National Collaborating Centre for Methods and Tools

Centre de collaboration nationale des méthodes et outils

School of Nursing | McMaster University

Rapid Review Update 1: What is known about parents' considerations for vaccine uptake for children and adolescents?

Prepared by: The National Collaborating Centre for Methods and Tools

Date: February 14, 2024

Suggested Citation:

National Collaborating Centre for Methods and Tools. (2024, February 14). *Rapid Review Update 1: What is known about parents' considerations for vaccine uptake for children and adolescents?* https://www.nccmt.ca/pdfs/res/parental-vaccine-confidence

Please Note: An update of this review may be available. Access the most current version of this review by visiting the National Collaborating Centre for Methods and Tools COVID-19 Rapid Evidence Service at the above link.

The National Collaborating Centre for Methods and Tools (NCCMT) is hosted by McMaster University and funded by the Public Health Agency of Canada. The views expressed herein do not necessarily represent the views of the Public Health Agency of Canada.

The authors declare they have no conflicts of interest to report.

Project Contributor: Amanda Doherty-Kirby, citizen partner with lived experience.

Executive Summary

Background

Many Canadians have received at least one dose of a coronavirus disease 2019 (COVID-19) vaccine, including children as young as five. Only a minority, however, are estimated to have been vaccinated per recommendations (e.g., booster vaccines). Vaccination rates are also estimated to be substantially lower in children younger than five (Public Health Agency of Canada, 2023). An in-depth understanding of parents' considerations in vaccinating their children is important for designing effective and equitable campaigns to promote continued vaccination against COVID-19 and other communicable diseases.

This rapid review was initially produced to support public health decision makers' response to the COVID-19 pandemic. This update identifies, appraises, and summarizes emerging research evidence about parental decisions, attitudes and beliefs surrounding COVID-19 and other childhood vaccines to inform ongoing and future vaccination efforts through evidence-informed decision making.

This rapid review is based on the most recent research evidence available at the time of release. The previous version was completed on June 28, 2021. This updated version includes evidence available up to November 13, 2023 to answer the question: **What is known about parents' considerations for vaccine uptake for children and adolescents?**

What Has Changed in This Version?

- New evidence related to parents' considerations for vaccine uptake has emerged and is included in this update; specifically, 29 new single studies were identified: 16 related to COVID-19 and 13 involved vaccines for other diseases. An archived copy of Version 1 is available.

- As the body of COVID-19 evidence is now more substantial, studies examining parental considerations related to COVID-19 vaccines conducted prior to the COVID-19 vaccine becoming available in December 2020 were excluded from this update (n=2). A list of all previously included but now excluded studies is available in Appendix 2.

- New evidence on vaccines for chlamydia (n=1) and tick-born encephalitis (n=1) has emerged and been included in this update; more evidence on influenza (n=1) and childhood vaccines in general (n=10), has been incorporated. No new evidence related to infant pneumococcal vaccines has been added.

- Findings from these new studies align with previous conclusions; for example, trust and safety continue to be key themes, as well as the need for tailored information to limit misinformation, the importance of benefit-risk assessment, and parental choice and preference for alternative health approaches. More evidence on perceived and actual cultural, social and structural inequities emerged in the more recently published studies.

Key Points

- **Trust**, or lack of trust, in health care providers or government, was a factor in parental decisions about childhood vaccination. Parents who accepted vaccination for their children tended to express trust in health care professionals, science, and government. Of these groups, many parents described health care professionals as their most trusted source of information on vaccines. Some parents believed, however, that advice from physicians was biased and not trustworthy; they looked to other or additional sources for information. A lack of trust in science, or doubt that vaccines are effective, also emerged as a reason not to vaccinate, or to be hesitant or unsure. The confidence in this finding is moderate (GRADE-CERQual); it is likely that this finding is a reasonable representation of the phenomenon of interest.

- **Safety** was a common theme across studies exploring perceptions of childhood vaccines. Parents who supported vaccination for their children expressed confidence that vaccines were generally safe. Concern about adverse effects was a common finding. Some parents who were hesitant or refused vaccination had a general sense that vaccines (or their ingredients) were unsafe, too numerous, or could cause illness. These fears were often prevalent when the vaccine had been newly released (e.g., COVID-19), with parents perceiving it to have been released too quickly and fearing it may not have been tested sufficiently or robustly. The confidence in this finding is moderate (GRADE-CERQual); it is likely that this finding is a reasonable representation of the phenomenon of interest.

- What **information and how it** is provided influenced parental considerations to vaccinate their child. A theme that parents lacked information emerged, as well as themes of too much contradictory information or information that is delivered without time to consider it. Misinformation and inconsistent or frequently changing information and messaging across sources may have reduced parental confidence in vaccines. Parents wanted access to their desired amount of trusted information; however, the appropriate amounts and preferred sources varied across individuals. Some parents encouraged older children (aged $\geq$ 8) to express autonomy and take part in their own healthcare decisions, therefore they required more age-appropriate information on vaccination. Providing accurate and consistent information, tailored towards the informational needs of different parents, may be a preferred communication strategy for increasing or reinforcing parental confidence. The confidence in this finding is moderate (GRADE-CERQual); it is likely that this finding is a reasonable representation of the phenomenon of interest. Citizen representative input emphasizes clear, concise information prior to vaccination about what to expect at a vaccination appointment, including practical strategies for managing and reporting adverse reactions, if any arise.

- In their decision-making, parents **assessed risks** associated with both the disease and childhood vaccination. For example, if the risks associated with the disease were high (e.g., the likelihood or consequences of being affected was high) and the risks associated with vaccination were low (e.g., the vaccine was considered safe), the risk calculation may have predisposed parental choice to vaccinate. The confidence in this finding is moderate (GRADE-CERQual); it is likely that this finding is a reasonable representation of

the phenomenon of interest. Citizen representative input suggests that providing information about risks of disease is important, particularly with COVID-19 where the perception may have been that children were not as impacted, but must be carefully done to avoid being perceived by parents as overly fear-based. Additionally, the citizen representative suggested that assessed risk of vaccination for some parents may also include assessing the risk the disease poses for the whole family, including assessing disease risk for caregivers such as grandparents or family members that were immunocompromised.

- Some parents felt strongly about the right and the opportunity to do their own research and make their **own choices** about the health of their children, and whether to vaccinate, without influence or input from authorities. Some parents expressed a preference for alternative methods of building a healthy immune system in their children (e.g., healthy diet and ways of living, alternative health care approaches, perceived beneficial exposure to disease). The confidence in this finding is moderate (GRADE-CERQual); it is likely that this finding is a reasonable representation of the phenomenon of interest.

- The studies included in this review provide limited evidence for the experiences of populations who live with **social and structural inequities, and cultural and ethnic minority groups**. Studies examining experiences of high and low socioeconomic (SES) populations found that largely similar decision-making processes are used, although high SES parents expressed more mistrust of physicians, and low SES parents had less familiarity with vaccines and experienced more structural barriers (e.g., cost, time to attend appointments) to accessing vaccination for their children. These structural barriers may have reduced the overall uptake in low SES families, however more evidence from diverse populations is needed. Similarly, individuals from cultural and ethnic minority groups may have different actual and perceived barriers to accessing vaccines, negatively impacting uptake. The need for culturally competent, safe, accessible care was identified as a key theme to encourage trust between individuals and health care providers and improve vaccine confidence. This included addressing structural racism, avoiding the generalization of cultural groups, ensuring care providers are aware of the lived experiences of the people they are treating, and using non-judgmental language. The confidence of this finding is low (GRADE-CERQual); it is possible that this finding is a reasonable representation of the phenomenon of interest.

Overview of Evidence and Knowledge Gaps

- Parents who had a negative vaccination experience themselves, or with their child, sometimes expressed concerns about vaccination for their children. Previous experience with a vaccine-preventable disease was identified as a factor that led to more vaccine acceptance. Citizen representative comments support this, adding that procedural pain associated with a previous vaccination may impact confidence. They reflected on the importance of health care provider acknowledgement, not dismissal, of these negative experiences and providing resources to mitigate discomfort or distress to be better prepared for vaccination.

- Some populations, including people living with low income, First Nations people, undocumented families, and/or those living in rural areas, described barriers to access (e.g., transportation, clinic policies that require certain conditions to be met, cost of vaccination, poor quality health care infrastructure) that impacted their uptake of vaccines. In two examples from the included studies, 1) First Nations people in Canada and Australia may have had more difficulty accessing primary care and vaccinations, and 2) undocumented families may have avoided vaccinations for fear of being deported if health care providers uncovered their status. Across studies, minority cultural groups perceived that racism in healthcare and a lack of safe, culturally appropriate care discouraged them from seeking vaccination. The included evidence was limited; further research is required to ensure representation of these populations for decision making.

- Social norms and judgements of others influenced both uptake and refusal, depending on the nature of the social environment. Parents were often influenced by a parental peer group.

- Parental opinions on mandatory vaccination strategies varied across studies. Penalizing parents who choose not to vaccinate by keeping children out of school, or providing financial incentives to vaccinate were identified as inappropriate strategies in multiple studies. However, parents in other studies appreciated school vaccine requirements. Universal strategies were generally preferred over targeted approaches.

- Studies related to parental acceptance of specific vaccines (e.g., influenza, infant pneumococcal, tick-borne encephalitis (TBE), and chlamydia) found that parents generally had confidence in vaccines for their children, but had concerns about the number of vaccinations their children received. Parents were more apprehensive about newer vaccines (e.g., chlamydia, TBE) as they were less certain of vaccine safety and efficacy, and were not sure of its necessity, as they believed children to be too young (in the case of the chlamydia vaccine) or not at risk (in the case of the TBE vaccine). However, for all vaccines, parents trusted information from what they considered reliable, unbiased sources, although the perception of what constituted a reliable source differed across individuals.

- With the newly included studies, much more evidence about parents' considerations surrounding the COVID-19 vaccine emerged. Parents who accepted vaccinations tended to share a belief that the vaccine would protect their child and/or their community members (i.e., a social responsibility) and desired a 'return to normalcy' (e.g., attending school, eliminating social distancing, etc.). They perceived COVID-19 to be a serious, highly contagious health risk, especially for children. They were encouraged by vaccine mandates and felt social pressure to vaccinate. Parents who refused vaccinations tended to fear potential side effects from the vaccine (e.g., reduced fertility, negatively impacted development, exacerbated pre-existing health conditions) and believed the vaccine was unsafe or ineffective, citing the "newness" of the vaccine, inadequate testing, and lack of information about its development. They also perceived the risk of contracting COVID-19

to be low in their area or their children's age group, or that it wasn't a serious illness, with no risk of long-term complications from infection. Their desire to vaccinate their children was also reduced due to perceptions of stigmatization, religious objection, and/or political lobbying around vaccination. One study concluded that the COVID-19 pandemic reinforced pre-existing concerns for vaccination, in general, among vaccine-hesitant parents, while among vaccine-accepting parents, the pandemic raised awareness of the benefits of routine vaccinations. Citizen representative input further emphasized lack of trust and confusion (e.g., severity and mechanism of spread among children, whether being infected provided greater immunity than vaccines) as contributing factors to vaccine hesitancy.

- One new study added in this update examined Canadian parents' views on the COVID-19 vaccine. These parents were concerned about the novelty, social pressures, and perceived political agendas behind vaccination efforts and felt there was stigma against the unvaccinated. Some struggled with the tension between doing what they perceived to be best for society (i.e., having their children vaccinated) vs. making the best choice for their individual child. Two previously included studies focused on general childhood vaccinations among First Nations and an ethnic minority community in Canada. They reported similar results, identifying questionable efficacy, potential side effects, and social pressures as barriers to vaccinating, as well as previous negative experiences with vaccination and health professionals. Citizen representative input acknowledged an additional barrier to vaccine access in Canada, noting that in some areas, vaccine clinics for children are only open during school hours, making parents choose between vaccinating their child and having them attend school.

- Gaps in research evidence were noted by the citizen representative. The experiences and decision-making processes among parents of a child with a chronic illness or disability (e.g., where there may be additional concerns about unique sensory needs or risk of exacerbating pre-existing conditions) are not well represented in the research. Not enough is known about the effect of access factors, such as a trusted provider, appointment reminders and timing (e.g., not during school / working hours), and public health or school-based clinics focusing on vaccination. What appears to be lack of trust in health care providers may be related to lack of consistent access to providers, and the lack of opportunity to build a trusting relationship. Citizen representative input suggested that parental uptake could be supported by providing accessible information and flexible options about where, by whom and when to vaccinate their children.

- Information about vaccination needed to be perceived as unbiased and trustworthy by the parent. Health care professionals are an important source of information, but not all parents considered health care providers to be trusted sources about vaccination. Parents wanted an opportunity to give informed consent or to not consent, based on their own assessments of the risks.

- Steps to ensure that vaccines are accessible to those who wish to receive them can involve providing transportation and convenient options, removing financial barriers, and providing as much tailored, accurate information about risks and benefits, as is requested.

Methods

A description of the development of the National Collaborating Centre for Methods and Tools' Rapid Evidence Service, including an overview of the rapid review process and rationale for methodological decisions, has been published (Neil-Sztramko et al., 2021).

Research Question

What is known about parents' considerations for vaccine uptake for children and adolescents?

Search

On November 13, 2023, the following databases were searched using key terms [vaccin*, immuniz*, confiden*, hesitan*, barrier*, uptake, coverage, safety, fear, anxiety*, attitude*, awareness, misconception, choice*, consen*, parent*, child*, qualitative, interview*, focus group, mixed methods]:

- MEDLINE database
- EMBASE database
- Sociological Abstracts
- CINAHL
- Trip Medical Database

This search builds upon the previous search (May 31, 2021) conducted in the first version of this rapid review. A copy of the full search strategy is available in Appendix 2.

Study Selection Criteria

The search results were first screened for recent guidelines and syntheses. When available, findings from syntheses and clinical practice guidelines are presented first, as these take into account the available body of evidence and, therefore, can be applied broadly to populations and settings.

English- and French-language, peer-reviewed sources and sources published ahead-of-print before peer review were included. Surveillance sources were excluded.

Additional exclusion criteria have been applied to this update to refine its focus, given a substantial increase in the body of evidence. In this update, study design was limited to qualitative or mixed-methods studies where it was possible to extract data collected and analysed using qualitative methods; non-systematic reviews and in-progress studies were excluded. Studies involving populations from low- and middle-income countries (LMICs) were excluded. Finally, studies related to COVID-19 were limited to > December 2020, to account for when the COVID-19 vaccine generally became available.

A full list of studies that were previously included but are now excluded is available in Appendix 2.

	Inclusion Criteria	Exclusion Criteria
Population	Parents of infants, children and adolescents Primary guardians and caretakers of infants, children and adolescents	Studies that report on considerations for parental vaccine uptake from the perspective of others (e.g., health care providers, administrators, etc.) Studies of vaccination uptake for self, among pregnant women Low- and middle-income countries
Interest	Vaccination for children and adolescents Studies that explore considerations for vaccine uptake from the perspective of parents; could include qualitative or mixed methods studies	Human papillomavirus (HPV) vaccines Studies that report on non-modifiable 'risk factors' for low uptake of vaccine, such as sociodemographic variables collected through administrative data or cross-sectional surveys COVID-19 studies conducted prior to December 2020 (i.e., before a vaccine became available)

Data Extraction and Synthesis

Data relevant to the research question, such as study design, setting, location, population characteristics and key findings were extracted, when reported. We synthesized results narratively due to the variation in methodology and research questions for the included studies.

Citizen Engagement in the Review Process

One citizen representative, recruited through the NCCMT internal pool of citizen partners, agreed to participate in the initial version of the review and this update. They provided feedback on the initial draft and approved the final report. Their feedback was incorporated into the Executive Summary.

Appraisal of Evidence Quality

We evaluated the quality of included evidence using critical appraisal tools as indicated by the study design below. Quality assessment was completed by one reviewer and verified by a second reviewer. Conflicts were resolved through discussion.

Study Design	Critical Appraisal Tool
Synthesis	Assessing the Methodological Quality of Systematic Reviews (AMSTAR) AMSTAR Tool
Qualitative	Critical Appraisal Skills Programme (CASP) Checklist for Qualitative Research; Joanna Briggs Institute (JBI) Checklist for Qualitative Research
Mixed Method	Mixed Methods Appraisal Tool (MMAT)

Completed quality assessments for each included study are available on request.

The Grading of Recommendations, Assessment, Development and Evaluations - Confidence in Evidence from Reviews of Qualitative Research (GRADE CERQual) (Lewin et al., 2018) approach was used to assess the confidence in the findings in the qualitative research based on four key domains:

- Methodological limitations
- Relevance
- Coherence
- Adequacy

The overall confidence in the evidence (expressed as either high, moderate, low, or very low) for each prominent theme was determined considering the characteristics of the available evidence. A judgement of 'overall confidence is moderate' means that it is likely that the finding is a reasonable representation of the phenomenon of interest; higher confidence reflects a view that the finding should be seen as a reasonable representation of the phenomenon of interest.

Findings

Summary of Evidence Confidence

In this update, 29 new single studies were identified. Six previously included studies were excluded based on revised eligibility criteria and one pre-print has since been published, for a total of 62 publications included in this review.

What is known about parents' considerations for vaccine uptake for children and adolescents?

Key Finding (Consideration for parents)	Evidence included		GRADE-CERQual assessment of confidence in the evidence	Explanation of GRADE-CERQual assessment
	Study design	n*		
Trust, or lack of trust, in health care providers or government	Syntheses Single	7 15	Moderate	Minor concerns regarding methodological limitations, relevance
Perceived safety of vaccines	Syntheses Single	6 16	Moderate	Minor concerns regarding methodological limitations, relevance
Satisfaction with amount and sources of information about vaccination	Syntheses Single	5 25	Moderate	Minor concerns regarding methodological limitations, relevance
Risk assessment of disease versus vaccination	Syntheses Single	4 22	Moderate	Minor concerns regarding methodological limitations, relevance
Parental choice and preference for alternative health approaches	Syntheses Single	6 20	Moderate	Minor concerns regarding methodological limitations, relevance
Perceived and actual cultural, social and structural inequities	Syntheses Single	1 9	Low	Minor concerns regarding methodological limitations; moderate concerns regarding relevance, adequacy

*Values exceed the total number of studies (n=62) as some studies contributed to multiple key findings.

Table 1: Syntheses

Reference	Date Released	Description of Included Studies	Summary of Findings	Quality Rating: Synthesis	Quality Rating: Included Studies
General Childhood Vaccination (n=8)					
Previously reported evidence					
Smith, L.E., Hodson, A., & Rubin, G.J. (2021). Parental attitudes towards mandatory vaccination; a systematic review. *Vaccine, 39*(30), 4046-4053. **Included in first version as pre-print; now published*	Jul 5, 2021 (Search completed Sep 17, 2020)	This review included 17 studies exploring parental beliefs and attitudes about mandatory vaccination, including 5 qualitative studies.	Themes identified in the qualitative studies: 1. Mandatory vaccination schemes perceived as an infringement of parental rights 2. Universal schemes seen as more equitable compared to targeted approaches 3. Financial incentives and requiring vaccination for child-care/schooling were seen as inappropriate 4. Motivation for vaccination • Protection from illness • State incentives 5. Disproportionate impact • Low-income families are more reliant on financial incentives to vaccinate 6. Objection to penalizing parents by withholding school or financial benefits if they chose not to vaccinate due to safety concerns 7. Risk of unvaccinated children passing on illness	Low	4 High 1 Low
Majid, U. & Ahmad, M. (2020). The factors that promote vaccine hesitancy, rejection, or delay in parents. *Qualitative Health Research, 30*(11), 1762-1776.	Jun 29, 2020 (Search completed Jun 23, 2019)	This interpretive review included 32 studies exploring the factors influencing parental vaccine hesitancy, rejection and delay • 32 Qualitative	Seven factors were identified: 1. Parents with previous negative experiences believed vaccines were unsafe and dangerous, and feared side effects of the vaccine 2. Vaccine hesitant parents valued natural treatments and lifestyles. 3. Parents preferred to interact with others who shared their same views on vaccines 4. Parents felt their concerns on the risk of vaccines were overlooked 5. Vaccine hesitant parents believed information from physicians was biased and relied on information from alternative health providers, whereas parents who vaccinated their children were more open to information from physicians. Both vaccine	Low	Not done

			accepting and vaccine hesitant parents felt there was too much information on vaccination and were not sure which sources they could trust 6. Vaccine hesitant parents expressed a distrust in the health system 7. Mandatory vaccine policies were not seen as necessary by vaccine-accepting parents. Parents expressed anger and frustration when fear was used as a strategy to increase vaccination rates		
Diaz Crescitelli, M.E., Ghirotto, L., Sisson, H., Sarli, L., Artioli, G., Bassi, M.C., … Hayter, M. (2020). A meta-synthesis study of the key elements involved in childhood vaccine hesitancy. *Public Health, 180*, 38-45.	Dec 12, 2019 (Search date not specified)	This review included 27 studies of parents who were hesitant about vaccinating their child • 22 Qualitative • 5 Mixed methods	Five main themes emerged: 1. Risk conceptualization • Risk of the vaccine causing harm • Low perceived risk from the disease 2. Mistrust • Government • Health care professionals • Vaccine information 3. Alternative health beliefs • Vaccine is an unnatural approach to immunity • Too many vaccines at once 4. Philosophical view on parental responsibility 5. Parent's information • Lack of objective information on vaccines and side effects • Unbalanced, biased information	Moderate	12 High 5 Moderate to High 9 Moderate 1 Low to Moderate
Gidengil, C., Chen, C., Parker, A.M., Nowak, S., & Matthews, L. (2019). Beliefs around childhood vaccines in the United States: A systematic review. *Vaccine, 37*(45), 6793-6802.	Sep 24, 2019 (Search completed Nov 2017)	This review included 71 studies exploring beliefs about childhood vaccines. Participants were largely parents who were both vaccine accepting and vaccine hesitant. • 71 Qualitative	Seven themes emerged: 1. Participants believed that vaccines could cause illnesses 2. Participants expressed mistrust in physicians, pharmaceutical companies and/or the government 3. Vaccines were perceived as unnecessary and natural immunity was preferable 4. Vaccines were believed to protect children 5. Participants were skeptical about the effectiveness of vaccines and the validity of herd immunity 6. Decisions around vaccination is the right of the parent 7. Participants expressed morality concerns around vaccines derived from aborted fetal tissue	Low	Not done

Dubé, E., Gagnon, D., MacDonald, N., Bocquier, A., Peretti-Watel, P., & Verger, P. (2018). Underlying factors impacting vaccine hesitancy in high income countries: a review of qualitative studies. *Expert Review of Vaccines, 17*(11), 989-1004.	Nov 7, 2018 (Search completed Dec 22, 2017)	This review of 22 studies explored the influences on parental vaccine decisions • 22 Qualitative	This review used the socio-ecological model to identify the following themes: Individual level • Vaccine safety • Anticipated regret and feelings of responsibility • Knowledge and sources of information on vaccination • Risks associated with or without vaccination • Personal experiences with vaccine preventable diseases Interpersonal level • Social norms and judgement Community level • Trust in mainstream, complementary and alternative medicine and the pharmaceutical industry	Low	20 High 2 Low
Forster, A.S., Rockliffe, L., Chorley, A.J., Marlow, L.A., Bedford, H., Smith, S.G., & Waller, J. (2016). A qualitative systematic review of factors influencing parents' vaccination decision-making in the United Kingdom. *SSM – Population Health, 2*, 603-612.	Dec 2, 2016 (Search completed Dec 2, 2014)	This review of 34 studies explored the factors influencing parental decisions to vaccinate a child • 34 Qualitative	Two types of decision-making were found to be used by parents. These two approaches were not mutually exclusive. Parents were found to adopt both approaches at different times. 1. Non-deliberative decision making where parents were happy to comply, did not think they had a choice and/or relied on social norms to make decisions 2. Deliberative decisions where parents weighed the risks and benefits, used the experiences of others to inform their decisions, considered judgment from others and their emotions (fear of side effects, worry and guilt) to guide their decisions to vaccinate Trust in vaccine information and stakeholders informed both non-deliberate and deliberate decisions. For parents who decided to vaccinate, practical issues such as time and travel to appointments was a barrier.	Low	4 High 30 Low
White, T., Sevdalis, N., Willaby, H., King, C., & Leask, J. (2014). Systematic Review into Factors Underlying	Oct 3, 2014 (Search completed Oct 2013)	This review of 72 studies explored factors influencing parental decisions to vaccinate a child	Parents and caregivers made decisions based on many related factors. Most factors cited were emotional or cognitive rather than practical barriers, such as access to vaccines.	Moderate	45 High 20 Moderate 8 Low

Parental Decisions about Childhood Vaccinations. Copy obtained from author.		• 62 Qualitative • 10 Mixed methods	The most frequently cited motivators for vaccination included trust in healthcare provider and vaccine safety, likelihood and prevalence of vaccine-preventable diseases and social norms for vaccination. The most frequently cited barriers to vaccination included beliefs in adverse effects or doubts around safety, unmet needs for information from health professionals, and belief in natural immunity or lack of direct threat from vaccine-preventable diseases.		

Mills, E., Jadad, A.R., Ross, C., & Wilson, K. (2005). Systematic review of qualitative studies exploring parental beliefs and attitudes toward childhood vaccination identifies common barriers to vaccination. *Journal of Clinical Epidemiology, 58*(11), 1081-8.	Nov 1, 2005 (Search completed May 2003)	This review of 15 studies explored parental barriers to childhood vaccination.
		• 15 Qualitative
			Most of the participants were mothers. Four main themes emerged
			1. Issues of harm
			  • Adverse effects
			  • Pain with vaccination
			2. Distrust
			  • Medical community
			  • The necessity of vaccines
			3. Access
			  • Parents believed children should not be vaccinated when they had a minor illness
			  • Parents were unaware of the vaccine schedule
			4. Other
			  • Parents believed they could control the pathogens their child may be exposed to
			  • Moral or religious reasons
				Moderate	2 High
					12 Moderate
					1 Low

Table 2: Single Studies

Reference	Date Released	Study Design	Participants	Setting	Summary of Findings	Quality Rating
COVID-19 Vaccines (n=16)						
New evidence reported on February 14, 2024						
Honcoop, A., Roberts, J.R., Davis, B., Pope, C., Dawley, E., McCulloh, R.J., … Darden, P.M. (2023). COVID-19 vaccine hesitancy among parents: a qualitative study. *Pediatrics*, *152*(5), e2023062466.	Oct 23, 2023	Qualitative	n=36 Black, Spanish-speaking, non-Hispanic White, and other rural parents / caregivers of children aged 2-17	United States	This study used focus groups and key informant interviews to examine the factors impacting pediatric COVID-19 vaccine decision-making. All parents commonly listed healthcare providers as trusted sources of information regarding the COVID-19 vaccine. Vaccine-related misinformation was commonly relayed by Non-Hispanic White parents, followed by Black rural and urban parents, which included claims that vaccines: • Affected fertility/child development • Lacked any/many benefits • Interfered with personal rights • Had religious repercussions The main concerns cited included: • Impact of the vaccine on preexisting medical conditions • Potential side effects • Desire for reliable vaccine-related information.	High
Carlson, S.J., Attwell, K., Roberts, L., Hughes, C., & Blyth, C.C. (2023). West Australian parents' views on vaccinating their children against COVID-19: a qualitative study. *BMC Public Health, 23*(1), 1764.	Sep 11, 2023	Qualitative	n=30 parents of children aged 5–17	Australia	This study used interviews to understand parents' willingness to vaccinate their children. Factors contributing to vaccine acceptance included: • Protecting the child and the community • Resuming travel • Returning to pre-pandemic way of life	Moderate

					Factors contributing to concern and delays in vaccine uptake included: • New/unfamiliar vaccine technology • Potential side effects (e.g., impacts on fertility) • Waiting to see what other parents would decide to do, or until they felt that there was a higher risk of COVID-19 in the region • Need for clear, consistent evidence-informed messaging addressing safety and importance of the vaccine.	
Whang, C., Lynch, K.A., Huang, T., & Tsui, E.K. (2023). Critical dynamics in Black and Latino parents' perceptions of childhood COVID-19 vaccination: How the "middle" moves. *Journal of Health Communication*, *28*(sup1), 86–96.	Jun 30, 2023	Qualitative	n=24 Black and Latino parents of children aged 5-11	United States	This study used interviews to understand parental vaccine hesitancy. Factors contributing to vaccine hesitancy included: • Mistrust in the healthcare system • Fear of deportation among undocumented migrants (worried that visiting vaccination sites could disclose their migration status, and possibly result in legal action) • Previous negative healthcare experiences Parents mainly relied on the social norms and decisions of other parents to aid their decision-making. They recommended transparent and supportive conversations, and further suggested the potential benefit of community ambassador models of vaccination promotion (i.e., leveraging lay community members and their local social ties and networks) to promote vaccine education and build trust.	Moderate

Nickerson, A., Gutierrez-Mock, L., Buback, L., Welty, S., Anicete, L.M., Sanchez, S., … Reid, M. (2023). Factors influencing parent and guardian decisions on vaccinating their children against SARS-CoV-2: A qualitative study. *Inquiry: A Journal of Medical Care Organization, Provision and Financing*, *60*, 469580231159742.	Mar 20, 2023	Qualitative	n=40 parents / guardians of children aged 13-17	United States	This study used interviews to explore factors that influenced parents'/guardians' intentions to vaccinate their children against COVID-19. The results found 3 themes: • Parental desire for their children to return to school safely motivated them • Unclear messaging/information about COVID-19 and low perceived effectiveness of vaccine contributed to vaccine hesitancy • Autonomy of adolescents and consideration of child's opinions on receiving the vaccine were deemed important by parents	Moderate
Wigle, J., Hodwitz, K., Juando-Prats, C., Allan, K., Li, X., Howard, L., … Parsons, J.A. (2023). Parents' perspectives on SARS-CoV-2 vaccinations for children: a qualitative analysis. *Canadian Medical Association Journal*, *195*(7), E259–E266.	Feb 21, 2023	Qualitative	n=20 parents of children aged 5-11	Canada	This study used interviews to explore parental reasons behind COVID-19 vaccine decisions. Themes for vaccine-related concerns included: • Novelty of the vaccine • Perceived political agendas behind vaccine recommendations • Social pressure to be vaccinated and stigma associated with being unvaccinated • Tension between individual vs. collective benefits of vaccine (i.e., some expressed wanting to do what's best for society, but felt responsible to make right decisions for their child)	High

Rajeh, M.T., Farsi, D.J., Farsi, N.J., Mosli, H.H., & Mosli, M.H. (2023). Are parents' willing to vaccinate their children against COVID-19? A qualitative study based on the Health Belief Model. *Human Vaccines & Immunotherapeutics*, *19*(1), 2177068.	Feb 8, 2023	Qualitative	n=50 parents	Saudi Arabia	This study used interviews to understand parental perspectives on COVID-19 vaccines for children using the Health Belief Model (HBM). Motivators to vaccinate children included: • High perceived benefits of the vaccine • High perceived susceptibility to COVID-19 among children • A sense of collective community responsibility • High confidence in the vaccine Factors contributing to hesitancy included: • Concerns about the development of the vaccine • Lack of reliable information about the safety of the vaccine	Moderate
Attwell, K., McKenzie, L., Tomkinson, S., Carlson, S.J., & Blyth, C.C. (2023). Parents' COVID-19 vaccine intentions for children under 5 years: Brief reflections from a qualitative study. *Journal of Paediatrics and Child Health, 59*(3), 453-457.	Jan 13, 2023	Qualitative	n=18 parents with at least one child aged <5	Australia	This study used interviews to explore parental COVID-19 vaccine-related intentions for their children. Parental decisions to vaccinate their children were strongly influenced by their own vaccine intentions. While most study participants indicated they would get their child vaccinated if/when they could, reasons for delay included: • Risk/safety perceptions • Fears about side effects • Influence from vaccine-hesitant individuals in their social networks	Moderate
Smith, L.E., Sherman, S.M., Sim, J., Amlôt, R., Cutts, M., Dasch, H., ... Rubin, G.J. (2022). Parents' intention to vaccinate their child for COVID-19: A mixed-methods study (CoVAccS-wave 3). *PloS one*, *17*(12), e0279285.	Dec 27, 2022	Mixed methods	n=270 parents	United Kingdom	This study used open-ended text responses to investigate parents' vaccination intention. Reasons parents intended to vaccinate their children included: • Protecting their child • Protecting others • Their child's decision to vaccinate	Low

					Reasons parents were unlikely to vaccinate their children included: • Vaccine-related safety concerns • Low perceived threat of COVID-19 • Did not find vaccination necessary for their child	
Lacy, R., Puma, J., Tubolino, M., LaRocca, D., Crane, L.A., Miller, L., … Leiferman, J.A. (2022). Rural parents' attitudes and beliefs on the COVID-19 pediatric vaccine: An explanatory study. *PloS one*, *17*(12), e0278611.	Dec 7, 2022	Mixed methods	n=41 parents	United States	This study used interviews to explore rural parents' perceptions of the COVID-19 vaccine, as well as potential barriers to vaccine uptake. Six themes emerged: • Difficulty accessing vaccines in rural communities • Possible side effects • Low perceived susceptibility to the COVID-19 virus • Vaccine-related beliefs • Child autonomy (parents with older children placed importance on consulting their child and considering their choice regarding vaccines) • Parental social networks influenced vaccine-related decision-making	High
Schiff, J., Schmidt, A.R., Pham, P.K., Pérez, J.B., Pannaraj, P.S., Chaudhari, P.P., & Liberman, D.B. (2022). Parental attitudes in the pediatric emergency department about the COVID-19 vaccine. *Vaccine*, *40*(50), 7328–7334.	Oct 26, 2022	Mixed methods	n=58 parents (26 Hispanic/Latinx Spanish-speaking, 20 Hispanic/Latinx English-speaking, 12 White English-speaking)	United States	This study used interviews to examine parental attitudes towards COVID-19 vaccination using the 4C vaccine hesitancy framework (calculation, complacency, confidence, convenience). Four themes emerged: • Few parents considered community benefits of vaccination as a motivating reason to vaccinate their children • All parent groups perceived susceptibility of COVID-19 among individuals with high-risk medical conditions and perceived vaccine effectiveness as reasons to vaccinate • Convenience in accessing vaccines was cited as a barrier to vaccination	Moderate

					• Safety, concerns about possible side effects, less knowledge about the vaccine, and belief in myths were cited as some of the reasons to not vaccinate.	
Goulding, M., Ryan, G.W., Minkah, P., Borg, A., Gonzalez, M., Medina, N., … Lemon, S. C. (2022). Parental perceptions of the COVID-19 vaccine for 5- to 11-year-old children: Focus group findings from Worcester Massachusetts. *Human Vaccines & Immunotherapeutics*, *18*(6), 2120721.	Sep 9, 2022	Qualitative	n=67 parents of children aged 5-11	United States	This study used focus groups to describe parental perception of the COVID-19 vaccine. Factors that contributed to vaccine uptake included: • Protection from the viral infection (high perceived risk) • Returning to social normalcy • Not missing school days/classes • Vaccines improving overall quality of life • Healthcare providers as a trusted source of information Factors contributing to parental vaccine hesitancy primarily included: • Potential side effects • Lack of evidence-based information to aid vaccine-related decision-making	Moderate
Wang, C.S., Doma, R., Westbrook, A.L., Johnson, J., Anderson, E.J., Greenbaum, L.A., … Bednarczyk, R.A. (2023). Vaccine attitudes and COVID-19 vaccine intention among parents of children with kidney disease or primary hypertension. *American Journal of Kidney Diseases*, *81*(1), 25–35.e1.	Jun 21, 2022	Mixed methods	n=207 parents of children aged <18 with kidney disease or primary hypertension	United States	This study used interviews to examine COVID-19 vaccine hesitancy among parents of children with chronic kidney disease or hypertension. Three themes emerged: • Parents considered the potential benefit versus harms of the vaccine (protection from the virus, protecting the community, and returning to pre-pandemic living, versus concerns about side effects) • Individuals willing to vaccinate trusted physician opinion, whereas individuals unsure or unwilling to vaccinate did not fully trust physician's opinions • Need for further vaccine-related information	Moderate

Schuster, L., Gurrieri, L., & Dootson, P. (2023). Emotions of burden, intensive mothering and COVID-19 vaccine hesitancy. *Critical Public Health, 33*(2), 218-229.	Apr 11, 2022	Qualitative	n=30 mothers	Australia	This study used interviews to explore the emotions experienced by vaccine hesitant mothers. Two important emotions experienced by mothers during vaccine-related decision-making were identified: • 'Fear of being a bad mother': mothers were concerned about both accepting or rejecting the COVID-19 vaccine, due to potential side effects of vaccines or perceived threat of illness, respectively. Mothers were worried they would be responsible for anything that happens to their child due to their decision. • Anticipated guilt: mothers described anticipated guilt from failing to meet societal expectations of being a good mother, regardless of their vaccine-related decisions for their child. In contrast to previous studies, anticipated guilt was also brought up in the context of failing to care for the community if they chose to not vaccinate their child.	High
Hopfer, S., Fields, E.J., Ramirez, M., Long, S.N., Huszti, H.C., Gombosev, A. ... Cooper, D.M. (2022). Adolescent COVID-19 vaccine decision-making among parents in Southern California. *International Journal of Environmental Research and Public Health*, *19*(7), 4212.	Apr 1, 2022	Mixed methods	n=46 parent-adolescent dyads	United States	The study used focus groups to evaluate parent-adolescent COVID-19 vaccine decisions. Main factors contributing to vaccine acceptance among parents included: • High confidence in health authority recommendations/advice • High perceived risk of COVID-19 • Responsibility towards children • Returning to social normalcy • Vaccine mandates Main factors contributing to vaccine uncertainty among parents included: • Low vaccine confidence • Low perceived risk of COVID-19 severity	Moderate

Schilling, S., Orr, C.J., Delamater, A.M., Flower, K.B., Heerman, W.J., Perrin, E.M., … Sanders, L. (2022). COVID-19 vaccine hesitancy among low-income, racially and ethnically diverse US parents. *Patient Education and Counseling*, *105*(8), 2771–2777.	Mar 30, 2022	Mixed methods	n=50 parents (25 English-speaking, 25 Spanish-speaking) of 106 children	United States	This study used interviews to examine the factors impacting parental intention to vaccinate children against COVID-19. Main influencing factors among vaccine-accepting parents included: • High perceived susceptibility to COVID-19 • High perceived severity of disease among children • Perceived benefits of vaccination (high vaccine efficacy; confidence in vaccine development process; ability to protect loved ones, and return to pre-pandemic way of living) Main influencing factors among vaccine-hesitant parents were: • Low perceived susceptibility to COVID-19 • Low perceived severity of disease among children • Perceived risk of vaccination (low confidence in vaccine efficacy, high safety risks, such as unknown side effects) • Information found on social media regarding vaccines • Constantly changing information about vaccines	High
Evans, S., Klas, A., Mikocka-Walus, A., German, B., Rogers, G.D., Ling, M. … Westrupp, E.M. (2021). "Poison" or "protection"? A mixed methods exploration of Australian parents' COVID-19 vaccination intentions. *Journal of Psychosomatic Research*, *150*, 110626.	Sep 23, 2021	Mixed methods	n=1094 parents of children aged <18	Australia	This study used open-ended survey questions to explore the reasons behind Australian parents' vaccine intentions for their children during COVID-19. Main themes identifying concerns about the vaccine for children pertained to: • Greater risk (potential long-term side effects of vaccine, particularly in babies and toddlers) • Protecting their child from adverse reactions • Lack of clear guidance	High

					Results also highlight that in the absence of expert advice from trusted medical groups, parents would turn to trusted individuals in their social networks.	
Influenza Vaccines (n=3)						
New evidence reported on February 14, 2024						
Price, T., McColl, E., & Visram, S. (2022). Barriers and facilitators of childhood flu vaccination: the views of parents in North East England. *Journal of Public Health*, *30*(11), 2619–2626.	Feb 18, 2022	Qualitative	n=12 parents (6 of vaccinated children, 6 of non-vaccinated children) of preschool children	United Kingdom	This study used interviews to investigate parental perceptions of the barriers and facilitators to flu vaccination. Parents with non-vaccinated children were not worried about side effects; however, barriers included: • Low perceived susceptibility to the flu • Lack of convenient vaccination opportunities (such as short appointment schedule windows) • Lack of awareness regarding the necessity of the vaccine • Fear of side-effects • Flu vaccination being a low priority for busy parents	Moderate
Previously reported evidence						
Paterson, P., Chantler, T., & Larson, H.J. (2018). Reasons for non-vaccination: Parental vaccine hesitancy and the childhood influenza vaccination school pilot programme in England. *Vaccine, 36*(36), 5397-5401.	Aug 28, 2018	Qualitative	n=25 parents who chose not to vaccinate their child	England	This study explored, through interviews, reasons why parents chose not to vaccinate their child against influenza. Reasons included: • No perceived need for vaccine due to child being low risk and healthy • Concerns about vaccine effectiveness and safety (side effects) • Concerns about vaccine ingredients, specifically porcine gelatin (due to religious reasons) Reported factors among parents which would address vaccine hesitancy: • Presence of an epidemic among children • If friends or family were high-risk • More evidence on vaccine effectiveness among children	High

Herbert, N.L., Gargano, L.M., Painter, J.E., Sales, J.M., Morfaw, C., Murray, D., ... Hughes, J.M. (2013). Understanding reasons for participating in a school-based influenza vaccination program and decision-making dynamics among adolescents and parents. *Health Education Research, 28*(4), 663-72.	May 30, 2013	Qualitative	n=31 parents	Rural Georgia, United States	This study used focus groups to explore attitudes and decision-making processes among parents who participated in or chose not to participate in a school-based influenza clinic for their child. Among parents who decided not to participate, reasons included: • Skepticism about the experimental nature of the school-based program • Desire to take children to pharmacy or primary care physician instead • Concerns about vaccine safety and side effects • Personal negative experiences with receiving the vaccine Barriers to influenza vaccination described: • Inconvenient locations; transportation • Parental time off work to take child to receive vaccine Factors that encouraged school-based vaccination: • Relationship/trust-building with parents in the community • Use of different communication channels for awareness raising/education Use of informational brochures influenced decision-making among participating and non-participating parents differently. • For participating parents, brochures allayed concerns • For non-participating parents, brochures provided information overload	Moderate

Infant Pneumococcal Vaccine (n=1)						
Previously reported evidence						
Chantler, T., Newton, S., Lees, A., Diggle, L., Mayon-White, R., Pollard, A.J., & Fitzpatrick, R. (2006). Parental views on the introduction of an infant pneumococcal vaccine. *Community Practitioner, 79*(7), 213-6.	Jul 2006	Qualitative	n=38 parents of children aged <2	United Kingdom	From Oct – Nov 2002, 23 interviewees and 2 focus groups were asked about their attitudes towards infant immunization, how they felt about the introduction of the new pneumococcal vaccine and what support they would need to have confidence in the vaccine. The following themes emerged: • Overall confidence and belief in immunizations • Anxiety about immunization; the number of vaccines children receive or making the wrong decision • Trust and understanding of information from reliable sources • Response to a new immunization; perceived risk and perceived benefit	Moderate
Chlamydia Vaccine (n=1)						
New evidence reported on February 14, 2024						
Footman, A., Kanney, N., Niccolai, L.M., Zimet, G.D., Overton, E.T., Davies, S.L., & Van Der Pol, B. (2022). Chlamydia vaccination: Parent opinions and implications for future promotion programs. *Sexually Transmitted Diseases*, *49*(11), 745–749.	Nov 2022	Qualitative	n=21 parents	United States	This study used interviews to explore parental opinions about an adolescent chlamydia vaccine to understand the barriers and facilitators to uptake. Certain factors/concerns were noted by parents as being important in their vaccine-related decisions: • Need to vaccinate at a young age (before puberty or before children were sexually active) • Vaccine efficacy and potential side effects • Their healthcare providers recommendation Results suggested that health education addressing specific vaccine-related concerns is important in influencing parental decision-making about chlamydia vaccines.	High

Tick-Borne Encephalitis Vaccine (n=1)						
New evidence reported on February 14, 2024						
Krasselt, J., Robin, D., Fadda, M., Geutjes, A., Bubenhofer, N., Suzanne Suggs, L., & Dratva, J. (2022). Tick-Talk: Parental online discourse about TBE vaccination. *Vaccine*, *40*(52), 7538–7546.	Dec 12, 2022	Qualitative	NR (105,000 online posts written by parents between 2007-19)	Switzerland	This study used extant discussion posts to understand parental discourse on child vaccination in an online Swiss community. Parents engaged in a multidimensional decision-making process which was characterized by calculating potential risks and benefits of TBE vaccine, referring to various sources of information (including webpages, social media, books, and scientific evidence), information received from healthcare professionals/official vaccine recommendations, and experiences reported by friends and family. Decision making was further influenced by vaccine safety, necessity, effectiveness, development and control; disease epidemiology (e.g., infection rates in risk areas); and alternatives to vaccines or additional prevention methods.	Moderate
General Childhood Vaccinations (n=32)						
New evidence reported on February 14, 2024						
Hsu, C., Evers, S., Ibrahim, A., Patricia, M., Throne, P., Melton, M., … Hofstetter, A.M. (2023). Sometimes your heart says 'I don't know': Insights from parents of undervaccinated children. *Academic Pediatrics*, *23*(1), 57–67.	Oct 10, 2023	Qualitative	n=41 parents of children aged 24-48 months	United States	This study used focus groups to explore drivers of suboptimal vaccination rates in parents who delayed or declined vaccines for their infants. Factors contributing to hesitancy included: • Concerns regarding control over decisions made for their children • Personal circumstances (e.g., busy schedules, personal stress, change in insurance coverage)	Moderate

					Factors encouraging vaccine uptake included: • School requiring child to be fully vaccinated • Negative experiences with or awareness of vaccine-preventable diseases • Family tradition of vaccinating children Participants highlighted the need to improve vaccine communication (e.g., parent-friendly materials, creating forums to discuss concerns, and offering vaccine information well before vaccine appointment).	
Appelqvist, E., Danielsson, M., Jama, A., Ask, L.S., Stenhammar, C., Lindstrand, A., … Roth, A. (2023). Parental views and the key role of nurses for high vaccine acceptance in Sweden - a focus group study. *BMC Public Health, 23*(1), 1786.	Sep 14, 2023	Qualitative	n=47 parents of children aged 1–2 and 8–12	Sweden	This study used focus groups to assess parental vaccine acceptance. Parents of children aged 1–2 trusted the national immunization program as guidance for vaccinating their children. Parents with positive relationships with healthcare professionals (e.g., nurses) felt safer making vaccine decisions. Parents also expressed the need for variety in vaccine-related content, in both amount and timing of information. Parents of children aged 8–12 who chose to vaccinate did so as they saw it as beneficial for their children and society. Trust in vaccinations and the system was also highlighted. Results also suggested that vaccine decision-making becomes complex in older age groups as parents feel the need to consult children to encourage autonomy. Lastly, the need for transparent information was also highlighted.	Low

Bolsewicz, K.T., Steffens, M.S., King, C., Abdi, I., Bullivant, B., & Beard, F. (2023). A qualitative study on COVID-19 pandemic impacts on parental attitudes and intentions for routine adolescent vaccinations: The role of trust. *Vaccine, 41*(28), 4138-4143.	May 22, 2023	Qualitative	n=21 parents (15 vaccine-accepting, 4 vaccine-hesitant, 2 vaccine-refusal)	Australia	This study used interviews to assess how parental experiences during the COVID-19 pandemic affected their attitudes and intentions for adolescent vaccinations. Major themes identified included: • Among vaccine hesitant parents, the pandemic reinforced pre-existing vaccine hesitancy, either due to: a) personal/friends' negative experiences with the COVID-19 vaccine, b) the perceived lack of clarity in government messaging, or c) the stigma of being unvaccinated and associated repercussions, which further exacerbated negative feelings towards vaccinations. • Among vaccine-accepting parents, the pandemic raised awareness of both the benefits of COVID-19 and routine vaccinations (especially influenza vaccines), with communication campaigns and a trusted doctor's recommendations contributing to this.	Moderate
Glassman, L.W., & Szymczak, J.E. (2022). The influence of social class and institutional relationships on the experiences of vaccine-hesitant mothers: a qualitative study. *BMC Public Health*, *22*(1), 2309.	Dec 9, 2022	Qualitative	n=37 mothers (22 middle-class, 15 working-class)	United States	This study used interviews to understand how social class influences the experiences and perspectives of vaccine-hesitant middle- and working-class mothers. (Class categorization was dependent on post-secondary education status (college degree vs. no degree) and professional roles (white-collar or full-time parent vs. blue-collar roles)). Middle-class mothers felt irritated and pushed by their pediatric clinicians into getting their child vaccinated; working-class mothers felt clinicians used authoritative tones, which put them at a vulnerable position with regards to their vaccine-related decisions.	High

					Working-class mothers expressed concerns that school administrators and emergency room staff could act as reporters of child's vaccination status for state intervention, including Child Protective Services; middle-class mothers did not share these concerns.	
Hijazi, R., Gesser-Edelsburg, A., Feder-Bubis, P., & Mesch, G.S. (2022). Hesitant and anti-vaccination groups: A qualitative study on their perceptions and attitudes regarding vaccinations and their reluctance to participate in academic research- an example during a measles outbreak among a group of Jewish parents in Israel. *Frontiers in Public Health*, *10*, 1012822.	Nov 9, 2022	Qualitative	n=18 parents	Israel	This study used interviews to identify the perceptions of hesitant and anti-vaccination parents. While parents understood the efficacy of vaccines, the seven themes were identified regarding parental perceptions of vaccines: • Vaccine to be given when 'needed' (e.g., during an outbreak, when risk of disease is high) • Lack of transparency in vaccine-related information communication by health authorities • Potential violation of autonomy (feeling coerced into vaccinating) • Generic vaccine schedule (parents felt vaccine schedules should be personalized to the child's health and needs) • Negative attitudes of the society towards vaccine hesitant parents • Low perceived vaccine effectiveness and potential side effects • Awareness that social media was an unreliable source of vaccine information (but some parents noted having difficulty identifying misinformation)	Moderate

Smith, S.E., Sivertsen, N., Lines, L., & De Bellis, A. (2022). Weighing up the risks - Vaccine decision-making in pregnancy and parenting. *Women & Birth: Journal of the Australian College of Midwives*, *35*(6), 547–552.	Nov 2022	Mixed methods	n=106 parents and pregnant women	Australia	This study used a survey with open-ended questions to explore the values, beliefs, and choices made by vaccine-hesitant parents and pregnant women. Results suggest that vaccine-related decision-making and unfavorable views were influenced by: • Vaccine safety concerns • Insufficient information about the development of the vaccine • Personal immunization beliefs (e.g., ability to choose what is right for their family) • Alternative practices to support their child's health and immunity, such as a healthy diet and lifestyle • Pregnancy status, where majority of pregnant individuals stated they would not accept vaccines during pregnancy Healthcare professionals (physicians, nurses, midwives) were found to be respected and vital sources for vaccine-related queries.	Moderate
Bankiewicz, P., Dworakowska, A.M., Makarewicz-Wujec, M., & Kozłowska-Wojciechowska, M. (2022). Beliefs and sentiments of parents vaccinating their children - small town perspective in Poland: a preliminary study. *Central European Journal of Public Health, 30*(1), 7-12.	Mar 31, 2022	Qualitative	n=53 parents (45 mothers, 8 fathers)	Poland	This study used interviews to explore factors contributing to positive parental attitudes to vaccination. Factors contributing to positive attitudes to vaccination included: • Understanding the necessity of vaccines (vaccine safety, benefit-to-risk ratio) • Confidence in health professionals • Media broadcasts and associated advertisements on the consequences of non-vaccination of children	Low

					Factors contributing to negative attitudes towards vaccines included: • Belief that the decision to vaccinate their kids should be up to parents • Belief in alternative preventative methods • Opinions of authority figures, who were against vaccination, including physicians	
Thomas, S., Paden, V., Lloyd, C., Tudball, J., & Corben, P. (2022). Tailoring immunisation programs in Lismore, New South Wales - we want our children to be healthy and grow well, and immunisation really helps. *Rural and Remote Health*, *22*(1), 6803.	Feb 21, 2022	Qualitative	n=35 Aboriginal and non-Aboriginal parents, carers, and health service providers	Australia	This study used interviews and focus groups to understand low vaccine coverage rates among Aboriginal and non-Aboriginal parents, carers, and health service providers. The results were grouped into six themes: • Accessibility barriers to health services • Additional support required to access vaccination services (e.g., transport, appointment scheduling) • The need for culturally safe and non-judgmental healthcare services for Aboriginal parents • Need for reminders and recalls to keep their children's vaccinations up to date • Parents' and carers' personal vaccine-related views influencing their decision to vaccinate their child • Need for reliable and unbiased vaccine-related information	High

Kate, J.T., de Koster, W., & van der Waal, J. (2022). Becoming skeptical towards vaccines: How health views shape the trajectories following health-related events. *Social Science & Medicine, 293*(1982), 114668.	Jan 2022	Qualitative	n=31 parents	Netherlands	This study used interviews to understand parental skepticism towards childhood vaccinations. Factors contributing to vaccine skepticism included: • Events that directly involved the parent/child's health (e.g., adverse effects of treatments) • Health/vaccination-related conversations with skeptical individuals • Pre-existing health views (parents with nature-oriented health views were more likely to be vaccine-skeptical; parents with science-oriented views assessed the potential risks of vaccination and sought out scientific information)	High
Bolsewicz, K., Thomas, J., Corben, P., Thomas, S., Tudball, J., & Fernando, M. (2022). 'Immunisation, I haven't had a problem, but once again the transport, making an appointment, the time that you waste and all of those things are an issue'—Understanding childhood under-immunisation in Mid North Coast New South Wales, Australia. *Australian Journal of Rural Health, 30*(1), 44-54.	Sep 14, 2021	Qualitative	n=56 (25 First Nations; 13 non-First Nations mothers/grand mothers; 18 health service providers)	Australia	This study used interviews and focus groups to understand childhood under-immunization among First Nations and non-First Nations families. Parents were generally supportive of immunization; however, they identified certain factors which would improve coverage: • Effective vaccine reminders • Improving accessibility (more appointment slots/reduced wait times) • Addressing healthcare workforce shortage • Addressing racism in the community and healthcare system to build trust in health services (some providers lacked the appropriate cultural competency to care for First Nations Peoples, resulting in unsafe language and behaviors)	Low

Previously reported evidence						
Nurmi, J. & Harman, B. (2021). Why do parents refuse childhood vaccination? Reasons reported in Finland. *Scandinavian Journal of Public Health, 50*(4), 490-496.	Apr 12, 2021	Qualitative	n=38 parents who refused vaccination for their children	Finland	Among Finnish parents who were interviewed, reasons for partial or complete refusal of vaccinations for their children included: • Risks and side effects of vaccinations • Distrust of health officials, medical professionals, and the pharmaceutical industry • Belief that natural immunity or alternative therapies provide better protection against communicable diseases	Moderate
Ten Kate, J., Koster, W., & Van der Waal, J. (2021). "Following Your Gut" or "Questioning the Scientific Evidence": Understanding Vaccine Skepticism among More-Educated Dutch Parents. *Journal of Health and Social Behavior, 62*(1), 85-99.	Feb 3, 2021	Qualitative	n=31 parents who hesitate or refused to vaccinate their children	Netherlands	This study used interviews to investigate reasons for vaccine hesitancy or full refusal among parents with post-secondary education. These reasons included: • Desire to be critical thinkers and not simply follow government recommendations • Uncertainty about reliability of vaccine evidence • Belief in the benefits of natural immunity or a natural approach to health care • Lack of scientific rigor in vaccination studies	High
Wiley, K.E., Leask, J., Attwell, K., Helps, C., Degeling, C., Ward, P., & Carter, S.M. (2020). Parenting and the vaccine refusal process: A new explanation of the relationship between lifestyle and vaccination trajectories. *Social Science & Medicine, 263*, 113259.	Aug 5, 2020	Qualitative	n=21; parents of children aged >18 who refused vaccination	Australia	Parental refusal of childhood vaccines was explored through in-depth interviews with vaccine-declining caregivers. • All parents identified parental responsibility as a reason for non-vaccination • Attitudes and opinions fluctuated as a result of changing personal experience and risk assessments • Vaccine declining parents did not necessarily embrace all aspects of an alternative lifestyle; many 'mainstream' parents made alternative lifestyle choices with respect to vaccination	Moderate

Swaney, S.E. & Burns, S. (2019). Exploring reasons for vaccine-hesitancy among higher-SES parents in Perth, Western Australia. *Health Promotion Journal of Australia, 30*(2), 143-152.	Aug 9, 2018	Qualitative	n=18; high SES vaccine-hesitant parents >$125,000 (n=11) health care professionals (n=7)	Australia	Qualitative interviews were conducted with vaccine hesitant, high socio-economic parents and health care providers who provided clinical services, to identify parent perceptions and influences on vaccination. Four main themes were identified among parents: • Parents believed their higher education levels led to enhanced decision-making processes • Parents had high feelings of control over individual health and believed that individual choices would control for vaccine preventable diseases • Perceived risk of diseases was low, but perceived risk of negative effects from vaccines was high • Parents expressed a need for more information on vaccine ingredients and necessity of vaccination	High
Romijnders, K., van Seventer, S.L., Scheltema, M., van Osch, L., de Vries, H., & Mollema, L. (2019). A deliberate choice? Exploring factors related to informed decision-making about childhood vaccination among acceptors, refusers, and partial acceptors. *Vaccine, 37*(37), 5637-5644.	Aug 2, 2019	Qualitative	n=55; vaccine acceptors (n=9) refusers (n=12) partial acceptors (n=24)	Netherlands	12 semi-structured focus groups were conducted to explore differences related to decision-making of childhood vaccine acceptors, refusers and partial acceptors The following observations were identified: • Acceptors view vaccines as a given • Refusers based their decision on anecdotal, rather than evidence-based information and perceived risk from vaccines higher than diseases • Partial acceptors extensively debated the pros and cons of each individual vaccine and perceived risk from vaccines as higher than diseases	Moderate

Helps, C., Leask, J., Barclay, L., & Carter, S. (2019). Understanding non-vaccinating parents' views to inform and improve clinical encounters: a qualitative study in an Australian community. *BMJ Open, 9*(5), e026299.	May 28, 2019	Qualitative	n=32 non-vaccinating parents	Australia	Qualitative interviews with parents were conducted to understand the decision-making process to forego vaccination and their encounters with the healthcare system. Themes included: • Potential harm of Western medicine and lifestyle • Experience(s) introducing doubt • Valid consent; vaccination through coercive measures • Being dismissed by health care professions over observation of adverse events following vaccination • Encounters with health professionals; health care providers as listeners and source of information rather than guardians of health • Quest for "real truth"; information comes from multiple sources, not just healthcare providers • Reluctance to system inflexibilities; being told what to do • Ongoing risk assessment Participants in the study did not report having an unwavering intention not to vaccinate prior to becoming parents. Rather, all had personal experiences that led to their decision.	Moderate
Mendel-Van Alstyne, J.A., Nowak, G.J., & Aikin, A.L. (2018). What is 'confidence' and what could affect it?: A qualitative study of mothers who are hesitant about vaccines. *Vaccine, 36*(44), 6464-6472.	Oct 22, 2018	Qualitative	n=61; vaccine hesitant mothers with children aged ≤ 5	Philadelphia, PA (n=4) San Francisco/ Oakland, CA (n=4)	8 two-hour focus groups were conducted between two socio-economic diverse groups (>$75K, <$75K) to examine the concept of confidence in relation to childhood vaccines. Reasons for lack of confidence in childhood vaccines were similar among high socio-economic (HSES) and low socio-economic (LSES) mothers and included: • Not having enough time to learn, do research and make a decision • Lack of information	Moderate

					• Concerns over children's immune system • Development of autism, asthma or allergies • Not perceived to be safe • Beliefs that vaccines cause the illness (e.g., flu) • Vaccine ingredients • Lack of control over number of, scheduling and use of combination vaccines • Effectiveness HSES mothers cited the age at which vaccinations are given/small size of infants and toddlers as well as a general mistrust of physician and healthcare provider motives or financial incentives to encourage vaccination. LSES mothers cited unfamiliarity and a lack of personal experience with the vaccine. Reasons for having higher confidence on childhood vaccines similar among HSES and LSES mothers included: • Familiarity/personal experience (e.g., they received as kids) • Recommendation/information comes from a trusted source • Satisfied that they have done their research HSES mothers cited additional reasons for higher confidence including their relationship with their healthcare provider and their healthcare provider's willingness to have their own children receive the vaccine. LSES mothers cited personal experience with vaccine preventable diseases as a contributing factor to confidence in vaccines.	

Ward, P.R., Attwell, K., Meyer, S.B., Rokkas, P., & Leask, J. (2017). Understanding the perceived logic of care by vaccine-hesitant and vaccine-refusing parents: A qualitative study in Australia. *PloS one, 12*(10), e0185955.	Oct 12, 2017	Qualitative	n=29 vaccine-hesitant parents	Australia	Interviews were conducted with parents to focus on the perceived risks and benefits incurred by vaccinating (or not vaccinating) their children. The main themes were: • Their decision not to vaccinate as a logical, reasoned choice • Their knowledge of evidence and recommendations, leading to distrust and rejection of Western medical epistemology • Their participation in labour-intensive parenting practices which they saw as boosting the natural immunity of their children and protecting them from illness (reducing or negating the perceived need for vaccinations)	High
Carrion, M.L. (2018). An ounce of prevention: Identifying cues to (in)action for maternal vaccine refusal. *Qualitative Health Research, 28*(14), 2183-2194.	Aug 10, 2018	Qualitative	n=50; mothers who refused one or more childhood vaccine	United States	Qualitative interviews were conducted with mothers to explore the events, experiences and information that prompted initial skepticism towards vaccines. Three themes emerged: • Perceived adverse events • Endorsements from healthcare professionals; physicians expressing even minor doubts to criticizing vaccine schedules • Perceived contradictions in expert communication	Moderate

Carrion, M.L. (2018). "You need to do your research": Vaccines, contestable science, and maternal epistemology. *Public Understanding of Science, 27*(3), 310-324.	Aug 25, 2017	Qualitative	n=50 mothers who refused one or more childhood vaccines with children aged <2	United States	Qualitative interviews were conducted with mothers to explore how participants' arguments and explanations for vaccine refusal straddled the boundary between personal and technical knowledge claims. The following themes emerged: • Mothers accept science, yet view existing vaccine conclusions as unsubstantiated or flawed. They felt scientific research reflects a political or economic agenda and lacks objectivity • Mothers do not accept traditional scientific approaches as absolute truth and consider maternal instinct superior to science	Moderate
Koski, K., & Holst, J. (2017). Exploring vaccine hesitancy through an artist-scientist collaboration: Visualizing vaccine-critical parents' health beliefs. *Journal of Bioethical Inquiry, 14*(3), 411-426.	Aug 16, 2017	Qualitative	n=9 vaccine-hesitant parents	The Netherlands and Finland	Interviews were conducted to explore health beliefs. These beliefs were interpreted through arts-based diagrams that merged multiple aspects of the parents' narratives, and then used in a collaborative meaning-making dialogue between the artist and the scientist. Four main health beliefs originated from the parents' interviews: • Perceived benefits of illness, • Belief in the body's intelligence and Self-healing capacity, • Beliefs about the "inside–outside" flow of substances in the body, • View of death as a natural part of life	Moderate

Blaisdell, L.L., Gutheil, C., Hootsmans, N.A., & Han, P.K. (2016). Unknown risks: parental hesitation about vaccination. *Medical Decision Making, 36*(4), 479-89.	Oct 27, 2015	Qualitative	n=42 vaccine-hesitant and refusing parents	United States	Focus group interviews were conducted to elicit parents' perceptions and thought processes regarding the risks associated with vaccination and non-vaccination, the sources of these perceptions, and their approach to decision making about vaccination for their children. • Parents tended to perceive risks of vaccination as greater than the risks of vaccine-preventable diseases. Parents perceived ambiguity in information about the harms of vaccination, citing concerns about the missing, conflicting, changing, or otherwise unreliable nature of information.	Moderate
Gross, K., Hartmann, K., Zemp, E., & Merten, S. (2015). 'I know it has worked for millions of years': the role of the 'natural' in parental reasoning against child immunization in a qualitative study in Switzerland. *BMC Public Health, 15,* 373.	Apr 12, 2015	Qualitative	n=32 parents who decided not to fully immunize their children	Switzerland	Interviews were conducted to explore parents' perceptions of immunization. • Parents believed in the strength of the naturally acquired immune system. • Childhood diseases were not perceived as a threat but as part of the natural way to reinforce the body and to acquire a "natural" and strong immunity Parents considered immunization as an artificial intrusion into the natural development of the immune system and feared overloading the still immature immune system of their young children and infants through current vaccination schedules.	High

Harmsen, I.A., Mollema, L., Ruiter, R.A., Paulussen, T.G., de Melker, H.E., & Kok, G. (2013). Why parents refuse childhood vaccination: a qualitative study using online focus groups. *BMC Public Health, 13*, 1183.	Dec 16, 2013	Qualitative	N=60 parents who refused all or some vaccinations for their children	Netherlands	In a series of 8 online focus groups with parents, reasons for vaccine refusal were explored. Themes emerged related to: • Family lifestyle that promotes their children's health, and therefore reduces the risk of getting an infectious disease • Perceptions about the child's body and immune system being insufficiently developed • Perceived risks of disease, vaccine efficacy, and side effects • Perceived advantages of experiencing the disease • Prior negative experience with vaccination • Social environment • Gaps in knowledge and information provided • Perception that too many vaccines are required or recommended	Moderate
Glanz, J.M., Wagner, N.M., Narwaney, K.J., Shoup, J.A., McClure, D.L., McCormick, E.V., & Daley, M.F. (2013). A mixed methods study of parental vaccine decision making and parent-provider trust. *Academic Pediatrics, 13*(5), 481-8.	Sep 1, 2013	Mixed methods	n=24 parents of under-vaccinated children aged <4	United States	As part of a mixed methods study, focus groups were conducted to explore decision-making related to vaccines. Themes included: • The vaccine decision-making process begins prenatally • Vaccine decision making is an evolving process There is overall trust in the pediatrician but a lack of trust in the information they provided about vaccines.	High

Whyte, M.D., Whyte Iv, J., Cormier, E., & Eccles, D.W. (2011). Factors influencing parental decision making when parents choose to deviate from the standard pediatric immunization schedule. *Journal of Community Health Nursing, 28*(4), 204-14.	Nov 4, 2011	Qualitative	n=143 parents who had refused vaccination for at least one child, and who participated in organizations skeptical about immunization practices	United States	Parents completed an open-ended survey about their decision not to participate in the recommended vaccination schedule Parents described a variety of misperceptions regarding the risks represented by common pediatric immunizations, including the perceived risk of autism, the presence of toxic ingredients in vaccines, and the desire to avoid ADHD.	Moderate
Tickner, S., Leman, P.J., & Woodcock, A. (2010). Parents' views about pre-school immunization: an interview study in southern England. *Child: Care, Health and Development, 36*(2), 190-7.	Feb 3, 2010	Qualitative	n=21 parents	England	Interviews with parents were conducted to explore parents' views about immunization and to identify possible reasons for lower second dose pre-school uptake. Although most parents believed pre-school immunization to be important and most intended to immunize, a minority questioned whether it was necessary based on their understanding of the duration of protection provided by the primary course. Compared with primary immunization, parents typically received no information about pre-school doses prior to their invitation to attend and had little or no contact with healthcare professionals. Other barriers included minor illness, apprehension about taking an older child for vaccinations and work or childcare commitments.	Moderate

Gullion, J.S., Henry, L., & Gullion, G. (2008). Deciding to opt out of childhood vaccination mandates. *Public Health Nursing, 25*(5), 401-8.	Aug 21, 2008	Qualitative	n=25 parents who chose not to vaccinate their children	United States	Interviews explored the attitudes and beliefs of parents who consciously chose not to vaccinate their children and the ways in which these parents process information on the pros and cons of vaccines. Two themes emerged: • A desire to have information on vaccines • Trust issues with the medical community Although parents placed a high value on scientific knowledge, they also expressed distrust of the medical community.	Moderate
Niederhauser, V.P. & Markowitz, M. (2007). Barriers to immunizations: Multiethnic parents of under- and unimmunized children speak. *Journal of the American Academy of Nurse Practitioners, 19*(1), 15-23.	Jan 5, 2007	Qualitative	n=64 parents or foster parents of under-immunized two-year olds	Hawaii, United States	Focus groups were held with predominantly Asian, Hawaiian or White parents/foster parents recruited from Head Start and other family support programs to explore the barriers to immunizations in parents whose children were not fully immunized by age 2. Five core themes emerged as barriers to childhood immunizations: • Parental barriers including personal situations of parents such as drug use or inconvenience, mistrust of sources of information, lack of knowledge about immunization, and fear that children could catch diseases from immunization) • Transportation barriers to accessing clinics • Financial barriers to affording vaccination • Child issues, such as delays in vaccination due to child illness • Health organization issues such as lack of reminders or clinic policies that create barriers	High

Tarrant, M., & Gregory, D. (2003). Exploring childhood immunization uptake with First Nations mothers in north-western Ontario, Canada. *Journal of Advanced Nursing, 41*(1), 63-72. Tarrant, M., & Gregory, D. (2001). Mothers' perceptions of childhood immunizations in First Nations communities of the Sioux lookout zone. *Canadian Journal of Public Health*, *92*(1), 42-45.	Jan 2003	Qualitative	n=28 mothers, 2 First Nations communities	Sioux Lookout Zone, north-western Ontario, Canada	Qualitative interviews were conducted with First Nation mothers to explore beliefs and perceptions of childhood immunizations and vaccine-preventable diseases. Participants were motivated to seek immunizations for their children by a fear of vaccine preventable diseases • A small proportion of mothers questioned the effectiveness of vaccines in preventing disease Traumatic immunization experiences, vaccine side-effects and sequelae, negative interactions with health professionals, knowledge gaps related to vaccine effectiveness, the influence of others who are against vaccines, and barriers such as time constraints and not being able to vaccinate during a clinic visit when the child was ill all served as deterrents to immunization.	High
Kulig, J.C., Meyer, C.J., Hill, S.A., Handley, C.E., Lichtenberger, S.M., & Myck, S.L. (2002). Refusals and delay of immunization within southwest Alberta. Understanding alternative beliefs and religious perspectives. *Canadian Journal of Public Health, 93*(2), 109-12.	Mar 1, 2002	Qualitative	n=47 people of Dutch ethnic background, Hutterites, and alternative health proponents, who chose not to vaccinate or delayed immunization for their children.	Alberta, Canada	Interviews explored reasons for not vaccinating with members of these three under-vaccinated groups. Major findings include: • Among the Dutch, most based their decision to refuse on religious beliefs • The Hutterites' decision not to immunize was due to their experiences with adverse reactions but was further supported by their use of alternative health approaches The alternative health group were concerned with the safety of vaccines and the short- and long-term effects on their children's health.	Moderate

Sporton, R.K. & Francis, S.A. (2001). Choosing not to immunize: are parents making informed decisions? *Family Practice, 18*(2), 181-8.	Apr 1, 2001	Qualitative	n=13 low-income parents who chose not to have their children immunized	United Kingdom	Interviews with parents explored their reasons for choosing not to immunize their children. • Most parents felt they had made an informed decision, based on a reflective process including an assessment of the risks and benefits of immunization and an acceptance of responsibility for that decision • All parents identified the risk of adverse effects as a reason Health professionals were not perceived as providers of balanced information.	Moderate

References

Appelqvist, E., Danielsson, M., Jama, A., Ask, L.S., Stenhammar, C., Lindstrand, A., … Roth, A. (2023). Parental views and the key role of nurses for high vaccine acceptance in Sweden - a focus group study. *BMC Public Health, 23*(1), 1786.

Attwell, K., McKenzie, L., Tomkinson, S., Carlson, S.J., & Blyth, C.C. (2023). Parents' COVID-19 vaccine intentions for children under 5 years: Brief reflections from a qualitative study. *Journal of Paediatrics and Child Health, 59*(3), 453-457.

Bankiewicz, P., Dworakowska, A.M., Makarewicz-Wujec, M., & Kozłowska-Wojciechowska, M. (2022). Beliefs and sentiments of parents vaccinating their children - small town perspective in Poland: a preliminary study. *Central European Journal of Public Health, 30*(1), 7-12.

Blaisdell, L.L., Gutheil, C., Hootsmans, N.A., & Han, P.K. (2016). Unknown risks: parental hesitation about vaccination. *Medical Decision Making, 36*(4), 479-89.

Bolsewicz, K., Thomas, J., Corben, P., Thomas, S., Tudball, J., & Fernando, M. (2022). 'Immunisation, I haven't had a problem, but once again the transport, making an appointment, the time that you waste and all of those things are an issue'—Understanding childhood under-immunisation in Mid North Coast New South Wales, Australia. *Australian Journal of Rural Health, 30*(1), 44-54.

Bolsewicz, K.T., Steffens, M.S., King, C., Abdi, I., Bullivant, B., & Beard, F. (2023). A qualitative study on COVID-19 pandemic impacts on parental attitudes and intentions for routine adolescent vaccinations: The role of trust. *Vaccine 41*(28), 4138-4143.

Carlson, S.J., Attwell, K., Roberts, L., Hughes, C., & Blyth, C.C. (2023). West Australian parents' views on vaccinating their children against COVID-19: a qualitative study. *BMC Public Health, 23*(1), 1764.

Carrion, M.L. (2018). "You need to do your research": Vaccines, contestable science, and maternal epistemology. *Public Understanding of Science, 27*(3), 310-324.

Carrion, M.L. (2018). An ounce of prevention: Identifying cues to (in)action for maternal vaccine refusal. *Qualitative Health Research, 28*(14), 2183-2194.

Chantler, T., Newton, S., Lees, A., Diggle, L., Mayon-White, R., Pollard, A.J., & Fitzpatrick, R. (2006). Parental views on the introduction of an infant pneumococcal vaccine. *Community Practitioner, 79*(7), 213-6.

Diaz Crescitelli, M.E., Ghirotto, L., Sisson, H., Sarli, L., Artioli, G., Bassi, M.C., … Hayter, M. (2020). A meta-synthesis study of the key elements involved in childhood vaccine hesitancy. *Public Health, 180*, 38-45.

Dubé, E., Gagnon, D., MacDonald, N., Bocquier, A., Peretti-Watel, P., & Verger, P. (2018). Underlying factors impacting vaccine hesitancy in high income countries: a review of qualitative studies. *Expert Review of Vaccines, 17*(11), 989-1004.

Evans, S., Klas, A., Mikocka-Walus, A., German, B., Rogers, G.D., Ling, M. … Westrupp, E.M. (2021). "Poison" or "protection"? A mixed methods exploration of Australian parents' COVID-19 vaccination intentions. *Journal of Psychosomatic Research*, *150*, 110626.

Footman, A., Kanney, N., Niccolai, L.M., Zimet, G.D., Overton, E.T., Davies, S.L., & Van Der Pol, B. (2022). Chlamydia vaccination: Parent opinions and implications for future promotion programs. *Sexually Transmitted Diseases*, *49*(11), 745–749.

Forster, A.S., Rockliffe, L., Chorley, A.J., Marlow, L.A., Bedford, H., Smith, S.G., & Waller, J. (2016). A qualitative systematic review of factors influencing parents' vaccination decision-making in the United Kingdom. *SSM – Population Health, 2*, 603-612.

Gidengil, C., Chen, C., Parker, A.M., Nowak, S., & Matthews, L. (2019). Beliefs around childhood vaccines in the United States: A systematic review. *Vaccine, 37*(45), 6793-6802.

Glanz, J.M., Wagner, N.M., Narwaney, K.J., Shoup, J.A., McClure, D.L., McCormick, E.V., & Daley, M.F. (2013). A mixed methods study of parental vaccine decision making and parent-provider trust. *Academic Pediatrics, 13*(5), 481-8.

Glassman, L.W., & Szymczak, J.E. (2022). The influence of social class and institutional relationships on the experiences of vaccine-hesitant mothers: a qualitative study. *BMC Public Health*, *22*(1), 2309.

Goulding, M., Ryan, G.W., Minkah, P., Borg, A., Gonzalez, M., Medina, N., … Lemon, S. C. (2022). Parental perceptions of the COVID-19 vaccine for 5- to 11-year-old children: Focus group findings from Worcester Massachusetts. *Human Vaccines & Immunotherapeutics*, *18*(6), 2120721.

Gross, K., Hartmann, K., Zemp, E., & Merten, S. (2015). 'I know it has worked for millions of years': the role of the 'natural' in parental reasoning against child immunization in a qualitative study in Switzerland. *BMC Public Health, 15,* 373.

Gullion, J.S., Henry, L., & Gullion, G. (2008). Deciding to opt out of childhood vaccination mandates. *Public Health Nursing, 25*(5), 401-8.

Harmsen, I.A., Mollema, L., Ruiter, R.A., Paulussen, T.G., de Melker, H.E., & Kok, G. (2013). Why parents refuse childhood vaccination: a qualitative study using online focus groups. *BMC Public Health, 13*, 1183.

Helps, C., Leask, J., Barclay, L., & Carter, S. (2019). Understanding non-vaccinating parents' views to inform and improve clinical encounters: a qualitative study in an Australian community. *BMJ Open, 9*(5), e026299.

Herbert, N.L., Gargano, L.M., Painter, J.E., Sales, J.M., Morfaw, C., Murray, D., … Hughes, J.M. (2013). Understanding reasons for participating in a school-based influenza vaccination program and decision-making dynamics among adolescents and parents. *Health Education Research, 28*(4), 663-72.

Hijazi, R., Gesser-Edelsburg, A., Feder-Bubis, P., & Mesch, G.S. (2022). Hesitant and anti-vaccination groups: A qualitative study on their perceptions and attitudes regarding vaccinations and their reluctance to participate in academic research- an example during a

measles outbreak among a group of Jewish parents in Israel. *Frontiers in Public Health*, *10*, 1012822.

Honcoop, A., Roberts, J.R., Davis, B., Pope, C., Dawley, E., McCulloh, R.J., … Darden, P.M. (2023). COVID-19 vaccine hesitancy among parents: a qualitative study. *Pediatrics*, *152*(5), e2023062466.

Hopfer, S., Fields, E.J., Ramirez, M., Long, S.N., Huszti, H.C., Gombosev, A. … Cooper, D.M. (2022). Adolescent COVID-19 vaccine decision-making among parents in Southern California. *International Journal of Environmental Research and Public Health*, *19*(7), 4212.

Hsu, C., Evers, S., Ibrahim, A., Patricia, M., Throne, P., Melton, M., … Hofstetter, A.M. (2023). Sometimes your heart says 'I don't know': Insights from parents of undervaccinated children. *Academic Pediatrics*, *23*(1), 57–67.

Kate, J.T., de Koster, W., & van der Waal, J. (2022). Becoming skeptical towards vaccines: How health views shape the trajectories following health-related events. *Social Science & Medicine, 293*(1982), 114668.

Koski, K., & Holst, J. (2017). Exploring vaccine hesitancy through an artist-scientist collaboration: Visualizing vaccine-critical parents' health beliefs. *Journal of Bioethical Inquiry, 14*(3), 411-426.

Krasselt, J., Robin, D., Fadda, M., Geutjes, A., Bubenhofer, N., Suzanne Suggs, L., & Dratva, J. (2022). Tick-Talk: Parental online discourse about TBE vaccination. *Vaccine*, *40*(52), 7538–7546.

Kulig, J.C., Meyer, C.J., Hill, S.A., Handley, C.E., Lichtenberger, S.M., & Myck, S.L. (2002). Refusals and delay of immunization within southwest Alberta. Understanding alternative beliefs and religious perspectives. *Canadian Journal of Public Health, 93*(2), 109-12.

Lacy, R., Puma, J., Tubolino, M., LaRocca, D., Crane, L.A., Miller, L., … Leiferman, J.A. (2022). Rural parents' attitudes and beliefs on the COVID-19 pediatric vaccine: An explanatory study. *PloS one*, *17*(12), e0278611.

Lewin, S., Booth, A., Glenton, C., Munthe-Kaas, H., Rashidian, A., Wainwright, M., … Noyes, J. (2018). Applying GRADE-CERQual to qualitative evidence synthesis findings: introduction to the series. *Implementation Science, 13*(2).

Majid, U. & Ahmad, M. (2020). The factors that promote vaccine hesitancy, rejection, or delay in parents. *Qualitative Health Research, 30*(11), 1762-1776.

Mendel-Van Alstyne, J.A., Nowak, G.J., & Aikin, A.L. (2018). What is 'confidence' and what could affect it?: A qualitative study of mothers who are hesitant about vaccines. *Vaccine, 36*(44), 6464-6472.

Mills, E., Jadad, A.R., Ross, C., & Wilson, K. (2005). Systematic review of qualitative studies exploring parental beliefs and attitudes toward childhood vaccination identifies common barriers to vaccination. *Journal of Clinical Epidemiology, 58*(11), 1081-8.

Neil-Sztramko, S.E., Belita, E., Traynor, R.L., Clark, E., Hagerman, L., & Dobbins, M. (2021). Methods to support evidence-informed decision-making in the midst of COVID-19: creation and

evolution of a rapid review service from the National Collaborating Centre for Methods and Tools. *BMC Medical Research Methodology, 21*(231).

Nickerson, A., Gutierrez-Mock, L., Buback, L., Welty, S., Anicete, L.M., Sanchez, S., … Reid, M. (2023). Factors influencing parent and guardian decisions on vaccinating their children against SARS-CoV-2: A qualitative study. *Inquiry: A Journal of Medical Care Organization, Provision and Financing*, *60*, 469580231159742.

Niederhauser, V.P. & Markowitz, M. (2007). Barriers to immunizations: Multiethnic parents of under- and unimmunized children speak. *Journal of the American Academy of Nurse Practitioners, 19*(1), 15-23.

Nurmi, J. & Harman, B. (2021). Why do parents refuse childhood vaccination? Reasons reported in Finland. *Scandinavian Journal of Public Health, 50*(4), 490-496.

Paterson, P., Chantler, T., & Larson, H.J. (2018). Reasons for non-vaccination: Parental vaccine hesitancy and the childhood influenza vaccination school pilot programme in England. *Vaccine, 36*(36), 5397-5401.

Price, T., McColl, E., & Visram, S. (2022). Barriers and facilitators of childhood flu vaccination: the views of parents in North East England. *Journal of Public Health*, *30*(11), 2619–2626.

Public Health Agency of Canada (2023). Canadian COVID-19 vaccination coverage report. Ottawa: Public Health Agency of Canada; December 8, 2023.

Rajeh, M.T., Farsi, D.J., Farsi, N.J., Mosli, H.H., & Mosli, M.H. (2023). Are parents' willing to vaccinate their children against COVID-19? A qualitative study based on the Health Belief Model. *Human Vaccines & Immunotherapeutics*, *19*(1), 2177068.

Romijnders, K., van Seventer, S.L., Scheltema, M., van Osch, L., de Vries, H., & Mollema, L. (2019). A deliberate choice? Exploring factors related to informed decision-making about childhood vaccination among acceptors, refusers, and partial acceptors. *Vaccine, 37*(37), 5637-5644.

Schiff, J., Schmidt, A.R., Pham, P.K., Pérez, J.B., Pannaraj, P.S., Chaudhari, P.P., & Liberman, D.B. (2022). Parental attitudes in the pediatric emergency department about the COVID-19 vaccine. *Vaccine*, *40*(50), 7328–7334.

Schilling, S., Orr, C.J., Delamater, A.M., Flower, K.B., Heerman, W.J., Perrin, E.M., … Sanders, L. (2022). COVID-19 vaccine hesitancy among low-income, racially and ethnically diverse US parents. *Patient Education and Counseling*, *105*(8), 2771–2777.

Schuster, L., Gurrieri, L., & Dootson, P. (2022). Emotions of burden, intensive mothering and COVID-19 vaccine hesitancy. *Critical Public Health, 33*(2), 218-229.

Smith, L. E., Hodson, A., & Rubin, G. J. (2021). Parental attitudes towards mandatory vaccination; a systematic review. *Vaccine, 39*(30), 4046-4053.

Smith, L.E., Sherman, S.M., Sim, J., Amlôt, R., Cutts, M., Dasch, H., … Rubin, G.J. (2022). Parents' intention to vaccinate their child for COVID-19: A mixed-methods study (CoVAccS-wave 3). *PloS one*, *17*(12), e0279285.

Smith, S.E., Sivertsen, N., Lines, L., & De Bellis, A. (2022). Weighing up the risks - Vaccine decision-making in pregnancy and parenting. *Women & Birth: Journal of the Australian College of Midwives*, *35*(6), 547–552.

Sporton, R.K. & Francis, S.A. (2001). Choosing not to immunize: are parents making informed decisions?. *Family Practice, 18*(2), 181-8.

Swaney, S.E. & Burns, S. (2019). Exploring reasons for vaccine-hesitancy among higher-SES parents in Perth, Western Australia. *Health Promotion Journal of Australia, 30*(2), 143-152.

Tarrant, M., & Gregory, D. (2001). Mothers' perceptions of childhood immunizations in First Nations communities of the Sioux lookout zone. *Canadian Journal of Public Health*, *92*(1), 42-45.

Tarrant, M., & Gregory, D. (2003). Exploring childhood immunization uptake with First Nations mothers in north-western Ontario, Canada. *Journal of Advanced Nursing, 41*(1), 63-72.

Ten Kate, J., Koster, W., & Van der Waal, J. (2021). "Following Your Gut" or "Questioning the Scientific Evidence": Understanding Vaccine Skepticism among More-Educated Dutch Parents. *Journal of Health and Social Behavior, 62*(1), 85-99.

Thomas, S., Paden, V., Lloyd, C., Tudball, J., & Corben, P. (2022). Tailoring immunisation programs in Lismore, New South Wales - we want our children to be healthy and grow well, and immunisation really helps. *Rural and Remote Health*, *22*(1), 6803.

Tickner, S., Leman, P.J., & Woodcock, A. (2010). Parents' views about pre-school immunization: an interview study in southern England. *Child: Care, Health and Development, 36*(2), 190-7.

Wang, C.S., Doma, R., Westbrook, A.L., Johnson, J., Anderson, E.J., Greenbaum, L.A., … Bednarczyk, R.A. (2023). Vaccine attitudes and COVID-19 vaccine intention among parents of children with kidney disease or primary hypertension. *American Journal of Kidney Diseases*, *81*(1), 25–35.e1.

Ward, P.R., Attwell, K., Meyer, S.B., Rokkas, P., & Leask, J. (2017). Understanding the perceived logic of care by vaccine-hesitant and vaccine-refusing parents: A qualitative study in Australia. *PloS one, 12*(10), e0185955.

Whang, C., Lynch, K.A., Huang, T., & Tsui, E.K. (2023). Critical dynamics in Black and Latino parents' perceptions of childhood COVID-19 vaccination: How the "middle" moves. *Journal of Health Communication*, *28*(sup1), 86–96.

White, T., Sevdalis, N., Willaby, H., King, C., & Leask, J. (2014). Systematic Review into Factors Underlying Parental Decisions about Childhood Vaccinations. Copy obtained from author.

Whyte, M.D., Whyte Iv, J., Cormier, E., & Eccles, D.W. (2011). Factors influencing parental decision making when parents choose to deviate from the standard pediatric immunization schedule. *Journal of Community Health Nursing, 28*(4), 204-14.

Wigle, J., Hodwitz, K., Juando-Prats, C., Allan, K., Li, X., Howard, L., … Parsons, J.A. (2023). Parents' perspectives on SARS-CoV-2 vaccinations for children: a qualitative analysis. *Canadian Medical Association Journal*, *195*(7), E259–E266.

Wiley, K.E., Leask, J., Attwell, K., Helps, C., Degeling, C., Ward, P., & Carter, S.M. (2020). Parenting and the vaccine refusal process: A new explanation of the relationship between lifestyle and vaccination trajectories. *Social Science & Medicine, 263*, 113259.