions, and systems. General perceptions of vaccine safety and efficacy were similar between COVID-19 and non-COVID-19 vaccines, and doubts regarding vaccine safety were neither new nor exclusive to the COVID-19 vaccine, indicating a persisting challenge. Furthermore, low vaccine confidence was partly determined by broader dynamics of mistrust towards Western countries and institutions, which was reflected for both vaccine groups. While conspiracy theories have been persisting determinants of low confidence, low COVID-19 vaccine confidence was partly determined by what was perceived as a lack of specific information.

Conclusion: Persistent challenges to vaccine confidence were identified, rooted in colonial legacies and global health inequities, as well as limited intercultural approaches to building trust with regards to vaccines.

1. Introduction

It is estimated that between 2010 and 2015, more than 5 million deaths were prevented annually through vaccine immunization [1]. Although the World Health Organization (WHO) adopted the Global Vaccine Action Plan in 2012 to achieve and sustain high and equitable vaccine coverage worldwide, vaccine inequity is still a major global public health issue [2].

In the context of the COVID-19 pandemic, vaccination inequities worldwide have become ever more relevant and represent an immediate risk for global and public health. First, access and use of vaccines against SARS-CoV-2 have proven highly unequal, as only 52 countries have met the target set by the WHO to immunise 70 % of their population, 69 countries have not yet reached the 40 % target, and only 11 % of the total population of low-income countries have received the vaccine [3]. Second, the pandemic has slowed immunization efforts for other

* Corresponding author at: Centro de Salud Global Intercultural, Edificio O, Universidad del Desarrollo, Avenida Plaza 680, Las Condes, Santiago, Chile.
E-mail address: bcabieses@udd.cl (B. Cabieses).

https://doi.org/10.1016/j.vaccine.2024.126546
Received 8 August 2024; Received in revised form 18 November 2024; Accepted 19 November 2024
Available online 27 November 2024

infections, as global coverage decreased from 86 % to 83 % in 2020 [4]. The regions most affected were low- and middle-income countries (LMICs) in North Africa, the Middle East, South Asia, Latin America, and the Caribbean [5]. These gaps call for the urgent need to understand the modifiable factors and mechanisms underpinning vaccine inequities regarding SARS-CoV-2 immunization and vaccination against other diseases.

In addition to systemic challenges related to policy, coordination, population prioritisation and health systems' capacity for vaccine delivery [3,6], other challenges have been identified in the existing literature, among which vaccine hesitancy. Despite the benefits of vaccines for individual and public health, vaccine hesitancy and refusal have proven to be an important challenge to vaccine uptake worldwide. Vaccine hesitancy is defined by the Strategic Advisory Group of Experts on Immunization (SAGE) Working Group on Vaccine Hesitancy as the "delay in acceptance or refusal of vaccination despite the availability of vaccination services" [7]. Furthermore, the SAGE Working Group establishes that hesitancy is heterogeneous and set on a continuum between complete vaccine acceptance and refusal.

In 2018, Betsch et al. proposed the 5C model of vaccine hesitancy: confidence (in the safety and efficacy of vaccines, in the competence of health services and professionals, and the motivations of health decision-makers), complacency (the perceived risks of vaccine-preventable diseases are low and vaccination is not considered necessary), constraints (availability, financial affordability, geographic accessibility, comprehensiveness and satisfaction with health care), calculation (individuals' participation in a comprehensive search for information) and collective responsibility (willingness to protect others through herd immunity) [8]. This review focused specifically on the first "C" of this conceptual model, confidence. The WHO and the SAGE define confidence as "the belief that vaccines are effective, safe, and part of a trustworthy medical system" [9]. In that sense, confidence is particularly interesting because it can be determined by perceptions, information, and beliefs surrounding health, healthcare, and vaccination [7]. Furthermore, this seems to have been exacerbated during the COVID-19 pandemic, where knowledge and beliefs surrounding vaccination in general, COVID-19 vaccination specifically, and COVID-19 itself, as well as political affiliation, played an important role in vaccine confidence and thus vaccine hesitancy [10,11].

Focusing on determinants of vaccine confidence in LMICs does not imply undermining the other "Cs" of the model, nor the structural forces under vaccine inequities, especially those with roots in persistent power imbalances in global health, such as vaccine nationalism and limited bargaining power or economic means [12,13]. Instead, the intention is to understand some of the mechanisms behind vaccine inequities beyond availability and access. Furthermore, quantitative data indicates that, during the COVID-19 pandemic, vaccine acceptancy was higher in 10 LMICs (80.3 %) than in the USA (64.6 %) and Russia (30.4 %) [14], and recent studies have revealed that feelings about vaccine safety are particularly negative in Europe [15]. This same study showed that countries with high levels of schooling and good access to health services show lower rates of positive feelings towards vaccination, pointing to an emerging inverse relationship between vaccination sentiment and socioeconomic status. These results point to the importance of understanding the elements driving vaccine confidence in LMICs to inform strategies at the global level. Furthermore, as vaccine acceptance, hesitancy, and refusal are complex and context-specific phenomena, understanding the determinants of vaccine confidence requires research designs that delve into the insights, beliefs and lived experiences of participants in a context-sensitive manner and mindful of the social processes involved [16]. For this reason, this systematic review focused exclusively on research conducted under the qualitative research paradigm around vaccine confidence in LMICs.

With regards to the existing evidence, several systematic reviews published before the pandemic have focused on the perceptions surrounding vaccination for specific infections, such as the Human Papillomavirus and influenza, or among specific populations, such as parents, regarding children's immunization or during pregnancy [17–19]. Interestingly, one review conducted on factors influencing parents' and informal caregivers' views and practices regarding routine childhood vaccination focused on qualitative evidence and found that parents in LMICs may be less accepting of vaccination for their children due to experiences of social exclusion and may reject vaccination as a form of resistance [17]. The COVID-19 pandemic drew special attention to vaccine confidence, and several reviews were carried out regarding vaccine hesitancy against SARS-CoV-2. Among these, some have specifically focused on LMICs and found that the vaccine's perceived safety was a determinant of vaccine confidence [20,21]. However, to the best of our knowledge, no systematic review has focused on LMICs with a special focus on contrasting COVID-19 and non-COVID-19 vaccination.

Considering that the COVID-19 may have (i) exacerbated existing challenges regarding vaccine confidence (ii) raised specific challenges to vaccine confidence, this systematic review of qualitative literature aimed at analysing the determinants of COVID-19 and non-COVID-19 vaccine confidence in LMICs. This review is relevant to practitioners and public health policymakers to shed light on current understandings of the impact of the pandemic on this issue and assess whether a new approach to understanding vaccine confidence may be necessary in LMICs.

2. Material and methods

A systematic review followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines updated in 2020 [22]. The PRISMA checklist is included as a Supplementary File. Furthermore, the Enhancing Transparency in Reporting the Synthesis of Qualitative research (ENTREQ) guidelines was followed [23]. Our study protocol was registered on the Open Science Framework platform and is accessible through the following link: https://doi.org/10.17605/OSF.IO/BCQEG

In line with the main objective, this systematic review addressed the following research question: What are the determinants of COVID-19 and non-COVID-19 vaccine confidence in LMICs?

2.1. Eligibility criteria

Studies were included in the review if they addressed vaccine confidence in any type of population. With regards to the study design, only qualitative studies published in scientific journals were included. The publication range was 2013–2023, and only studies in English or Spanish were considered for feasibility reasons. Finally, only studies conducted in LMICs as defined by the World Bank [24] were included. When studies included multiple countries, some of which were high-income countries, only results explicitly referring to LMICs were included in this study. During the screening process of titles and abstracts, publications that did not address human vaccination or were explicitly focusing on non-LMIC countries were excluded. In order to determine whether vaccine confidence was addressed during full text screening, the following criteria were considered, and the publication had to meet at least one to be included:

- Vaccine confidence was explicitly mentioned;
- Perceptions and experiences surrounding vaccination were explored;
- Vaccine hesitancy, decision-making processes, attitudes or behaviours regarding vaccination, were discussed;
- Vaccination uptake was discussed, including barriers and facilitators.

2.2. Information sources and search strategy

Searches were performed on five scientific databases: Cinahl, Embase, Pubmed, Scopus and Web of Science. The searches were performed in May 2023, and the following terms were used:

(vaccination OR vaccines) AND (refusal OR opposition OR hesitancy OR reluctance OR denial OR rejection OR non-adherence OR resistance OR scepticism) AND (beliefs OR values OR knowledge OR motivations OR expectations OR perspectives OR perceptions) OR (decision-making process)

Language and date filters were applied according to the eligibility criteria presented in the previous subsection.

2.3. Selection process

The identified records were uploaded to Covidence for selection. After removing duplicates, two researchers (PV and CC) independently screened titles and abstracts using the eligibility criteria previously set. AO resolved discrepancies. PV and BC reviewed the full texts retrieved separately, and AO resolved any discrepancies.

2.4. Data collection process

Data was extracted and organised under the following categories: Author(s), Year, Title, Country, Objectives, Instrument, Target population, Vaccine(s), Sample, Determinants of vaccine confidence.

2.5. Data item

Consistent with the research question, determinants of vaccine confidence were identified in the literature. The definition of vaccine confidence used in this review was the one presented in the introduction: "the belief that vaccines are effective, safe, and part of a trustworthy medical system" [9]. In that sense, the determinants of vaccine confidence were the perceptions, reasons, beliefs, or lived experiences influencing vaccine confidence in the target populations.

2.6. Synthesis methods

All studies eligible according to the inclusion criteria previously set and consistent with the research question were included in the synthesis. Following guidance put forward by Thomas and Harden [25], a thematic synthesis was conducted in three steps: (i) free coding of the findings of the studies included in the review – translating loose data into classifiable determinants; (ii) organising the 'free codes' to construct 'descriptive' themes – grouping determinants according to similarities; (iii) and developing 'analytical' themes – constructing three main categories of determinants of vaccine confidence.

PV and AB conducted the synthesis separately, and after a joint review, AO resolved any discrepancies.

2.6.1. Quality assessment

A critical evaluation of the quality of the included articles was carried out by AB and AO, based on the following parameters, defined by the Joanna Briggs Institute's Checklist for Qualitative Research [26]:

- Congruity between the stated philosophical perspective and the research methodology
- Congruity between the research methodology and the research question or objectives
- Congruity between the research methodology and the methods used to collect data
- Congruity between the research methodology and the representation and analysis of data
- Congruity between the research methodology and the interpretation of results
- The researcher is located culturally or theoretically
- Influence of the researcher on the research, and vice-versa, is addressed
- Representation of participants and their voices
- Ethical approval by an appropriate body
- Relationship of conclusions to analysis, or interpretation of the data

Very few publications complied with all the parameters ($n = 4$), as most did not include statements regarding the cultural or theoretical position of the researcher and the influence of the researcher on the research, and vice-versa. However, the vast majority complied with all the other parameters. For further detail on the assessment of each publication, please see the Excel spreadsheet in Supplementary File 1. No publication was excluded based on the quality assessment.

2.6.2. Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

3. Results

1737 records were found across the five databases. After removing duplicates, 1365 abstracts were screened, of which 1157 were excluded for not complying with the inclusion criteria. 208 records were retrieved for full text screening. This process led to excluding 142 records. Finally, 66 records were selected and included in this review. Fig. 1 shows the detailed PRISMA flow diagram of the process.

3.1. Sample description

We included 66 publications in the review. Among them, 39 focused on vaccination against infections other than SARS-CoV-2, including cholera, HPV, HBV, influenza, measles, polio, tetanus, Meningococcal Serogroup A Conjugate Vaccine (MACV), maternal vaccination in general, and general vaccination in general (non-COVID-19 vaccination). Twenty-seven publications focused on vaccination against SARS-CoV-2 (COVID-19 vaccination). Studies from 41 countries characterised as LMICs by the World Bank were included in Latin America, the Caribbean, Asia, Africa, Oceania, and Europe.

With regards to the year of publication, the studies focusing on non-COVID-19 vaccination were published between 2014 and 2023, distributed as follows: 2014 ($n = 1$), 2016 (n = 1), 2017 (n = 1), 2018 ($n = 2$), 2019 ($n = 6$), 2020 ($n = 7$), 2021 ($n = 14$), 2022 (n = 6) and 2023 (n = 1). The studies focusing on COVID-19 vaccination were published between 2021 and 2023, distributed as follows: 2021 ($n = 23$), 2022 ($n = 15$) and 2023 ($n = 9$). Tables 1 and 2 describe the main characteristics of the studies included in this review.

Through thematic analysis, three main determinants of vaccine confidence were identified:

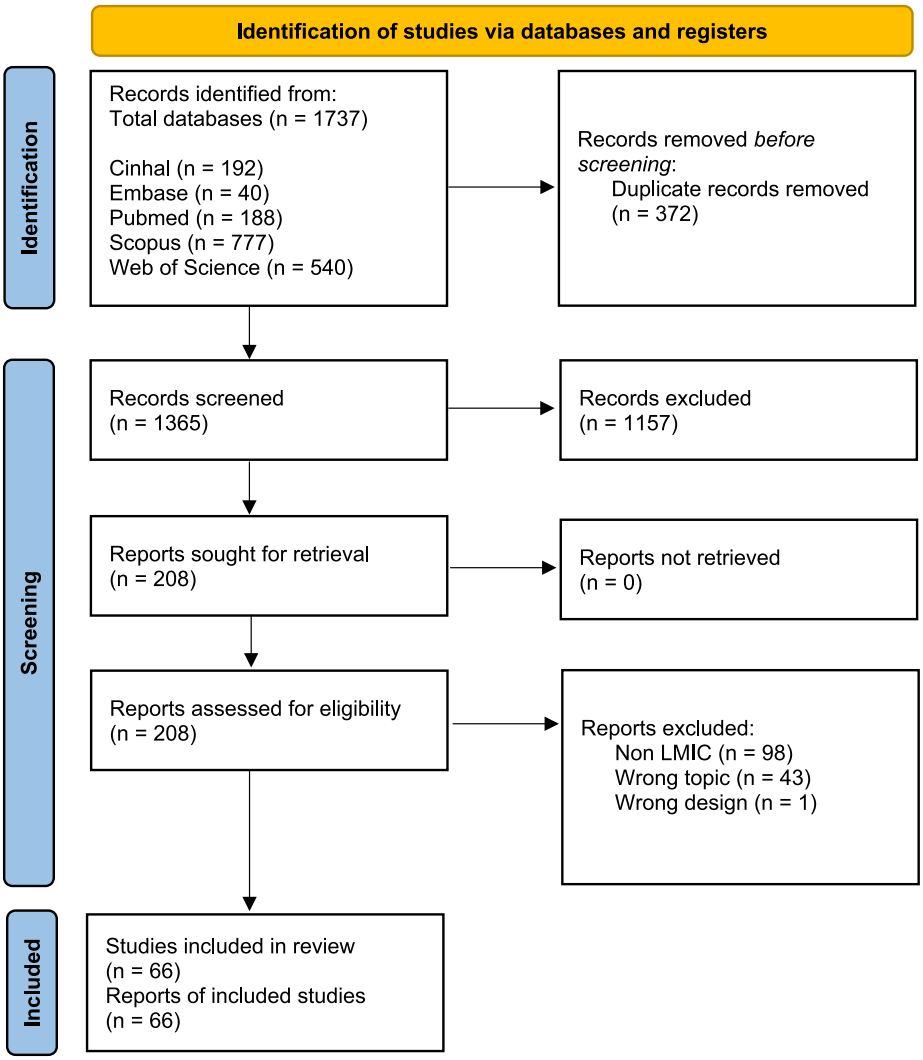
1) General perceptions on the safety and efficacy of vaccines
2) Information and experience
3) Trust in healthcare providers, institutions, and systems

3.2. General perceptions on the safety and efficacy of vaccines

On the one hand, the literature on vaccination against diseases other than COVID-19 showed that some study participants expressed a positive perception of vaccination. In general, this perception was rooted in the view that vaccination is safe and essential protection against diseases, promoting health and well-being [27–32]. Vaccine safety was understood as meeting quality standards and offering greater benefits than the potential drawbacks of minor side effects [33,34].

More specifically, studies reporting parents' perceptions of childhood and HPV vaccination showed that vaccinating their children was an act of care, something that was also perceived by healthcare workers [35–37]. In the case of maternal vaccination, participants linked it to protecting their unborn child as an absolute priority [38,39].

On the other hand, some participants expressed negative perceptions of vaccination. Generally, fear of injection pain and needles seemed to



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Fig. 1. PRISMA 2020 flow diagram for new systematic reviews included searches of databases and registers only.

contribute to a generally negative perception of vaccines, leading to low confidence [40–43]. More specifically, participants' confidence was hindered by doubting vaccine efficacy and safety [27,35,36,39,44–51]. Additionally, many studies reported fear of side effects and adverse events [35,37,40,42,46,52–55].

For instance, a study conducted in Mexico with pregnant women revealed some of the participants' fear that their baby may be born with disabilities if they were vaccinated during pregnancy, and women in Peru showed similar concerns [30,39]. In turn, parents feared that vaccination would not immunise their children or even make them ill by exposing them to infection [27]. Other studies showed that parents questioned the composition of vaccines [45,47]. Research carried out in Pakistan showed that some parents held the belief that the oral polio vaccine contained chemicals causing infertility in children. At the same time, another study conducted in Somalia reported similar beliefs with regard to vaccines in general containing HIV or sterilization agents [46,56]. Additionally, the study from Pakistan highlighted that some parents had the perception that the polio vaccine was low-quality [56].

In a similar line, some studies showed especially negative perceptions of specific vaccines, including HPV, measles, mumps and rubella (MMR), and vaccines given at birth against Hepatitis B and BCG-tuberculosis, in some cases among healthcare professionals [57] and in others, among patients and caretakers [35]. HPV vaccination was particularly contentious, as it brought up the topic of sexual health, which is taboo in some cultures [58]. Additionally, HPV vaccination clashed with some parents' expectations of their child's sexual activities [35,37,59], and in the case of women in China, seeking HPV vaccination was frowned upon and stigmatized [60].

Regarding COVID-19, vaccination confidence seemed to be rooted more in perceptions surrounding the efficacy of the vaccines than perceptions of safety. Participants in several studies cited fear of COVID-19 and seeing vaccination as a way of protecting themselves [61–69]. Furthermore, the desire to end the pandemic and return to normalcy were strong determinants of vaccine confidence [63,66,70–73]. More specifically, participants viewed vaccination as essential to travel or socialise, or, in some cases, work, sometimes being resigned to vaccine mandates [62,71,74,75].

Although some studies reported safety as a determinant of confidence [76–78], it was mentioned as a source of fear and anxiety for participants in many other studies, with anticipating side effects ranging from pain to long-term health issues representing an important determinant of low confidence [61,62,66,70,71,75,77–82]. One of the sources of such negative perception of vaccine safety was the view that it had been developed too fast and that there was a lack of information

Table 1
Characteristics of the studies on non COVID-19 vaccination.

First author	Year	Country	Vaccine(s) in study	Sample size	Determinants of vaccine confidence
Abakar	2018	Chad	General	$n = 12$ (interview participants) $n = 35$ (focus group participants)	• Programme mistrust • Concerns about side effects • Religious beliefs
Abdullahi	2020	Somalia	General	$n = 61$	• Low trust in vaccines • Religious beliefs • Patriarchal system • Concerns about side effects • Some parents believed that vaccines contain HIV or sterilization agents
Adeyanju	2021	Malawi	HPV	$n = 38$	• Lack of confidence in the safety and effectiveness • Misconceptions, rumours, conspiracy theories • Religious beliefs • Gender imbalances in vaccination decision-making
Balgovind	2023	Fiji	General	$n = 22$	• Role of HCWs in advocating for immunization • Religious beliefs
Burghouts	2017	Venezuela	Childhood vaccination	$n = 31$	• Effectiveness of vaccines • Concerns about side effects • Perception that child is too young to vaccinate • Perception that the same vaccine should not be given twice
Carcelen	2021	Perú	General	n = 12	• Perceived effectiveness of vaccines and need • Protection of the mother and baby • Trust between healthcare workers and pregnant women through open and honest communication • Empowered to make their own decisions regarding vaccination • Side effects of vaccination in pregnancy, particularly for the baby
Córdoba-Sánchez	2019	Colombia	HPV	$n = 49$ girls $n = 58$ parents	• Obtained information from the internet • Fear of adverse effects • Fear of needles • Belief that prevention should be done through education, not vaccines
De Oliveira	2019	Brazil	HPV	n = 14	• Concern about a healthier future for their daughters • Vaccinating as an act of maternal care • The experience of cancer in the family • Pediatrician recommended vaccination • The adolescent's interest in being vaccinated • Confidence in the protection offered by the vaccine • Unclear interests behind promoting vaccination • Fear of vaccination and adverse effects • Access to the internet promotes autonomy but also fears • Criticizing the recommended age for vaccination, relating to encouraging early sexual life and, above all, attitudes of carelessness in relation to safe sex by adolescents • Fear of the vaccine not being effective
Erchick	2022	India	General	$n = 21$	• Knowledge gap • Personal, family, or community experiences with vaccination, especially regarding common mild side effects • Relationship between vaccine hesitancy and adherence to non-allopathic medicine • Belief that vaccination is unnecessary, unnatural, harmful, or "Western" • Common perception that healthcare provided by government is of lower quality than private facilities
Friedman	2014	Kenya	HPV	n = 12 interview participants $n = 56$ (focus-group participants)	• Information on safety and effectiveness of the vaccine needed • Caregivers and opinion leaders were willing and eager to accept the vaccine • Trust in government decisions and recommendation about vaccine safety • Positive experience with childhood vaccines • Prevention of cancer for the future health of girls and communities • Adverse events and side effects, including pain or physical reaction • Sexual health may be taboo and parents may struggle to talk to their children about prevention of cervical cancer • Mistrust in the medical community • Rumours • Religious beliefs
González-Block	2021	Brazil, Paraguay, Peru (and other non-LMICs)	Influenza	$n = 87$	• Experience • Adequate and timely information • Doubts about vaccine efficacy and safety • Fear of getting sick • Misinformation • Perceived lack of need for vaccination related to age • Perceived importance • Religious beliefs
Hasni	2021	Malaysia	General	$n = 33$	• Lack of knowledge in infectious disease • Trust issues with hospitals and doctors • Fear of side effects

(*continued on next page*)

Table 1 (*continued*)

First author	Year	Country	Vaccine(s) in study	Sample size	Determinants of vaccine confidence
					• Lack of trust in the government • Misinformation on social media
Jackson	2022	Armenia	General	$n = 30$	• Lack of information on vaccines and side effects
Jain	2020	India	General	Unknown - 6 focus groups	• Pain during vaccination and side effects • Unawareness and invisibility of the benefits of vaccination • Belief of potential risk of future impotency due to the vaccination • Lack of satisfaction with the services provided at the centre
Jamal	2020	Pakistan	Polio	Unknown - 6 focus groups with 10–14 participants each	• Lack of awareness and a confusion between RI and Polio • Fear of side effects
Johm	2021	Gambia and Senegal	Tetanus	$n = 152$	• Efficacy of vaccines • Trust information given to them by doctors and nurses
Khan	2016	Pakistan	Polio	$n = 42$	• Educational level • Campaigns against polio vaccination • Religious beliefs • Belief that the oral polio vaccine causes infertility among children • Perception that the vaccine is of low quality • Conspiracy theories of hidden agendas of CIA to make children sterile
Lin	2022	China	General	$n = 26$	• Postponed vaccinations if the child was in poor health • Questioning the safety of vaccines
Malik	2021	Argentina, Mexico, Honduras, Brazil, Peru	Maternal vaccination	$n = 162$	• Safety and effectiveness of vaccines • Prioritisation of the baby's health • Confidence in medical advice • Relatives'experience • Mistrust in the dominant medical model and support of alternative medicine • Awareness of the anti-vaccine movement
Musa	2020	Bosnia and Herzegovina	Childhood vaccination	$n = 37$	• Vaccine safety and side effects • Role of health workers in promoting childhood vaccination, motivated by their confidence in vaccines, a sense of duty as well as enjoying this aspect of their job • Poor or inadequate knowledge of vaccine safety and skills in managing side effects and contraindications • Feeling of frustration and stress among health workers, where vaccination is seen as a demanding and thankless task • Perceived lack of trust and respect of parents towards doctors
Musa	2021	Bosnia and Herzegovina	Childhood vaccination	n = 22	• Knowledge of vaccination and vaccine-preventable diseases • Positive communication with paediatricians • Positive attitudes towards vaccination • Confidence that vaccines are safe, understanding that they meet a certain quality standard • Implicit trust in health workers • Frustration that doctors did not discuss vaccination in enough detail or did not present as "completely" confident in vaccination • Fear of side effects • Importance of vaccines • Perception that vaccination should be delayed until children are older and stronger • Perception that vaccine quality is poorer than in western Europe because of rumours on low budgets, cold chain issues, and corruption in the pharmaceutical industry • Lack of trust in health worker, questioned their knowledge and allegiance with the pharmaceutical industry
Mutyoba	2021	Uganda	HBV (birth dose)	$n = 70$	• Importance of vaccination • Low awareness and diverse perceptions of HBV and its prevention • Concerns about the ability of a newborn to fight an infection that it is exposed to early in life, perception that the vaccine may instead introduce the newborn to infection • Concerns about vaccine safety • Low risk perception • Fears regarding the skills and ethical standards of HCWs while handling newborns
Nair	2021	India	Childhood vaccination	$n = 252$	• Past negative experiences • Doubts regarding the need for vaccination for a healthy child • Religious beliefs • Lack of trust in allopathic medicine
Njuguna	2021	Kenya	HPV	$n = 92$	• Cultural and religious beliefs • Doubts surrounding effectiveness and safety • Beliefs surrounding population control
Nkwenkeu	2020	Burkina Faso	MACV	n = 12	• Positive experience of the community with vaccination • Desire to keep their child healthy • Cultural practices • Misconception surrounding the disease and its prevention • Religious beliefs

(*continued on next page*)

Table 1 (*continued*)

First author	Year	Country	Vaccine(s) in study	Sample size	Determinants of vaccine confidence
Oduwole	2021	South Africa	Childhood vaccination	$n = 19$	• Concern over child's pain • Fear of side effects • Belief that children should develop their own natural immunity • Religious beliefs
Paul	2022	Nepal	Childhood vaccination	$n = 76$	• General positive perception • Understanding of importance and safety • Positive social norms • National prioritisation and policies related to immunization • Satisfaction and pride among health workers • Expressed self-confidence in healthcare workers' ability to efficiently perform their duties Mistrust and lack of mutual respect between health workers and patients because of micro-aggressions, power imbalance, poor quality of care, perceived client noncompliance and provider bias
Powelson	2022	Mozambique	Childhood vaccination	$n = 32$	• Concerns about side effects • Fear of having multiple vaccines at the same time • Negative interactions with health workers • Fear to be rejected or humiliated by health workers
Rujumba	2021	Uganda	HPV	$n = 40$	• Fear of pain • Discouragement from caregivers or peers • Religious and cultural beliefs
Rumetta	2020	Malaysia	General	n = 14	• Beliefs of pharmaceutical conspiracy • Non-allopathic approach to health • Religious beliefs and restrictions • Fear of side effects • Beliefs surrounding composition of the vaccines • Ineffectiveness of vaccines • Vaccine-preventable diseases not perceived as a threat • Lack of information, knowledge and understanding of vaccines
Sabahelzain	2019	Sudan	Measles	n = 14	• Religious beliefs • Beliefs and attitudes on health and prevention • Lack of knowledge and awareness
Simas	2021	Mexico	Maternal vaccination	$n = 54$	• Perceived effectiveness • Healthcare professional recommendation • Doubts over the safety and effectiveness of vaccines • Distrusting the safety of maternal vaccines, worrying that babies would be born with malformations and disabilities because of pregnancy vaccination • Lack of information and exposure to misinformation • Distrust of government
Siu	2019	China	HPV	n = 35	• Lack of knowledge regarding HPV vaccination • HPV vaccination perceived to be irrelevant to their students • Religious and cultural beliefs
Siu	2019	China	HPV	n = 40	• Importance of vaccination • Marriage plans and experiences of sexual activities • History of gynecological conditions • Stigma associated with HPV vaccination • Distrust of HPV vaccines
Sumengen	2021	Türkiye	Childhood vaccination	n = 22	• Concerns over safety of vaccines and their composition • Side effects and negative experiences • Distrust of healthcare system and healthcare workers • Beliefs surrounding commercial interests behind vaccination • Religious beliefs • Misinformation • Internet and social media/foreign publications • Influence of anti-vaccine doctors
Sun	2018	China	General	$n = 34$	• Severity of the disease and long-term disability • Belief that imported vaccines are inadequate for Chinese children's physical constitutions
Wiot	2019	India (and other non-LMICs)+	General	$n = 75$	• Lack of information and knowledge
Yang	2020	China	General	$n = 20$	• Vaccine safety • Lack of transparency of the government and CDC
Zin	2022	Malaysia	Childhood vaccination	$n = 27$	• Self-principle • Non allopathic medical beliefs • Distrust of healthcare provider • Media influence

regarding potential side effects [65,74], an opinion shared by some healthcare workers [70,82]. Other studies found that their participants doubted its suitability for patients with specific characteristics, such as older people or those with comorbidities [72]. Moreover, some studies reported that participants showed doubt and expressed uncertainty as to the vaccine's effectiveness and importance, in the latter's case due to the introduction of non-medical strategies to curb infections as shown in a study carried out in China, the belief that only those with a weak immune system need it, or the belief that immunity would be naturally developed over time [67,69,71,72,74,75,78,80–83].

In conclusion, perceptions of vaccines' safety, efficacy, and importance were determinants of confidence or lack thereof, for all types of

Table 2
Characteristics of the studies on COVID-19 vaccination.

First author	Year	Country	Vaccine (s) in study	Sample size	Determinants of vaccine confidence
Aci	2021	Türkiye	COVID	$n = 36$	• Statements from the Ministry of Health • Images on social media of healthcare workers being vaccinated • Protection of family, society and life • Ending of the pandemic Feelings of anxiety, fear, suspicion, burnout, vulnerability, insecurity, hopelessness, and helplessness Fear of side effects • Uncertainties about the duration of protection and the benefit–harm balance • Misinformation • Bias towards the country where specific vaccines were developed • Healthcare workers felt they used as advertising or guinea pigs
Al-Jalabneh	2022	Jordan	COVID	n = 30	• Low trust in the vaccine • Social media misinformation • Poor knowledge of health-related information • Low health literacy COVID-19 news fatigue
Bakare	2023	Nigeria	COVID	n = 32 caregivers n = 19 healthcare workers	HCWs • Preventing sudden death and protecting against the virus • Motivation from senior colleagues or health managers and later positive testimonies from recipients • Distrusting the government • Concerned about vaccine safety, quality, short timeline for vaccine development and the government's aggressive vaccination campaign • Perception that vaccines were not tested very well in Nigeria before being approved Caregivers • Misinformation and conspiracy theories • Fearing the COVID-19 vaccines • Distrust in government efforts regarding COVID-19 vaccines • Religious beliefs • Misinformation • Fear of side effects
Belkebir	2023	Palestine	COVID	$n = 46$	• Trust in Ministry of Health and WHO • Effectiveness of vaccines • Trusted information on the vaccine(s) available in Palestine, side effects, and effectiveness • Uncertainty about COVID-19 and the vaccines • Perceived rapid development of vaccines • Effectiveness and side effects of the different vaccines • Lack of knowledge about vaccines, the potential side effects, and the fact that there were too many types of vaccines
Chan	2022	Malaysia	COVID	$n = 59$	• Younger participants influenced by their favourite local influencers or celebrities speaking about COVID 19 on Tik Tok and Instagram • Trust in "local vaccination heroes" • Trust in doctors and nurses among older patients • Different ethnic groups in Malaysia were perceived to prefer certain vaccines • Distrust of the government's management of the vaccination process, local politicians • Distrust of the efficacy of the vaccines and their side effects
Cokro	2022	Indonesia	COVID	n = 25	• Effectiveness of the vaccine and side effects (patients with comorbidities) • Important for traveling, or socializing and meeting-up with their family • Healthcare workers' advice • Trust in the government • Desire to return to normal life • Availability of certain brands of vaccine

(*continued on next page*)

Table 2 (*continued*)

First author	Year	Country	Vaccine (s) in study	Sample size	Determinants of vaccine confidence
De Nascimento	2023	Brazil	COVID	n = 32	• News from social media and television • Beliefs surrounding government business/political interests • Effectiveness of the vaccine • Possibility of a quick return to life • Misinformation mainly from social media • Fear of receiving the Brazilian made vaccine
Elbarazi	2022	Egypt, Libya, Sudan, and Jordan (and other non-LMICs)	COVID	*n* = 100	• General trust • Fear of COVID-19 • Media influence • Anecdotal evidence • Education status was reported by the participants as a determinant of trusting science, medicine, and research • Social media and media reports were their main sources of trusted information against the vaccines.
Fard	2023	Iran	COVID	n = 10	• Hearing or reading news about the side effects • Conspiracy theories around the aim of reducing human population • Experience of community members • Fear of side effects Perceived lack of information and studies on the vaccines
Herry	2023	Grenada	COVID	n = 25	• Conspiracy theories • Distrust in politicians • Doubts surrounding effectiveness and importance • Healthcare workers' advice • Awareness and trust the importance and safety of vaccine • Necessary to work and travel • Adherence to non allopathic medicine
Iwuagwu	2023	Nigeria	COVID	n = 16	• Mistrust in the vaccine, healthcare professionals and the government • Informal sources of information • Trust in healthcare workers, • Perceived benefits and importance of the vaccine • Fear of side effects • Lack of trust in the government and healthcare system • Misinformation • Religious beliefs and concerns about the vaccine's compatibility with their faith • Non-allopathic medicine perceived to be more effective than the vaccine
Kumar	2022	India	COVID	*n* = 18	• Effectiveness of the vaccine • Trusting the vaccine development process, scientists, policymakers and government officials • Lack of information on the safety of the vaccine
Kumari	2021	India	COVID	*n* = 43	• Effectiveness and importance of vaccines • Concerns about the safety of vaccines • Beliefs that vaccines are unnecessary for specific age groups • Gap of information, education and communication from the government • Concerns surrounding the rapid development of vaccines • Concerns about safety and efficacy for the elderly population and individuals with comorbidities
Long	2022	China	COVID	n = 8 (healthcare workers) *n* = 26 (adult 18–59) *n* = 60 (adults >59) *n* = 14 (parents of children 0–6)	• Safety, effectiveness, importance • Fear of side effects • Advice from healthcare providers • Social media moderately undermined the advice of healthcare providers • Fear of pain and injections
Myburgh	2023	South Africa and Zimbabwe	COVID	*n* = 129	• Positive experience with childhood vaccination • Trust in the COVID-19 vaccine and its benefits • Trust in government • Knowing someone who had a positive vaccination experience • Vaccine safety concerns, vaccine development concerns, conspiracy theories, • Negative experience with healthcare workers

(*continued on next page*)

Table 2 (*continued*)

First author	Year	Country	Vaccine (s) in study	Sample size	Determinants of vaccine confidence
Rajeshwari	2022	India	COVID	$n = 39$	• Beliefs that COVID-19 does not exist and was fabricated by the government • Use of non allopathic medicine to cure COVID-19 • Fear, myths and misconceptions regarding the safety of the vaccine • Fear of some adverse event or death • Lack of knowledge on the disease • Anguish over news reports on television
Sacramento	2022	Philippines	COVID	n = 21	• Fear of side effects • Preferences towards specific vaccine brands influenced by the origin of the vaccine (China vs Western countries) • Misinformation • Anecdotal information
Sialubanje	2022	Zambia	COVID	$n = 272$	• Effectiveness of the vaccine (depending on age group) • Personal or family experience with the COVID-19 disease or vaccination • Limited knowledge, access to information, myths and misconceptions • Misinformation from social media
Su	2023	China	COVID	n = 12	• Effectiveness and safety of vaccines • Trust in science • Perceived benefits • Perceived threat to the freedom of choosing to get vaccinated
Tenorio-Mucha	2022	Peru	COVID	n = 30	• Vaccination promotion strategies perceived to violate human rights
Tibbels	2022	Ivory Coast	COVID	$n = 156$	• Perceived risk of the vaccine vs. the severity of the disease • Perceived severity of rumoured side effects or safety issues of vaccines • Conspiracy theories
Wang	2021	China	COVID	n = 92	• Vaccine safety • Vaccine effectiveness and awareness of vaccination necessity
Wang	2022	Haiti (and other non-LMICs)	COVID	$n = 47$	• Distrust of COVID-19 vaccines, the pharmaceutical industry and government entities • Beliefs and attitudes regarding health and prevention • Misinformation and rumours • Information environment • Anti-vaccination lobbies • Historical factors
Watermeyer	2022	South Africa	COVID	n = 20	• Desire to go back to normal • Resignation towards mandatory vaccine policies • Safety and effectiveness of vaccines against COVID-19 • Conspiracy theories and rumours • Fear of side effects • Perceived lack of control • Lack of trust in the government's intentions and information • Lack of trust in healthcare services
Wong	2022	China	COVID	$n = 45$	• Healthcare workers' recommendations • TV, radio, and newspapers as main sources of trustworthy information • Resuming a normal social life • Perceived benefits out- weighing risks of mild and short-term side effects • Concerns about severe and long-term side effects • Concerns about the rapid development of vaccines Perceived insufficient data on safety and effectiveness
Yıldırım	2022	Türkiye	COVID	n = 20	• The fear of COVID-19 • Trust in the national vaccine • Belief that COVID-19 was exaggerated, that the vaccine was not effective, and that people's bodies become immune over time • Conspiracy theories about biological or economic warfare • Beliefs surrounding the rapid development of the vaccines and being tested on the general population
Yuan	2023	China	COVID	n = 27	• Effectiveness and importance • Concern about safety and side effects

vaccines. Fears around the safety of vaccines are not specific to the COVID-19 vaccines as a determinant of low confidence; however, in the case of vaccination against COVID-19, efficacy seemed to weigh more than safety in determining high confidence, especially as it was perceived as the leading solution to the pandemic in an exceptional context of a health crisis affecting many aspects of daily life. With regards to side effects, fear of injection pain and needles seemed to contribute to low confidence in other vaccines, especially those aimed at children. At the same time, concerns around the COVID-19 vaccination centred mainly around serious side effects.

3.3. Information and experience

The general perception of vaccination was partly determined by information, experience, or lack thereof. Studies reporting positive perceptions of vaccination highlighted that education and being informed played a crucial role in vaccine confidence, even boosting self-efficacy with regards to vaccination [30,33,34,37,44]. Conversely, there was a general acknowledgement that lack of knowledge and awareness regarding vaccination played role in determining low confidence but not always negative perceptions [33,41,43,46,47,52,56,59,84–86], while being exposed to misinformation, conspiracy theories, and anti-vaccine movements within their communities or through the internet and social media, determined negative perceptions [35,38–40,43,45,48,52,58]. However, lack of knowledge or exposure to erroneous information were not the only determinants of low vaccine confidence. Several studies reported that participants expressed low vaccine confidence due to non-biomedical health promotion and prevention approaches, such as religion [43,44,46,50,56,84] or non-allopathic medicine [47,48,85,87]. These perceptions were identified in countries across continents without any specific pattern.

Beyond information and in addition to it, experience was found to be a key determinant of vaccine confidence. The literature reviewed reported, on the one hand, that participants with a generally positive experience with vaccination, either at the individual, family, or community levels, displayed high confidence and acceptance of vaccination [35–37,44]. An example of a positive experience at the community level was the recognition that vaccination had prevented serious childhood illnesses among its members [36]. On the other hand, participants who had had a negative experience, either themselves or a family member, displayed low confidence [38,44,45,85,88]. For instance, parents tend to exhibit lower confidence if they previously had a bad experience when immunising their child, including crying, pain, and short-term mild side effects [88]. Another example was given by a participant who explained that her niece had developed autism after receiving vaccination to justify her low confidence in vaccines [45].

Regarding COVID-19 vaccination, positive perceptions surrounding safety and efficacy were determined by effective communication by healthcare professionals and health authorities [61,62,70,74,82]. Interestingly, a study conducted in Malaysia showed that younger participants' confidence in COVID-19 vaccination was determined by local influencers and celebrities, regardless of whether they were healthcare professionals, through social media [89]. Traditional news media outlets such as television or the radio emerged in several studies as determinants of confidence [62,74,76]. To a much lesser extent than in the case of vaccines against diseases other than COVID-19, was education cited as a determinant of trust in science and, thus, vaccine confidence [76], which may indicate a shift from the focus on formal education as a determinant of vaccine confidence to turn to information from the healthcare system and social media, highlighting their potential to be harnessed to boost vaccine confidence. Finally, having had a good experience with previous non-COVID-19 vaccines, knowing someone who had a good experience with the COVID-19 vaccine or having had COVID-19 were determinants of high vaccine confidence [67,76,79].

Concerning information and negative perceptions, several key determinants of low vaccine confidence were reported. The first one was the lack of information about the vaccine, its side effects, and COVID-19 [65–67,72,81,82]. The second one was exposure to conspiracy theories and rumours regarding the safety and side effects of the vaccine [61,71,74,83,90] through social media, informal sources, or word-of-mouth within communities and families [63,67,75–77,80,83,91]. The third one was knowing someone, or of someone, who had had a bad experience with the vaccine, which in turn fed into word-of-mouth [64,76,77]. With regards to traditional news media, these, in some cases, were a source of anxiety and "COVID-19 news fatigue", which prompted negative attitudes towards vaccination and, concomitantly, low confidence [66,91]. Finally, much like with other types of vaccines, non-biomedical approaches to health, such as religion and the use of natural remedies, also played a role in low vaccine confidence [61,64,75,79].

In conclusion, information was key in determining confidence for COVID-19 and non-COVID-19 vaccination. However, a key difference was that for non-COVID-19 vaccines, "being informed" was understood as general education, where the educational level would determine confidence, or as health literacy and awareness of the existence of a vaccine, while for COVID-19, the information referred to specific information on the vaccines: their development process, the expected benefits and potential side effects. A lack of information on these elements was usually seen as suspicious and fuelled uncertainty. The vacuum then seemed to be filled by conspiracy theories and rumours built upon anecdotal evidence, and misinformation circulated widely on social media and by word-of-mouth at the community level. However, in the case of COVID-19 vaccination, social media could also be used to increase confidence if messages promoting the vaccine were relayed by trustworthy figures among the relevant audience, something that was not reported in the case of other vaccines. Finally, non-biomedical approaches to health played a role in determining low confidence for both vaccine groups, indicating persisting challenges to achieving effective intercultural communication.

3.4. Trust in healthcare providers, institutions, and systems

Finally, trust in institutions and systems was a determinant of vaccine confidence in LMICs. Trust, or lack thereof, was identified towards three levels: individual healthcare providers, healthcare institutions, and, more broadly, systems represented by, governments and pharmaceutical companies.

Vaccine confidence was bolstered by participants' trust in nurses' and doctors' recommendations to receive vaccination or vaccinate their children [28,35,38,39]. More specifically, participants valued supportive and honest communication from healthcare workers and a relationship with them based on built or implicit trust [30,31,33,34]. Some studies focused on healthcare workers' perceptions regarding vaccination, and they recognised their role in promoting vaccination out of a sense of duty [31,87]. More broadly, vaccine confidence was also boosted by a general trust in the government's recommendations regarding vaccination, as shown by a study carried out in Kenya on HPV vaccination [37].

Conversely, vaccine confidence was hindered when participants reported a negative relationship with the healthcare system based on past negative experiences with individual providers, including discrimination, being berated for not complying with healthcare workers' expectations or instructions or being unsatisfied with the care received [27,34,43,55]. Another issue raised by a study in Bosnia and Herzegovina was the frustration felt by patients who reported a lack of information from medical providers or their providers not appearing fully confident in the safety and efficiency of the vaccine [33]. Similarly, a study conducted in Türkiye reported some participants being influenced by anti-vaccine medical providers [45]. From the viewpoint of healthcare providers, the vaccination process was sometimes viewed as a burden and a catalyst for conflict with patients [33].

At the level of healthcare institutions, as well as larger systems, some

participants expressed doubts regarding the general quality of their country's healthcare system or general mistrust in the healthcare system or the medical community, sometimes citing an alleged allegiance to pharmaceutical companies [33,37,45,48,52,85]. General wariness of pharmaceutical companies was another determinant of low vaccine confidence, coupled with mistrust in the government, usually linked to undemocratic regimes, commercial interests, the feeling that they were treated like "guinea pigs", or the suspicion that they were receiving lower quality vaccines than high-income countries [33,35,39,45,47,50,52]. Other studies reported mistrust in imported vaccines [32,45]. More specifically, a couple of studies conducted in Kenya and Pakistan alluded to participants' beliefs that vaccines were promoted by unspecified or foreign agencies, such as the CIA, to control their country's populations through sterilization [51,56].

Concerning vaccination against COVID-19, peer support and local leadership [62,89], as well as trust in local healthcare professionals and their recommendations, were crucial in determining high vaccination confidence, according to several studies [62,64,66,74,75,89]. At a higher level, trust in the government and authorities such as the Ministry of Health, in science in general, and the vaccine-development process were also determinants of confidence [62,65,82]. Finally, some studies reported that some participants trusted only certain brands of vaccines or vaccines developed only by certain countries [62,69,77]. For instance, a study conducted in Malaysia showed that the ethnic Chinese population preferred vaccines developed by China. In contrast, the ethnic Malay preferred the Pfizer vaccine to enable them to resume the pilgrimage to Mecca [89].

Regarding low confidence, the main determinant emerging from the studies reviewed beyond mistrust of the pharmaceutical industry and the healthcare system [63,71,79], which seemed to play a lesser role, was the lack of trust in the government. Several studies reported that participants were suspicious of why their country's government would promote vaccination in a way perceived as "aggressive", tying it to veiled commercial or political interests [61,62,71,75,79]. A study carried out in Turkey with healthcare providers reported that they suspected that the government was "testing" the vaccine with them first [70], and another one felt that the vaccine had not been tested well in Nigeria before being implemented [61]. Notably, a study conducted in Uganda showed that some participants thought the government was implementing strategies to curb the pandemic to "play along" with foreign countries and attract aid and that the management of the pandemic was overly influenced by Western media and politics [64]. Other studies brought up conspiracy theories linked to biological warfare [69,76], and a study conducted in Haiti highlighted that there was a belief that the vaccine was tested in low-income countries and was ultimately designed to reduce the black population [83]. Furthermore, some participants did not trust their government's capacity to manage the vaccination process, especially when there was a history of corruption and mismanagement of the COVID-19 crisis [89]. Finally, some studies in China, Peru and South Africa reported that participants felt that their freedom was threatened by vaccine mandates [68,71,92].

In conclusion, trust in institutions and systems was a key determinant of confidence for COVID-19 and non-COVID-19 vaccines. For non-COVID-19 vaccines, a trusting relationship with healthcare providers seemed to be central in determining high vaccine confidence. However, mistrust in the government, the healthcare system, and pharmaceutical companies appeared to be strong determinants of low confidence. The determinants of COVID-19 vaccine confidence were similar, and greater emphasis was put on global systems stemming from existing tensions. One such emphasis was the greater trust put onto vaccines manufactured by a specific country or company, the idea that the vaccines were being tested first in low-income countries, that they were designed to reduce the population, or that Western interests managed the pandemic. These perceptions are linked to historical contexts and modern forms of coloniality and must be addressed rather than dismissed as conspiracy theories.

4. Discussion

This study aimed to define the determinants of COVID-19 and non-COVID-19 vaccine confidence in LMICs from a review of the qualitative evidence published in the last ten years. Three main determinants of vaccine confidence emerged: i) General perceptions of the safety and efficacy of vaccines, ii) Information and experience, and iii) Trust in healthcare providers, institutions, and systems. These are consistent with those reported in other articles on vaccine confidence [93].

General perceptions of vaccine safety and efficacy were similar between COVID-19 and non-COVID-19 vaccines, and doubts regarding vaccine safety are neither new nor exclusive to the COVID-19 vaccine. This indicates a persisting challenge with regards to vaccine confidence, which have also been detected in high income countries [94]. More specifically, in LMICs, low vaccine confidence is determined by broader dynamics of mistrust towards Western countries and institutions, which was reflected for both vaccine groups. Similar results have been found in other reviews on the topic, both within LMICs and among marginalised communities in high income countries [95,96]. These perceptions are inscribed in historical contexts of power imbalances and injustices requiring, taking concrete steps to dismantle oppressive structures in global health and within healthcare systems [97–99].

Regarding the importance and efficacy of vaccines, while the studies' participants usually recognised it, some challenges remain. One such challenge is the use of non-biomedical approaches to health or non-pharmacological prevention measures, which are seen as contradictory to vaccination [100]. Efforts must be made to reconcile the diversity of approaches to health promotion and prevention without undermining the traditional knowledge and practices that deviate from biomedical standards from an intercultural point of view [101]. This requires designing interventions and decision-making processes for vaccine promotion that involve the target communities and take a genuine interest in approaches to health in a horizontal manner [102]. Furthermore, considering that trusting relationships with local healthcare providers were vital in determining high vaccine confidence, strengthening the healthcare system, acceptability of services delivered and nurturing the patient-provider relationship could be a step towards improving vaccine confidence in the post-pandemic era [103]. However, for these processes to be genuine and successful in reducing inequities, patterns of discrimination and inequities stemming from structural racism within healthcare institutions must be systematically dismantled.

Although these main determinants were common to COVID-19 and non-COVID-19 vaccines, differences were identified between both vaccine groups, especially regarding information and experience. While conspiracy theories and negative experiences with vaccination due to pain and other side effects have been persisting determinants of low confidence, low COVID-19 vaccine confidence was partly determined by what was perceived as a lack of specific information on the development process, the expected benefits and potential side effects of vaccines. Lack of formal information on these elements was usually seen as suspicious, creating a vacuum filled by informal sources of information and anecdotal evidence amplified by social media. This highlights the importance of transparency and expectation management with regards to vaccination processes. However, minimum trust in the institutions circulating the information must be achieved for this to work. Although this may not be possible in the short or even medium term, transmitting information through trusted figures in online communities may be a way to ensure that trustworthy information is circulated.

The results of this review indicate persisting challenges connected to individual experiences with healthcare providers and lack of information. However, it is important to acknowledge that the individual level is inscribed within a history of inequality in global health and larger structures of oppression. In that sense, while recommendations are made to address persisting challenges at the individual level, steps must also be taken to address these larger structural determinants of vaccine confidence and advance towards vaccine equity globally.

4.1. Strengths and limitations

This review focused exclusively on qualitative evidence, which allows to explore vaccine confidence from the point of view and experience of the studies' participants and describe the complex mechanisms that bolster or undermine vaccine confidence. However, the use of qualitative evidence means that causality cannot be established, nor was it sought, and prevalence of specific factors could not be identified either. Furthermore, while both non-COVID-19 and COVID-19 vaccines were included in order to explore potential differences, a formal comparison process to determine the impact of the COVID-19 pandemic on vaccine confidence was beyond the scope of this review. Additionally, while results specific to certain countries were identified and highlighted in the results section, making systematic comparisons between the countries included in the study was beyond the scope of this review. Finally, only literature in English or Spanish was reviewed for feasibility reasons, potentially leaving out part of the scientific literature on vaccines produced in LMICs.

5. Conclusions

This study examined the determinants of confidence for non-COVID-19 and COVID-19 vaccines in LMICs based on a review of the qualitative evidence published between 2014 and 2024. The three main determinants identified were consistent throughout all types of vaccines. Persistent challenges to vaccine confidence were identified, rooted in colonial legacies and global health inequities, as well as limited intercultural approaches to building trust with regards to vaccines. The challenges to COVID-19 vaccine confidence build upon existing challenges to vaccine confidence in general. However, using social media to increase access to trusted information and strengthening patient-provider relationships emerged as potential strategies to address these challenges in the context of the COVID-19 pandemic.

Funding

The overarching research project was funded by the Health Equity Catalyst Fund, MERCK.

CRediT authorship contribution statement

Alice Blukacz: Writing – original draft, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Alexandra Obach:** Writing – original draft, Validation, Funding acquisition, Formal analysis, Conceptualization. **Paola Vásquez:** Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Carla Campaña:** Writing – review & editing, Investigation, Data curation. **Catalina Huerta:** Writing – review & editing, Investigation, Data curation. **Yanara Bernal:** Writing – review & editing, Investigation, Data curation. **Báltica Cabieses:** Writing – review & editing, Validation, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Baltica Cabieses reports financial support was provided by Health Equity Catalyst Fund, MERCK. 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.

Data availability

Data will be made available on request.

Acknowledgments

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.vaccine.2024.126546.

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