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Parental Vaccine Hesitancy and Childhood Immunization in China: A Literature Review

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ABSTRACT

Childhood vaccination is among the most cost-effective public health interventions, yet parental vaccine hesitancy (VH) threatens sustained coverage worldwide. China presents a distinctive case: near-universal coverage of free Category I (National Immunization Program, NIP) vaccine coexists with fragile public trust and persistently low uptake of self-paid, voluntary Category II (non-NIP) vaccines. This review examines the determinants of parental VH in China, its effect on childhood immunization, and the interventions studied to address it. PubMed and Google Scholar were searched for peer-reviewed studies published between 2016 and 2026 examining parents or primary caregivers of children in China. Findings were synthesized narratively. Reported VH prevalence varies widely (approximately 6-65%), reflecting inconsistent measurement. The reviewed Chinese literature emphasizes institutional trust rather than the anti-vaccine ideology more often described in some Western settings. Confidence has been eroded by recurrent domestic vaccine-safety incidents, most notably the 2018 Changchun Changsheng scandal, by distrust of domestically produced vaccines, and by the two-tier free and self-paid system. Category I coverage remains high (above 90%) while Category II uptake is low. Migrant and left-behind children face persistent equity gaps. Safety incidents are associated more with delayed vaccination than outright refusal. Effective responses center on rebuilding institutional trust through transparent incident response, strengthened safety surveillance, provider communication, and equity-focused delivery. Knowledge-deficit "myth busting" alone is insufficient.

Keywords: *Medical and Health Sciences; Public Health; Parental vaccine hesitancy China; Childhood immunization; National Immunization Program; Vaccine confidence; Vaccine safety incidents; Category II vaccines*

INTRODUCTION

Vaccines are widely regarded as the most cost effective approach to reducing childhood disease burden, as well as saving an estimated 2-3 million lives each year.[1] Vaccination programs are credited with eradicating smallpox and polio worldwide, as well as lowering the morbidity and mortality of other Vaccine Preventable Diseases (VPDs) such as measles.[1] Vaccination not only provides direct protection to those who have received them, but also reduces the risk of infection for those who are unable to get vaccinated within the community by reducing the spread of viruses.[2] This phenomenon is known as herd immunity. Historically, nations with high childhood immunization rates report significantly lower incidence of VPDs in comparison to places where immunization rates are low. This attests to the efficacy

of vaccines in preventing childhood diseases. However, in recent years, vaccination rates have gone down as higher rates of vaccine hesitancy emerged.

Vaccine hesitancy, as defined by the World Health Organization (WHO), is a refusal or delay in adherence to vaccination programs, and has been recognized as a major threat to global health,[3] a crisis exacerbated by the COVID-19 pandemic, which triggered the largest sustained drop in childhood vaccinations in approximately 30 years.[4] This drop was driven by healthcare disruptions and a surge in misinformation. Globally, 1 in 5 children do not receive routine life-saving immunizations, and an estimated 1.5 million children continue to die per year from diseases that could be prevented by already existing vaccines.[5]

China illustrates why hesitancy cannot be understood through a single global lens. Under the 2019 Vaccine Administration Law, childhood vaccines are divided into two categories: Category I vaccines (the National Immunization Program NIP), which are provided free of charge and are effectively required for school and kindergarten enrollment; and Category II vaccines (non-NIP), which are voluntary and self-funded.[6-7] The results of this structure contrast each other, thus producing contrasting outcomes. Coverage of Category I vaccines is high: national routine coverage exceeds 90%, and coverage of vaccines scheduled before 12 months of age reaches roughly 97–99% in some settings; whereas uptake of Category II vaccines remains low. For example, reported three-dose coverage of the pneumococcal conjugate vaccine has been as low as ~5%, and timeliness of booster doses is often poor.[7-8] Hesitancy in China therefore manifests less as outright refusal than as delay, incomplete schedules, and selective non-uptake of optional vaccines.

The drivers emphasized in the Chinese literature also differ in emphasis from the misinformation- and ideology-driven patterns often described in high-income Western settings. A series of domestic vaccine-quality and safety incidents have repeatedly undermined public confidence, including events in Shanxi (2010) where damaged vaccines were administered to children, a hepatitis B vaccine controversy (2013) after which coverage reportedly fell before recovering, the illegal sale of improperly stored vaccines in Shandong (2016), and, most consequentially, the 2018 Changchun Changsheng incident, in which a manufacturer was found to have produced substandard diphtheria–tetanus–acellular-pertussis (DTaP) vaccine and to have falsified records for rabies vaccine.[9-10] Following the Changsheng incident, one survey found that roughly 70% of respondents lacked vaccine confidence, and the proportion of the public strongly agreeing that vaccines are safe and effective declined substantially.[10] Distrust of domestically produced vaccines in particular is among the strongest correlates of parental hesitancy, and awareness of the incident has been associated with greater doubt about vaccinating one's children.[11] Importantly, studies tracking real-world behavior found the incident was followed by significant increases in delayed DTaP doses rather than mass refusal.[9]

Hesitancy in China is further patterned by equity and access rather than belief alone. Coverage is heterogeneous across regions and between rural and urban communities, as well as migrant ("floating population") children and rural left-behind children. These groups are consistently identified as under-reached, in part because China has lacked a unified national system to track immunization across

jurisdictions.[8,12,] Sociodemographic associations reported in Chinese samples do not always mirror Western findings; for instance, associations with caregiver education have been inconsistent across studies, and residency status (local vs. non-local) has emerged as a notable predictor of safety concerns.[13-14]

Although research on parental vaccine hesitancy in China is expanding rapidly, the literature remains fragmented: prevalence estimates range from roughly 6% to 65% owing to inconsistent measurement, and studies vary by region, vaccine type, and the determinants examined.[15] A focused synthesis is therefore needed to inform policy and practice. Accordingly, this review aims to (1) examine the determinants of parental vaccine hesitancy in China, (2) assess how hesitancy influences childhood immunization uptake, and (3) identify recurring themes and gaps in the literature. It addresses the question: **How does parental vaccine hesitancy affect childhood vaccination uptake in China, and what consistent patterns emerge across existing studies?**

METHODS

Study design

This is a narrative review of the literature on parental vaccine hesitancy and its impact on childhood immunization in China. To improve transparency and reproducibility, it used a structured search of two databases and a documented two-stage screening process, and its reporting was informed by the principles of the PRISMA 2020 statement. It is not a systematic review. Searches were limited to two databases and to English-language publications, screening and data extraction were performed by a single reviewer rather than in duplicate, and no formal risk-of-bias or quality appraisal was undertaken. The findings should therefore be read as a structured narrative synthesis rather than a quantitative or exhaustive systematic review.

Literature search strategy

A search was performed across PubMed and Google Scholar to capture peer-reviewed studies relevant to parental vaccine-hesitancy in Chinese populations. The search covered publications from January 2016 to March 2026, reflecting contemporary vaccine policy environments, including the period surrounding the 2018 vaccine-safety incidents and the 2019 Vaccine Administration Law.

Search terms combined keywords and Boolean operators. Core terms included: “vaccine hesitancy,” “parents,” “caregivers,” “children,” “pediatric,” "immunization/vaccination coverage,” and “uptake,” each combined with “China,” “Chinese,” “National Immunization Program,” and non-NIP/Category II.” Terms were adapted per database to optimize sensitivity and specificity. Reference lists of included studies were manually screened to identify additional relevant articles. Search terms combined controlled vocabulary and free-text keywords with Boolean operators, adapted to each database. The PubMed search was: ("vaccine hesitancy"[tiab] OR "vaccination hesitancy"[tiab] OR "vaccine confidence"[tiab] OR "vaccine acceptance"[tiab] OR "vaccine refusal"[tiab] OR "vaccine uptake"[tiab]) AND (parent*[tiab] OR

caregiver*[tiab] OR guardian*[tiab] OR mother*[tiab] OR father*[tiab]) AND (child*[tiab] OR infant*[tiab] OR pediatric*[tiab] OR paediatric*[tiab] OR immunization[tiab] OR vaccination[tiab]) AND (China[tiab] OR Chinese[tiab] OR "National Immunization Program"[tiab]), limited to 2016 to 2026 and to English. The Google Scholar search used a simplified string, ("vaccine hesitancy" OR "vaccine confidence" OR "vaccine refusal") AND (parents OR caregivers OR guardians) AND (children OR pediatric OR immunization) AND (China OR Chinese), restricted to 2016 to 2026, with the first 100 records screened by relevance. Reference lists of included studies were hand-searched to identify additional articles.

Eligibility criteria

Studies were included if they:

1. Were published in peer-reviewed journals between 2016 and 2026.
2. Were conducted in mainland China (or in Chinese populations).
3. Focused on parents or primary caregivers of children under 18 years.
4. Examined determinants, attitudes, causes, or consequences of vaccine hesitancy.
5. Reported outcomes related to childhood vaccination uptake, coverage, delay, or refusal.
6. Were written in English.

Studies were excluded if they:

1. Focused exclusively on adult vaccination or non-human populations.
2. Were opinion pieces, editorials, commentaries, letters, or conference abstracts.
3. Did not explicitly address vaccine hesitancy or its relationship to childhood immunization.

Peer-reviewed systematic reviews and meta-analyses were eligible. They were used as supporting evidence, to provide international context, and to frame intervention options, they are identified as reviews in the text, and they were not treated as primary China-based studies. A small number of authoritative background sources, such as the World Health Organization definition of vaccine hesitancy, were cited for context only.

Study selection

Titles and abstracts were screened for relevance, followed by a full-text review to confirm eligibility (Figure 1). This two-stage process ensured consistency and relevance of included literature.The database searches returned 54 records (PubMed 34, Google Scholar 20). After 19 duplicates were removed, 35 records were screened by title and abstract, of which 2 were excluded. The remaining 33 full-text articles were assessed for eligibility, and 8 were excluded for being adults or not childhood-focused (3 studies), having no hesitancy outcome (2 studies), or being opinion or non-peer-reviewed (3 studies). This left 25 sources included in the review (Figure 1). Screening and full-text review were conducted in two stages to confirm relevance and eligibility.

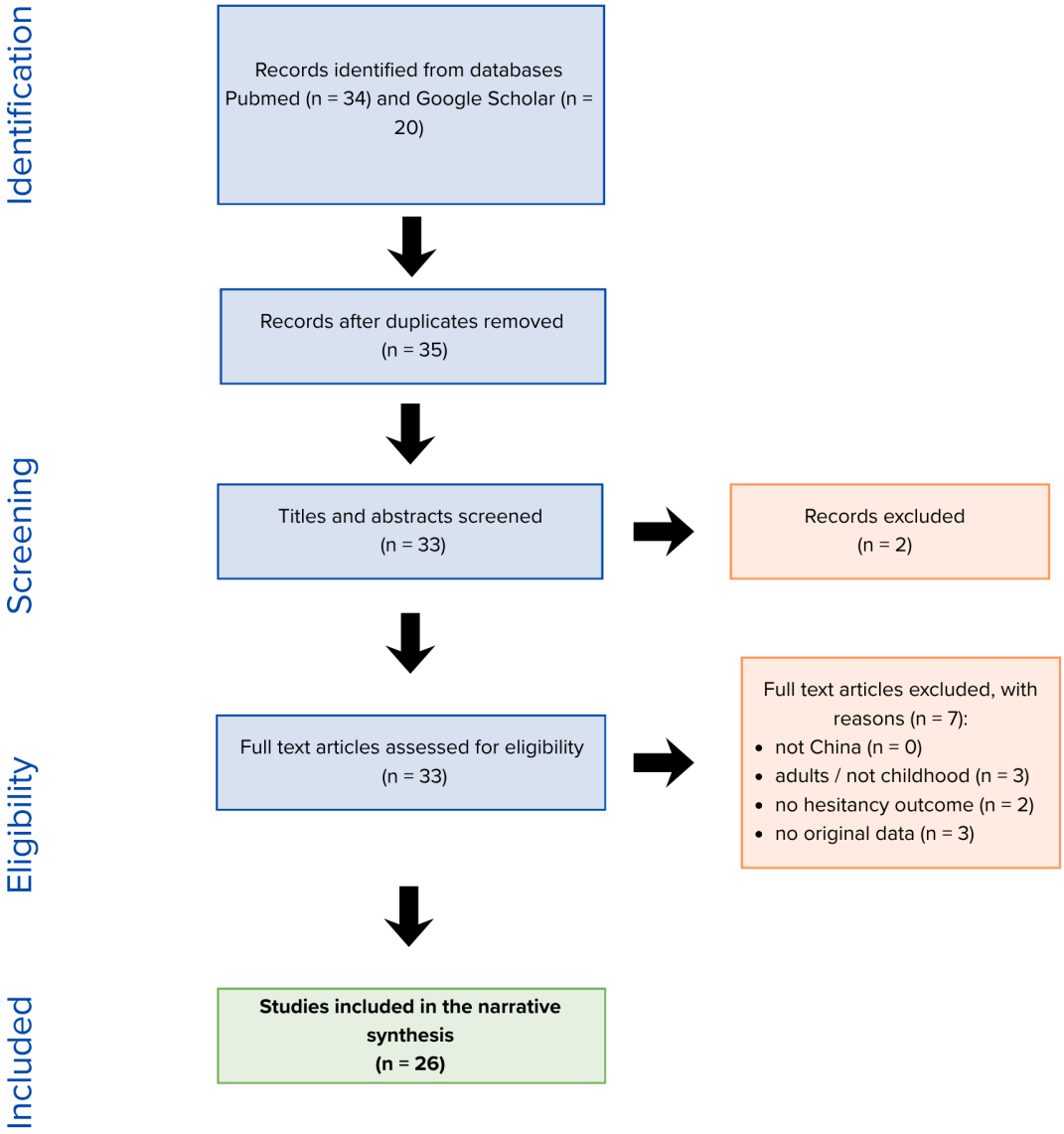

Figure 1: Flow of study identification, screening, and inclusion.

Data extraction

Data was extracted using a structured approach, capturing author(s), year of publication, region within China, study design, population characteristics, vaccine type(s) (Category I vs. Category II), measures of vaccine hesitancy, determinants, and reported effects on childhood immunization uptake. Both qualitative themes and quantitative associations were recorded.

Data synthesis

Given heterogeneity in study designs, populations, and outcome measures, a narrative synthesis was used rather than meta-analysis. Findings were organized thematically around recurring determinants (e.g., vaccine-safety incidents and institutional trust, confidence in domestic vaccines, the Category I/Category II structure, access and equity for migrant and left-behind children) and consistent patterns linking hesitancy to reduced coverage, delay, or refusal. Similarities and differences across regional and socioeconomic contexts within China were examined to identify broader trends and gaps.

RESULTS

Extent of Parental Vaccine Hesitancy

Reported prevalence varies widely across Chinese studies because of differences in measurement tools, populations, and vaccine types. A validated Chinese childhood vaccine hesitancy scale noted estimates ranging from 6.6% to 64.5%.[16] A commonly cited national-level figure is that roughly one in four parents (about 24.9%) reported hesitancy toward all recommended childhood vaccines.[15] For international context, a global meta-analysis of parents of children aged 0 to 6 years estimated pooled hesitancy at 21.1%, which places China within the broad global range.[15]

Hesitancy in China depends heavily on the vaccine category. The national program separates free, effectively required Category I vaccines from self-paid, voluntary Category II vaccines. Parents report more hesitancy toward Category II vaccines. In an online survey of 2,952 parents of children under 6 years, 17.5% were highly hesitant toward Category II vaccines, and parents who lacked confidence or perceived vaccines as risky were more likely to show hesitant behavior.[17]

Hesitancy also varies sharply by specific vaccine. Parental influenza vaccine hesitancy is high even though children are a priority group. A Shanghai survey of 5,016 parents of children aged 6 months to 14 years reported influenza vaccine hesitancy of 34.05%.[18] Regional surveys reported higher figures: 43.2% in Zhejiang Province, and 47.6% in Wuxi, where nearly half of parents both hesitated and refused the influenza vaccine.[14,17] Several studies report that parents became somewhat more willing to vaccinate children against influenza after the COVID-19 pandemic.[17]

Determinants of parental vaccine hesitancy in China

Vaccine-safety incidents and institutional trust. The most distinctive driver in China is the erosion of trust following a series of domestic vaccine-quality incidents. These include events in Shanxi (2010) a corruption scandal where the government overlooked and covered for damaged and potentially harmful vaccines being administered to children, a hepatitis B vaccine controversy (2013), the illegal sale of improperly stored vaccines in Shandong (2016), and the 2018 Changchun Changsheng incident involving substandard DTaP vaccine and falsified rabies vaccine records.[9,20] After the Changsheng incident, one survey found that about 70% of respondents lacked vaccine confidence.[20] The proportion of the public

strongly agreeing that vaccines are safe fell from 47.0% to 34.2%, and strong agreement that they are effective fell from 49.0% to 38.1%.[19] In a survey of 2,124 caregivers, 60% expressed some hesitancy, and having heard of the incident was associated with higher odds of doubt (adjusted OR 1.61).[11] Confidence in the vaccine delivery system and in government was protective.[12]

Confidence in domestic versus imported vaccines. Trust in domestically produced vaccines is one of the strongest correlates of hesitancy. In a Guangzhou survey, parents who distrusted domestic vaccines were far more likely to be hesitant than those who trusted them, with odds ratios reaching about 10.9.[11] Preference for imported vaccines also tracked with higher hesitancy.

The two-tier system and vaccine knowledge. Awareness of which vaccines are required and which are optional shapes behavior. Parents unaware of the Category I versus Category II distinction were roughly twice as likely to be hesitant.[11] Knowledge gaps are common for Category II vaccines. In a Chengdu study, only about one third of guardians recognized the importance of self-paid vaccines, and exposure to negative media reports was associated with hesitant attitudes.[19]

Socioeconomic and access factors. Findings on socioeconomic status are mixed and depend on the study. In a six-province study of 1,638 parents, lower household income was associated with higher hesitancy, while educational attainment was not.[22] In the larger non-NIP survey, however, less-educated parents were more hesitant, so the role of education is not consistent across studies.[17] Access and equity factors are prominent. Migrant ("floating population") children and rural left-behind children are repeatedly identified as under-reached, in part because China has lacked a unified national system to track immunization across jurisdictions.[12] In Shanghai, rural non-local (recently migrated) parents reported greater concern about vaccine safety and effectiveness than local residents.[16]

Information environment. Vaccine information in China circulates heavily on domestic platforms such as WeChat, Weibo, and Douyin. Negative vaccine news and higher complacency were both associated with influenza vaccine hesitancy in Shanghai.[21] Evidence on social media is not uniformly negative. Some studies report that greater frequency and diversity of social media use, higher media trust, and higher health information literacy were associated with lower hesitancy. This suggests that the quality and framing of online information matter more than exposure alone.[21]

Risk perception and complacency. Hesitancy reflects how parents weigh perceived vaccine risks against perceived disease risks. Low perceived disease threat (complacency), concern about side effects, and doubts about effectiveness recur across Chinese samples. These themes align with widely used frameworks such as the 5C model (confidence, complacency, constraints, calculation, and collective responsibility) and Protection Motivation Theory.

Impact on childhood immunization coverage

Hesitancy in China affects timing and completeness more than it produces outright refusal. Coverage of Category I vaccines is high. National routine coverage exceeds 90%, and coverage of doses scheduled before 12 months of age reaches roughly 97% to 99% in some settings.[7,8] However, timeliness is often poor for booster doses and for vaccines scheduled at 12 months or later.[8] Coverage of Category II vaccines is substantially lower. Reported three-dose coverage of the pneumococcal conjugate vaccine has been about 5%, and coverage of rotavirus and Hib vaccines is also low.[12] Similarly, coverage for Category II vaccines is much lower than Category I vaccines. Fully immunized coverage for Category I vaccines was found to be 83.1% at the national level across multiple provinces, while coverage for Category II vaccines was less than 50%.[6] Furthermore, for Category II vaccines, there is a reported disparity between rural and urban settings: coverage for Category II vaccines in rural settings is 81.5% while coverage in urban settings is 69.4%.[6] This rural-over-urban pattern is counterintuitive given the access disparities described elsewhere in this review. It likely reflects the specific vaccines and populations sampled rather than uniformly higher Category II uptake in rural areas, and urban coverage may be underestimated where large migrant populations are incompletely captured by local registries. It should therefore be interpreted cautiously and does not overturn the broader finding that migrant and left-behind children are under-reached.

Vaccine-safety incidents translate into measurable delay. After the Changsheng incident, the share of delayed DTaP doses rose significantly, from 19.12% to 22.51% for delays up to 3 months, and from 7.17% to 11.82% for delays beyond 3 months.[12] Active refusal remained rare. In the post-incident caregiver survey, only about 3% refused specific vaccines, while larger proportions vaccinated with doubts or delayed.[12] Equity gaps compound these patterns, with migrant and left-behind children less likely to be fully and promptly vaccinated.[12]

Interventions evaluated to reduce hesitancy in China

Chinese and international evidence supports multi-component strategies that rebuild trust and lower practical barriers. Purely didactic myth-busting is often insufficient.[6] Community-engaged financing models have shown strong results. In a randomized controlled trial in Chengdu, a pay-it-forward strategy (a subsidized first dose plus an opportunity to support others) raised first-dose HPV vaccination among girls aged 15 to 18 from 17.5% to 34.2% and reduced vaccination delay.[12] A pay-it-forward influenza program for children and older adults reported uptake of about 74% versus 36% for standard user-paid care, alongside improved vaccine confidence.[11] Provider communication, culturally appropriate education, and reminder or recall systems are also supported.[6,19] Following safety incidents, prompt and transparent government response and strengthened adverse-event surveillance are repeatedly recommended as trust-rebuilding measures.[18,20] Table 1 summarizes key Chinese studies.

Table 1. Selected studies of parental vaccine hesitancy and its determinants in China.

Study	Setting and sample	Design	Key findings
Han et al., 2022	Online, China; 2,952 parents of children under 6y	Cross-sectional	17.5% highly hesitant toward Category II vaccines; younger, less-educated, and health-occupation parents more hesitant; low confidence and risk belief predicted hesitancy.
Fan et al., 2022	Shanghai; 5,016 parents (children 6 mo to 14 y)	Cross-sectional	Influenza vaccine hesitancy 34.05%; negative vaccine news and complacency associated with hesitancy.
Wang et al., 2021	Wuxi; 3,009 parents (children under 18 y)	Cross-sectional	52.4% willing to give the influenza vaccine (so 47.6% not); more hesitancy toward Category II vaccines; parent and health-worker hesitancy correlated.
Du et al., 2020	China; 2,124 caregivers (children under 6y)	Cross-sectional	60% expressed some hesitancy (26% vaccinated with doubts, 31% delayed, 3% refused); awareness of the incident raised odds of doubt (AOR 1.61); trust in the delivery system and government was protective.
Tu et al., 2020	China; national comparison	Cross-sectional, mixed methods	Strong agreement that vaccines are safe fell 47.0% to 34.2%, and effective 49.0% to 38.1%, after the Changsheng incident.
Zhang et al., 2021	Guangzhou; parents	Cross-sectional	Distrust of domestic vaccines strongly linked to hesitancy (OR up to about 10.9); unawareness of the Category I versus II distinction roughly doubled hesitancy
Liu et al., 2025	Chengdu; guardians	Cross-sectional	Positive overall attitudes but

			knowledge gaps for Category II vaccines; about one third recognized the importance of self-paid vaccines, and negative media exposure was linked to hesitancy.
Hou et al., 2023	Ten provinces; 5,294 children	Interrupted time series	After the Changsheng incident, delayed DTaP doses rose (up to 3 mo: 19.12% to 22.51%; beyond 3 mo: 7.17% to 11.82%).
Wagner et al., 2021	Shanghai; about 1,021 parents	Cross-sectional	Rural non-local (migrant) parents reported greater concern about vaccine safety and effectiveness than local residents.

Table 2 organizes the strategies mentioned in studies from Table 1 by which mechanism (5C / PMT) they deployed. Table 2 also mentions what components of each strategy worked in reducing parental vaccine hesitancy.

Table 2. Evidence-based strategies to reduce parental vaccine hesitancy in China.

Strategy	Mechanism (5C / PMT)	Evidence in China	Implementation notes
Transparent safety-incident response and stronger adverse-event surveillance	Restores confidence in regulators, domestic vaccines, and the delivery system (confidence)	Repeatedly recommended after the Changsheng incident; confidence declines followed slow or opaque responses.[17,20]	Rapid public communication; independent investigation; visible corrective action; real-time adverse-event monitoring.
Community-engaged financing (pay-it-forward)	Removes the cost barrier for Category II vaccines; builds reciprocity and confidence (constraints, confidence)	HPV first-dose uptake rose 17.5% to 34.2% in a Chengdu RCT;[22] influenza uptake about 74% versus 36% with improved confidence.[21]	Subsidize the first dose; add postcards and voluntary donation; deliver through community health centers.
Provider recommendation and communication	Leverages trust in clinicians; reduces decisional conflict	Provider communication and culturally appropriate materials recommended	Train staff; use plain language and presumptive recommendations; allow

	(confidence)	for Chinese guardians;[12] supported in reviews.[22]	longer first-dose visits.
Reminder and recall, and convenient delivery	Reduces logistical barriers; improves timeliness (constraints)	Supported for on-time uptake; timeliness gaps are documented for boosters and later doses.[22]	Automate through immunization registries; offer same-day slots and catch-up protocols.
Tailored, dialogue-based education (not myth-busting)	Builds confidence and comprehension; avoids reactance	Category II knowledge gaps are common;[12] myth-busting alone is insufficient.[22]	Personalize by concern profile; anchor content to clinical encounters.
Equity-focused outreach and a unified information system	Improves reach for migrant and left-behind children (constraints)	Providers cite the absence of a unified tracking system as a barrier.[18]	Cross-jurisdiction records; targeted outreach; school and community partnerships
Credible online content on domestic platforms	Counters misinformation where parents actually look	Higher media trust and health literacy linked to lower hesitancy.[22]	Pre-bunking and narrative framing on WeChat, Weibo, and Douyin; use credible messengers.

DISCUSSION

This review indicates that parental vaccine hesitancy in China is multifactorial and, in important ways, distinct from patterns described in high-income Western settings. Prevalence estimates are wide (roughly 6% to 65%) because of inconsistent measurement, yet a consistent structure emerges. Hesitancy concentrates in self-paid Category II vaccines and in newer vaccines such as influenza, while free Category I vaccines retain high coverage. The dominant driver emphasized across the reviewed studies is not anti-vaccine ideology but institutional trust, repeatedly shaken by domestic vaccine-safety incidents. As a result, hesitancy in China shows up as delay and selective non-uptake rather than blanket refusal.

How the drivers interact

Trust sits at the center (Figure 3). Safety incidents lower confidence in domestic vaccines, regulators, and the delivery system, and this reduced confidence raises perceived risk, which in turn increases hesitancy.[12,18] The two-tier system adds a structural layer. Because Category II vaccines are optional and paid out of pocket, any dip in confidence or knowledge converts easily into non-uptake, which helps explain persistently low coverage of vaccines such as the pneumococcal conjugate vaccine.[19,21] Access and equity factors interact with trust, since migrant and left-behind children face both weaker health-system contact and, in some groups, greater safety concern.[16,18] The information environment can

amplify or dampen these dynamics, depending on the credibility and framing of content encountered on WeChat, Weibo, and Douyin.[6,18]

Distinguishing hesitancy from access barriers

Low or delayed uptake in China does not always reflect parental hesitancy, and the two should be read separately. Attitudinal delay reflects parents who doubt, distrust, or deprioritise a vaccine, as in the rise in delayed DTaP doses after the Changsheng incident.[12] Structural delay reflects barriers that operate even when parents are willing. These include the out-of-pocket cost of Category II vaccines, interrupted care during migration, limited service availability, and the absence of a unified cross-jurisdiction record that lets migrant and left-behind children fall through the system.[12] The low coverage of Category II vaccines therefore reflects both the voluntary, self-paid design of that tier and residual hesitancy. Under-vaccination among migrant and left-behind children is driven substantially by access and record-keeping gaps rather than by attitudes alone. Because most studies measure coverage or attitudes but not both, coverage shortfalls are treated here as an upper bound on the contribution of hesitancy.

What the intervention evidence suggests

The most consistent gains come from strategies that rebuild trust and lower practical barriers, rather than from information alone. Pay-it-forward models pair a subsidy with community reciprocity. They improved both uptake and confidence in Chinese trials, and they directly address the cost barrier built into Category II vaccination.[12,21] Provider recommendation, reminder and recall systems, and convenient delivery reduce the constraints that turn hesitant attitudes into delayed doses.[12,21] Purely informative myth-busting performs poorly and can reinforce doubt.[21] For China specifically, the evidence points to a lever with little Western analogue: the speed and transparency of the official response to safety incidents, together with stronger adverse-event surveillance, appear central to protecting confidence.[19-20]

Implications for policy and practice

The reviewed evidence supports the determinants and intervention directions described above. The points below translate that evidence into policy-relevant recommendations. They are reasoned implications rather than directly tested conclusions, and the strength of each depends on the underlying evidence noted in the text.

- Treat safety-incident response as a core confidence strategy. Respond quickly and transparently, and strengthen adverse-event surveillance so problems are detected early.[20,24]
- Address the Category II coverage gap through affordability measures. Community-engaged financing such as pay-it-forward, or the inclusion of high-value vaccines in local programs, can raise uptake.[12,21,24]
- Support provider communication and reminder or recall systems to improve timeliness, especially for boosters and later-scheduled doses.[12,24]

- Target equity gaps for migrant and left-behind children, including a unified national immunization information system.[12,23]
- Design online content for credibility and comprehension on domestic platforms, and anchor it to clinical channels rather than relying on myth correction.[6]

LIMITATIONS

This synthesis is constrained by heterogeneity in hesitancy definitions, measurement tools, vaccine types, and study designs, which prevents pooled estimates and limits direct comparison. Most included studies are cross-sectional, so causal inference is limited. Many intervention studies report short-term attitudes or intentions rather than sustained coverage. Restriction to English-language sources omits the large Chinese-language literature indexed in databases such as CNKI and Wanfang, which may bias the evidence base. Finally, pandemic-era shifts make it difficult to separate structural drivers from attitudinal ones. Because most included studies are cross-sectional and associational, the determinants identified here, including the central role of institutional trust, are best read as consistent associations rather than established causes. The intervention conclusions rest on a small number of trials and reviews, so recommendations such as pay-it-forward financing and bundled trust-building are promising rather than definitive. Taken together these constraints mean the patterns described are well-supported but provisional, and they should be confirmed in broader, longitudinal, and bilingual reviews that include Chinese-language databases.

Future directions

Priorities include standardizing vaccine hesitancy and vaccine literacy measures for Chinese populations, so that estimates become comparable across regions.[24] Longer-term evaluations should test bundled interventions that combine trust-building, provider communication, reminder or recall, and affordability measures, with outcomes focused on timely series completion and sustained coverage rather than short-term attitudes.[25-26] Implementation research should examine how effective strategies can be scaled equitably to migrant and left-behind populations. Given the domestic digital environment, ongoing monitoring of misinformation on WeChat, Weibo, and Douyin, and testing of pre-bunking and narrative approaches, remain important.

CONCLUSION

Parental vaccine hesitancy in China is a serious but tractable challenge with a distinctive profile. Free Category I vaccines retain high coverage, while hesitancy concentrates in self-paid Category II and newer vaccines and expresses itself mainly as delay and selective non-uptake. The central lever is trust, repeatedly tested by domestic safety incidents and shaped by the two-tier system, the information environment, and access gaps for migrant and left-behind children. The most dependable gains come from three moves: rebuilding institutional trust through transparent incident response and stronger surveillance, lowering cost and logistical barriers, and pairing credible communication with convenient delivery.

Programs designed around how Chinese parents actually decide, cognitively, financially, and logistically, offer the best path to sustaining high childhood coverage.

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