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Research Article

Beyond Risk Awareness: Confidence, Trust, and Behavioral Access in Influenza Vaccination Decisions Among Chinese Parents

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Abstract

Despite the availability of influenza vaccines and recommendations, vaccination rates among the Chinese population have remained low and below desired public health targets. This student-led study examined how Chinese parents understand and make decisions about influenza vaccination. Using perception, trust, and behavioral access as an organizing framework for the analysis, the authors analyzed closed-ended survey items and optional open-ended responses involving 165 eligible parents of school-age children in selected regions of China. The brief contextual comparison with Australia was made with evidence from policy documents and published literature, which helped interpret the findings within a broader public health system context.

The results show that in this sample, risk awareness was less important than confidence, trust, and behavioral access with respect to vaccination behavior. Parents of children who had been vaccinated, and those whose children had not, experienced similar levels of perceived risk. By contrast, parents of vaccinated children were found to have increased belief in the effectiveness of the vaccination, greater perceived necessity of annual vaccination, greater trust in the doctor, greater confidence in medical recommendations, greater convenience of the vaccination, and more social influence supporting vaccination. Some of the most reported barriers were concerns about side effects, uncertainty about whether the vaccines would be effective, and a lack of physician recommendation among unvaccinated respondents. Looking to Australia suggested that system design may make vaccination more visible, routine, and easy to do.

This study finds that providing information or vaccines alone may not enhance influenza vaccination uptake. Public health strategies may need to work on increasing confidence in vaccine effectiveness, enhancing trust and encouraging action by giving clear provider recommendations, and making vaccination easier, more visible, and better socially supported.

Keywords:
Influenza vaccination; vaccine hesitancy; parental decision-making; China; public health; trust; behavioral access

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1. Introduction

Seasonal influenza remains a critical public health challenge worldwide. Although seasonal influenza is often treated as a routine seasonal illness, influenza can cause a significant health care burden, disruptions in schools and workplaces, hospitalizations, and preventable deaths, especially among older adults, young children, and people with underlying health conditions.[1] Annual vaccination for influenza is widely considered one of the best ways to reduce severe disease and influenza-related mortality.[2]

Influenza vaccines may be readily available, but this does not mean high uptake will automatically occur. Vaccination coverage varies across countries. These differences reflect flaws in the supply of vaccines, as well as problems with public health systems, social attitudes, and individual decision-making. Influenza vaccination is available free of charge through the National Immunization Program in Australia to eligible high-risk groups.[4] In contrast, China has long experienced low influenza vaccination coverage, with previous estimates often placing population-level uptake at around 2–5%.[3] This contrast raises an important question: why is influenza vaccination underused in China despite vaccine availability and public health recommendations?

According to previous research in China, people face numerous barriers to influenza vaccination, including limited awareness, safety and efficacy concerns, cost, convenience, and access. While these are certainly important explanations, they may not fully capture how people make vaccination decisions in their daily lives. Low demand does not necessarily stem from extreme anti-vaccine beliefs. In many instances, individuals do not actively reject the vaccine, but rather remain passive. Many do not perceive influenza as a serious illness or view vaccination as necessary. Furthermore, they do not consider getting vaccinated to be urgent.

This research looks at decision-making regarding flu vaccinations through three interconnected dimensions. Perception is how people tend to gauge influenza risk and vaccination requirements. Trust involves individuals’ state of trust in doctors, health information, and vaccines. Getting vaccinated must not only be physically possible but also affordable, socially normal, and easy to act upon, all of which fall under behavioral access. These factors are closely interrelated. People may not take the flu shot if they begin to see the illness as mild. Individuals’ trust in their healthcare providers may

not be enough to address vaccine hesitancy if those providers do not make a clear recommendation or offer an explanation. If vaccination requires too much effort, time, or cost, then non-vaccination may become the default choice.

This study, led by students, examines how Chinese parents understand and make decisions regarding influenza vaccination. Using mainly closed-ended survey items and optional open-ended responses from parents in selected regions of China, and a brief contextual comparison with Australia, the study asks: How do perception, trust, and behavioral access shape Chinese parents' decisions about influenza vaccination?

This study is aimed at generating insights into the low influenza vaccine uptake in China, specifically as to why mere risk awareness does not suffice for vaccination, and highlighting practicable suggestions for community-based vaccine activities in the future.

2. Methods

2.1 Study Design

The study sought to find out how Chinese parents understand and make decisions about influenza vaccines. The primary source of data was the parent survey, which consisted of closed-ended rating items and optional open-ended responses. A brief contextual comparison of China and Australia, based on publicly available policy documents and published literature, was conducted to aid the interpretation of these responses.

This was a student-led exploratory study. The goal was to understand the patterns of decision-making with respect to vaccination rather than to create statistically representative estimates of vaccine attitudes in China. Descriptive statistics of the closed-ended items offered a helpful context for the qualitative themes, and thematic analysis was done on the open-ended questions. The survey given to parents was the key piece of evidence underpinning the assessment. The document review was used to understand the background on differences in vaccination policy, channels of access, immunization data systems, and public health messaging.

2.2 Participants and Parent Survey

A cross-sectional online survey was conducted in 2025. A total of 299 survey responses were received. One respondent did not provide consent and was excluded. Among the remaining respondents, 133 did not identify as parents or guardians of school-age children and were excluded based on the predefined eligibility criteria. The final analytical sample therefore consisted of 165 eligible parent respondents. The survey was distributed through open social-media and community networks. Because the total number of individuals who received or viewed the survey invitation could not be determined, a conventional response rate could not be calculated.

Participants were parents or guardians of school-age children living in selected regions of China, including Beijing, Shanghai, Guangdong, Shanxi, and other cities. Parent gender, age group, region, child education level, and self-reported influenza vaccination status in the previous 12 months were summarized descriptively in [Table 1](#).

The survey included rating options and open-ended questions. Closed-ended items assessed participants' influenza risk perception, perceived vaccine effectiveness, trust in health care providers, perceived adequacy of doctors' vaccine explanations, satisfaction with vaccination convenience, treatment-oriented beliefs, and perceived social influence. The complete parent questionnaire, including the survey-item wording, response options, rating scales, and open-ended questions, is provided in Supplementary File S1. Allowing participants to express their thoughts in their own words through open-ended questions was appropriate for the exploratory nature of the research.

Since the purpose of the study was exploratory, the sample did not aim to be statistically representative of Chinese parents. Sample adequacy here was considered in terms of responses from participants being information-rich and relevant for addressing the aim of the study. This is in line with the concept of information power in qualitative research.^[19]

2.3 Descriptive and Thematic Analysis of Survey Responses

Simple descriptive statistics, including counts and mean scores, were used to assess closed-ended items. These statistics were used to situate the qualitative findings rather than to make statistical claims concerning the wider population. Vaccination status was clearly reported by 162 respondents. Group comparisons were conducted between vaccinated respondents who reported receiving an influenza vaccine in the previous 12 months ($n = 37$) and unvaccinated respondents who reported not receiving an influenza vaccine in the previous 12 months ($n = 125$). Three respondents selected “not sure/cannot remember” for vaccination status and were included in the overall descriptive sample but excluded from vaccinated-versus-unvaccinated comparisons. Independent-samples t-tests were used as exploratory comparisons of mean scores between vaccinated and unvaccinated respondents. Analyses were based on the responses available for each relevant item, and no missing-data imputation was performed. The three “not sure/cannot remember” responses to vaccination status were treated as valid responses rather than missing data and were excluded only from the vaccinated-versus-unvaccinated comparisons.

The open-ended responses were analyzed via thematic analysis using Braun and Clarke’s method.[8], [18] Because the open-ended questions were optional and participants could respond selectively to individual items, a single overall number of participants contributing qualitative responses could not be determined reliably from the analytic dataset. All available open-ended responses were therefore included in the qualitative analysis. Two researchers independently read and coded the responses. They then compared their coding and discussed differences until agreement was reached. Initially, the responses were read repeatedly for familiarization. The data were then coded for recurring ideas, grouped into candidate themes, reviewed against the dataset, and refined into final themes. Coding focused on the perceived likelihood of an influenza infection, the perceived necessity of vaccination, treatment-related health beliefs, trust in health care professionals, safety concerns, convenience, cost, and social norms. Quotations were selected as concise examples that clearly illustrated recurrent ideas within the final themes. Where the original response was provided in Chinese, the quotation was translated into English for reporting.

The final analysis was framed by perception, trust, and behavioral access and their relationships. Perception refers to how the participants perceive their risk of influenza and the need for vaccination. Trust is the confidence people have in health workers, health information, and vaccine advice. Behavioral access relates to ease, including physical access to the vaccinations themselves, as well as practical and social factors that make it easier or harder to act (e.g., convenience and cost).

Because this exploratory study relied on a convenience sample, the analysis was not meant to indicate the prevalence of each attitude in the wider Chinese population. The objective of the analysis was to uncover links that might shed light on why influenza vaccination is frequently not a priority, rather than to test statistical predictors. To ensure analytic transparency, coding decisions and the development of themes were documented throughout the process.[20]

2.4 Contextual Comparison with Australia

To contextualize the Chinese survey results, we conducted a brief comparison of the influenza vaccination systems in China and Australia. We looked through public policy materials, vaccination manuals, and papers. The sources utilized for the analysis were national immunization program documents, recommendations on influenza vaccination, data from the immunization registry, and published articles based on studies describing the uptake and access to influenza vaccination.[4], [14], [15], [16], [17] Australia was selected because its influenza vaccination program is more clearly integrated into a national immunization framework, with publicly supported access for eligible groups and a national immunization register, providing a useful contrast with the more locally variable and individually initiated vaccination environment described in China. The comparison was intended to provide policy and health-system context for interpreting the Chinese survey findings rather than to establish Australia as a formal control group.

The analysis examined these in relation to the financing of vaccines, access to vaccines, vaccine information systems, and communications. Australia stands out from China as influenza vaccination

is more integrated within national public health programs. Free vaccination through the National Immunization Program is offered to eligible high-risk groups.[4]

This contextual comparison was not intended to suggest a causal relationship between national immunization systems and individual vaccination behavior. Rather, it was used to provide background for interpreting the barriers identified in the Chinese survey, including convenience, provider recommendation, public communication, and system-level support.

2.5 Ethical Considerations

Participants were informed that the survey was conducted as part of a student educational research project on decision-making concerning influenza vaccination. Participation was voluntary, and respondents could refuse to answer any question or decline participation. Only responses from participants who indicated consent were included in the analysis. The analytical dataset was de-identified before analysis, and neither the analysis nor the manuscript contained identifiable personal information.

External research advisor oversight was provided by a qualified public health researcher, who reviewed the questionnaire, participant screening process, data handling plan, and manuscript. The project was treated as an anonymous, voluntary, minimal-risk educational survey; full institutional IRB review was not required. The questionnaire did not request names, phone numbers, WeChat IDs, addresses, identification numbers, or other direct personal identifiers. Platform-generated metadata, including IP address, submission time, and response source information, was excluded from the de-identified analytical dataset and was not used in the analysis.

3. Results

Out of the 299 survey responses received, the final analytical sample included 165 eligible parent respondents as per consent and eligibility screening. Characteristics of the participants are shown in Table 1. The respondents were parents or guardians of school-age children from selected cities/regions in China, including Beijing, Shanghai, Guangdong, Shanxi, and others.

Influenza vaccination in the prior 12 months was self-reported by the participants. Out of the 165 eligible respondents, 37 reported receiving an influenza vaccine, 125 reported that they had not, and 3 selected “not sure/cannot remember.” Accordingly, vaccinated-versus-unvaccinated comparisons were made with the 162 respondents with clearly reported vaccination status.

The findings were structured in three dimensions: perception, trust, and behavioral access. Overall, the findings indicated that risk awareness was not the only explanation of vaccination behavior. Differences between vaccinated and unvaccinated parents were more visible with respect to vaccine confidence, perceived necessity of an annual dose, trust in health care providers, convenience, and social influence.

3.1 Participant Characteristics

Table 1 presents the demographic profile of the 165 eligible respondents. There were more female than male respondents in the sample, and most belonged to the 31-40 and 41-50 age groups. The participants reported having children at the primary, middle, and high school levels. Most respondents had not been vaccinated against influenza in the previous 12 months. Due to the online recruitment of participants through social media and community networks, these characteristics should be considered descriptive rather than representative of the entire Chinese parent population.

3.2 Quantitative Comparison Between Vaccinated and Unvaccinated Parents

Table 2 shows the mean scores of vaccinated and unvaccinated respondents for the three key dimensions of the study framework: perception, trust, and behavioral access. As illustrated in Figure 1, there are clear differences. No difference in perceived influenza risk between the two groups was a key finding. As a result, vaccination behavior in this sample was not simply explained by whether parents considered influenza to be serious.

Disparities were more noticeable in other items related to perception. Vaccinated respondents reported stronger belief in vaccine effectiveness than unvaccinated respondents. They also believed that they needed them every year. The implication here is that knowledge about flu risk may not be enough; parents may also believe that the vaccine works and that they must be vaccinated annually.

The vaccinated individuals who filled out the questionnaire trusted doctors more and strongly agreed that doctors advised getting the vaccine only in their best interest. This means that trust cannot be a general attitude; it only becomes meaningful in a relevant context, such as that of medical advice. Furthermore, behavioral access also appeared important. The vaccinated respondents stated that vaccination was more convenient and that their peers supported vaccination or viewed it as the norm. People are more likely to get vaccinated when it is socially acceptable, when it is easy and familiar, and when it is socially supported.

3.3 Perception: Risk Awareness Alone Was Not Enough

The survey shows that perception did matter, but not just in terms of whether parents viewed influenza as a risk. Vaccinated and unvaccinated respondents, on average, felt the same risk of getting influenza. However, they differed more clearly in their belief in vaccine effectiveness and the perceived necessity of annual vaccination.

This is an essential distinction. Some parents see influenza as a real disease but do not see value in vaccination for a variety of reasons. Some parents are uncertain about vaccine effectiveness. Others feel that we can treat influenza after infection. In their free-text answers, some participants described influenza as something they could manage, or suggested medicine would suffice if infected. This treatment-oriented perspective decreased the recognition of vaccination as a preventive measure.

One respondent mentioned, "Most of us have been well, even if we do not get the vaccine." Another respondent mentioned, "You can always take medicine if you catch the disease, so I do not really need vaccination." Thus, perhaps non-vaccination indicates low perceived necessity rather than active refusal.

3.4 Trust: General Trust Needed Clear Recommendation

Vaccination choices relied partly on a degree of trust in health care providers. Individuals who had been vaccinated indicated that they trusted doctors a great deal more and that they were confident that doctors were making vaccination recommendations in their best interests. The implication is that trust will have a greater impact on behavior when it is linked to credible medical advice.

Some parents did trust their doctors, but did not receive detailed information on vaccines or proactive conversations. According to one participant, "The doctor is relatively trustworthy, but he does not have the time to explain sufficiently." So, the problem was not distrust. While there was provider trust, it needed to be triggered by the right vaccine recommendations and explanations.

This does not contradict the concepts of a "trust deficit" and "vaccine hesitancy." In this example, general trust in doctors was not enough for vaccination promotion. Additionally, it required trusted providers to communicate clearly enough for parents to see influenza vaccination as worthwhile.

3.5 Behavioral Access: Convenience, Social Support, and Non-Vaccination Barriers

Another key dimension was behavioral access. According to the respondents, the people who were vaccinated felt that it was easier to arrange and do. There were also stronger peer influences or social norms supporting vaccination. These trends point to the idea that vaccination choice was shaped not just by what parents believed, but also by whether vaccination was distinctively practical and socially supported.

Some unvaccinated respondents stated that their hesitation was primarily due to vaccine side effects and uncertainty about effectiveness. Others reported feeling this way because their doctor did not suggest it or they did not think they needed it. Moreover, some reported being unable to pay for it or travel there. As respondents could select multiple reasons, these barriers should be interpreted as overlapping, rather than mutually exclusive. As illustrated in Figure 2, these reasons were commonly reported.

Table 1. Demographic Characteristics of Participants.
The analytical sample included 165 eligible parent respondents. Values are presented as n and %.

Characteristic	Categories	n	%
Gender	Female	125	75.8
	Male	40	24.2
Age Group (Parent)	18–30 years	14	8.5
	31–40 years	103	62.4
	41–50 years	44	26.7
	≥ 51 years	4	2.4
Region	Beijing	48	29.1
	Shanghai	38	23
	Guangdong	49	29.7
	Shanxi	15	9.1
	Other	15	9.1
Child Education Level	Primary School (Grades 1–6)	73	44.2
	Middle School (Grades 7–9)	47	28.5
	High School (Grades 10–12)	45	27.3
Influenza Vaccination Status (Past 12 Months)	Vaccinated	37	22.4
	Unvaccinated	125	75.8
Total		165	100

Table 2. Comparison of Key Decision-Making Factors Between Vaccinated and Unvaccinated Parents.
Group comparisons included 162 respondents with clearly reported vaccination status: 37 vaccinated and 125 unvaccinated respondents. Values are presented as mean and SD on a 1–5 Likert scale, ranging from 1, Strongly Disagree, to 5, Strongly Agree. Independent-samples t-tests were used for exploratory comparisons between the two groups.

Dimension (Factor)	Survey Item (Abbreviated)	Vaccinated(n=37) Mean (SD)	Unvaccinated(n=125) Mean (SD)	Mean Difference(Vaccinated – Unvaccinated)	p-value (Two-tailed)
1. PERCEPTION(Understanding Risk and Necessity)					
Perceived influenza risk	Influenza is a serious disease.	3.51 (1.02)	3.58 (1.07)	–0.07	0.760 (ns)
Belief in vaccine effectiveness	The flu vaccine is effective.	4.19 (0.82)	3.63 (0.99)	0.56	0.002*

Table 2 (continued)

Dimension (Factor)	Survey Item (Abbreviated)	Vaccinated(n=37) Mean (SD)	Unvaccinated(n=125) Mean (SD)	Mean Difference(Vaccinated – Unvaccinated)	p-value (Two-tailed)
Perceived necessity of annual vaccination	It is necessary to get a flu vaccine every year.	4.00 (0.76)	3.19 (1.05)	0.81	< 0.001***
2. TRUST(Confidence in Information and Providers)					
Trust in doctors	I trust my doctor's advice about flu vaccines.	4.05 (0.75)	3.46 (1.00)	0.59	0.001**
Adequacy of doctor explanation	Doctors explain the flu vaccine clearly.	3.51 (0.88)	3.21 (1.01)	0.3	0.092 (ns)
Trust that advice is in the best interest	Doctors recommend the flu vaccine in my best interest.	4.22 (0.71)	3.55 (1.02)	0.67	< 0.001***
3. BEHAVIORAL ACCESS(Making Vaccination Easy and Socially Supported)					
Convenience and effort	Getting a flu vaccine is convenient for me.	4.19 (0.81)	3.42 (1.08)	0.77	< 0.001***
Practical barriers	There are practical barriers that make vaccination difficult. (R)	2.46 (1.01)	2.81 (1.10)	−0.35	0.091 (ns)
Peer influence / social norms	People important to me think I should get a flu vaccine.	4.00 (0.88)	3.47 (1.03)	0.53	0.003**
Social visibility of vaccination	Getting a flu vaccine is considered normal in my community.	3.24 (1.02)	2.81 (1.10)	0.43	0.059 (ns)

*Note. (R) = reverse-coded item (higher scores indicate fewer barriers). Independent-samples t-tests were used for comparisons. ns = not statistically significant ($p \geq 0.05$); * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.*

3.6 Contextual Comparison: System Design and the Vaccination Environment

Figure 3 presents a contextual comparison of influenza vaccination systems in China and Australia. The comparison between the discussed countries includes the policy environment, availability and cost of vaccines, recommendations by providers, public awareness, culture, and vaccination coverage. This serves more as a background for interpretation than a formal policy assessment.

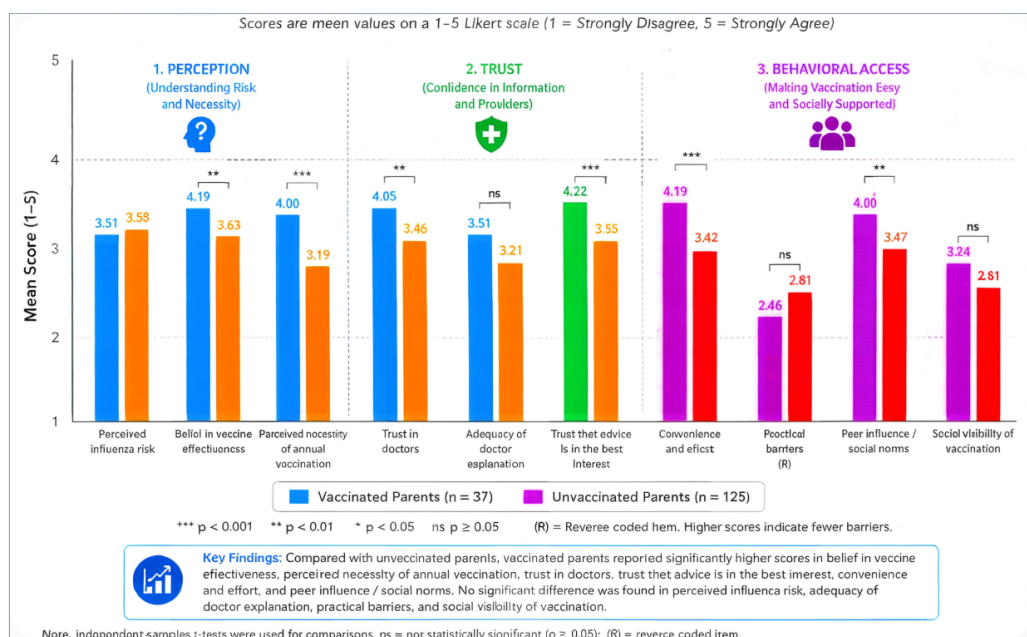


Figure 1. Comparison of Key Decision-Making Factors Between Vaccinated and Unvaccinated Parents.

Mean scores are shown for 37 vaccinated and 125 unvaccinated respondents. Survey items were rated on a 1–5 Likert scale, ranging from 1, Strongly Disagree, to 5, Strongly Agree.

By comparing both scenarios, we can see how system design may shape the environment where parent decisions are made. Australia's national immunization policy strongly supports influenza vaccination. Eligible groups can receive flu shots without being charged. Influenza vaccination in China is largely influenced by local policy, out-of-pocket payments, and individual initiative. This may affect whether vaccination is seen as visible, routine, and worth the effort.

This comparison ought to be viewed with caution. This does not imply that vaccination uptake is caused by system design. Rather, it illustrates how these systems may operate differently in different settings, offering a background for understanding.

3.7 Integrated Framework

The qualitative and quantitative findings are combined in Figure 4. According to the framework, there were three interrelated dimensions of Chinese parents' decision-making regarding influenza vaccination: perception, trust, and behavioral access. Regarding the quantitative findings, vaccinated parents could be distinguished more from unvaccinated parents in terms of confidence in vaccine effectiveness, perceived necessity for annual vaccination, trust in providers, convenience, and social influence than in perceived influenza risk itself.

The framework must be seen as interpretive and not causal. It doesn't show that these factors directly caused vaccination behavior. Rather, it helps summarize the main patterns in this exploratory study and shows how perception, trust, and behavioral access can interact to help vaccination become an actionable and socially accepted activity.

4. Discussion

4.1 Risk Awareness Alone Was Not Enough

According to this exploratory study, risk awareness is not the only explanation for influenza vaccination behavior among Chinese parents. The study showed that the vaccinated respondents did not underestimate their risk of getting influenza compared to the unvaccinated ones. Thus, simply acknowledging that influenza is a potential health risk does not suffice. Clearer differences were found regarding belief in vaccine effectiveness, the necessity of annual vaccination, trust, convenience, and social support.

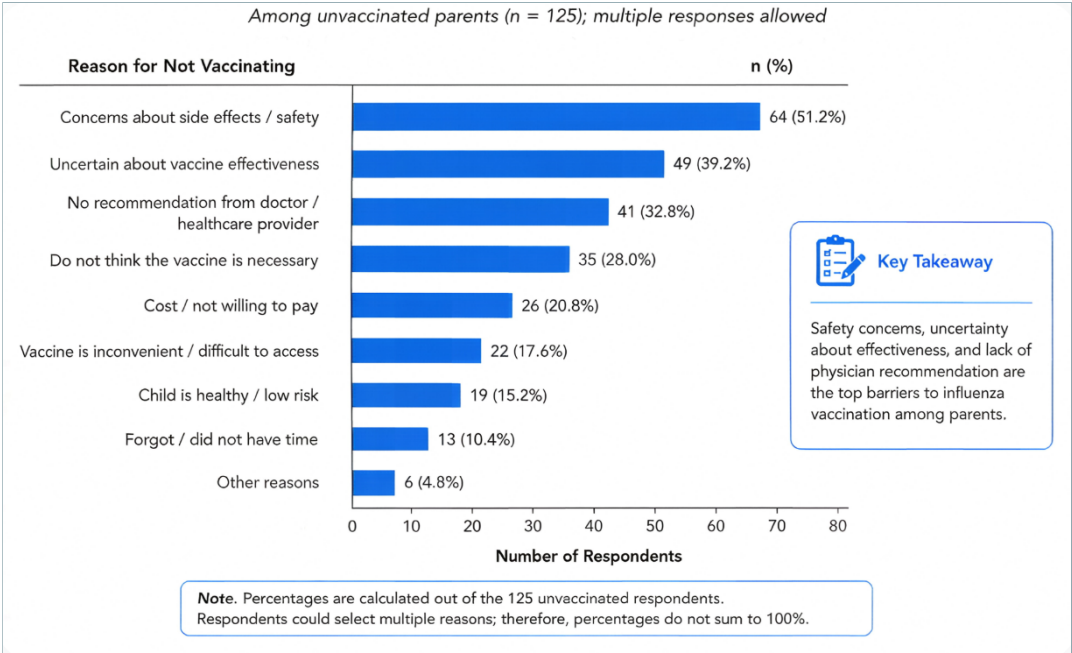


Figure 2. Most Frequently Reported Reasons for Non-Vaccination Among Unvaccinated Parents.

The figure summarizes reasons reported by unvaccinated respondents, and participants could select more than one reason. The sample size shown for this analysis should correspond to the number of unvaccinated respondents who provided an available response to this survey item.

Given this finding, awareness campaigns should change for the problem to be solved. Some parents may know that the flu can be harmful, but nevertheless do not get vaccinated because they have doubts about flu shots working, do not see annual vaccination as necessary, do not get a direct recommendation they trust from a doctor, or face barriers to vaccination. Accordingly, one could still regard non-vaccination as passive hesitancy, but the survey findings suggest that such hesitancy is not merely about low risk perception.

Vaccine hesitancy broadly refers to the delay or uncertainty of vaccination despite the availability of vaccines.[7] The 5C model of vaccination behavior posits that confidence, complacency, constraints, calculation, and collective obligation or responsibility shape vaccination decisions rather than mere knowledge.[12] Confidence in the vaccine, trust in health care providers, and access to the vaccine seemed particularly important in the study at hand.

4.2 Trust Is Present, but It Does Not Automatically Lead to Action

At the same time, trust is important; however, general trust may not be enough. The vaccinated respondents trusted doctors more and believed doctors recommended vaccination in their best interests. This means trust becomes more important when linked to specific vaccine advice. Even if a parent thinks that doctors are trustworthy, their trust may not result in vaccination unless a doctor clearly recommends the vaccine and explains why it is useful.

Researchers have shown that provider communication influences vaccine acceptance, which aligns with our findings. According to Opel et al., the nature, coherence, and quality of provider-parent vaccine conversations matter, particularly when recommendations are clear and proactive.[13] Notably, provider communication mattered not only because it provided information, but also because it could help turn general trust into a specific reason to vaccinate.

This also explains why the problem is not merely a trust deficit. Some parents trust doctors but may decide not to act if they sense that vaccination is not discussed clearly, or that the recommendation is vague. For this reason, increasing influenza vaccination uptake may require health care providers to make clear, brief, and timely recommendations, instead of assuming general trust will automatically result in uptake.

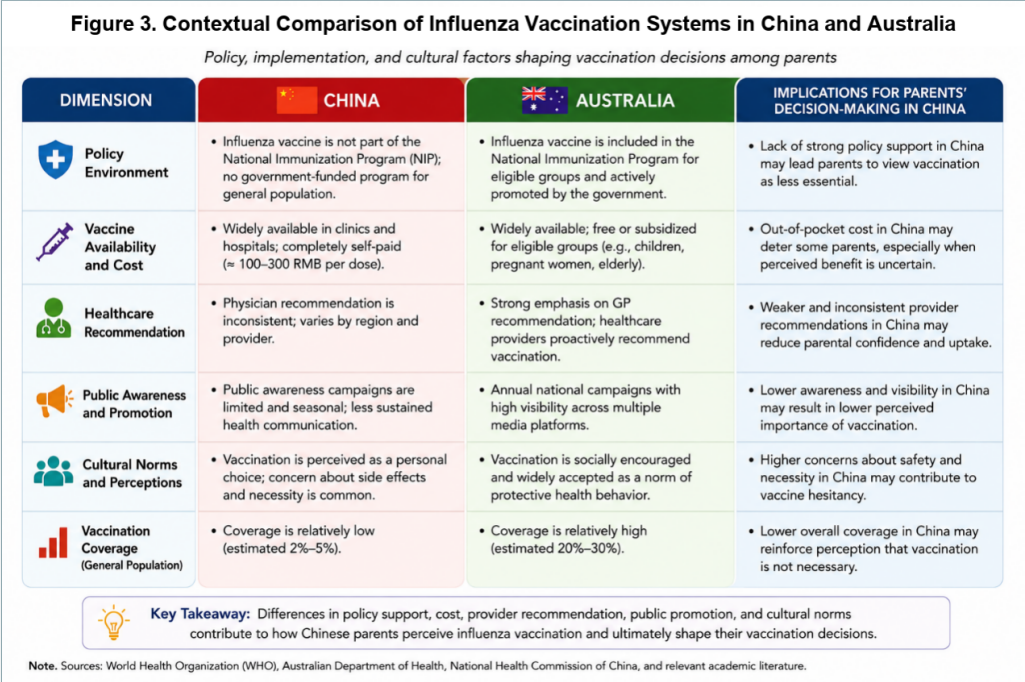


Figure 3. Contextual Comparison of Influenza Vaccination Systems in China and Australia.

The figure summarizes differences in vaccination policy, access and cost, provider recommendation, public communication, information systems, and the broader vaccination environment based on the policy documents and published literature reviewed in this study. This comparison provides policy and health-system context and does not represent a participant-level control comparison.

4.3 Behavioral Access and the Ease of Doing Nothing

The research suggests that access should also be interpreted practically and behaviorally. Even if a vaccine is available, parents must know where to get it, have enough time to get it, feel the effort is worth it, and think vaccination is socially supported. Vaccinated respondents perceived access as easier and felt greater social support to get vaccinated. This suggests that access is not just about supply; it is also about whether it feels easy and normal to get vaccinated.

This interpretation is consistent with behavioral science perspectives on friction and choice architecture. Thaler and Sunstein argue that small features of the decision environment can influence whether people act, especially when motivation is uncertain.[11] The 5C model also identifies convenience and constraints as important factors in vaccination behavior.[12]

The reasons reported by unvaccinated respondents also lend credence to this view. Concerns over side effects, doubts about vaccine effectiveness, a lack of physician recommendations, involved costs, and difficulty in accessing vaccination were common barriers. These obstacles should not be seen as entirely disconnected. For instance, a parent hesitant about vaccine effectiveness will be less likely to overcome cost or inconvenience. Thus, low confidence and practical friction can combine to reinforce each other and weaken the motivation to vaccinate.

4.4 How System Design Shapes the Vaccination Environment

The analysis of Australia provides a useful perspective for considering these parent-level findings. Australia has taken a step further than China in its incorporation of influenza vaccination into a national immunization policy. Eligible groups may receive their annual flu shot for free or at a subsidized cost through the National Immunization Program.[4], [9] The Australian Immunization Register is another useful tool for vaccination monitoring and record-keeping.[10] These system characteristics may help make vaccination more visible, routine, and easier to act upon.

In China, it is mostly local policy, out-of-pocket payments, and individual initiative that drive influenza vaccination. Public communication and vaccination tracking may also be less integrated. This

comparison should not be misinterpreted. There is no evidence in this study that system design directly causes vaccination uptake. Yet, it indicates that people's decisions are made in environments that may encourage or undermine the action.

This system-level context can explain the importance of confidence, trust, and behavioral access. Parents may not need extra motivation to seek vaccination as long as it is regularly recommended, visible, and easy to access. If the effort necessary for vaccination is optional, less visible, and burdensome, uncertainty is more likely to cause inaction.

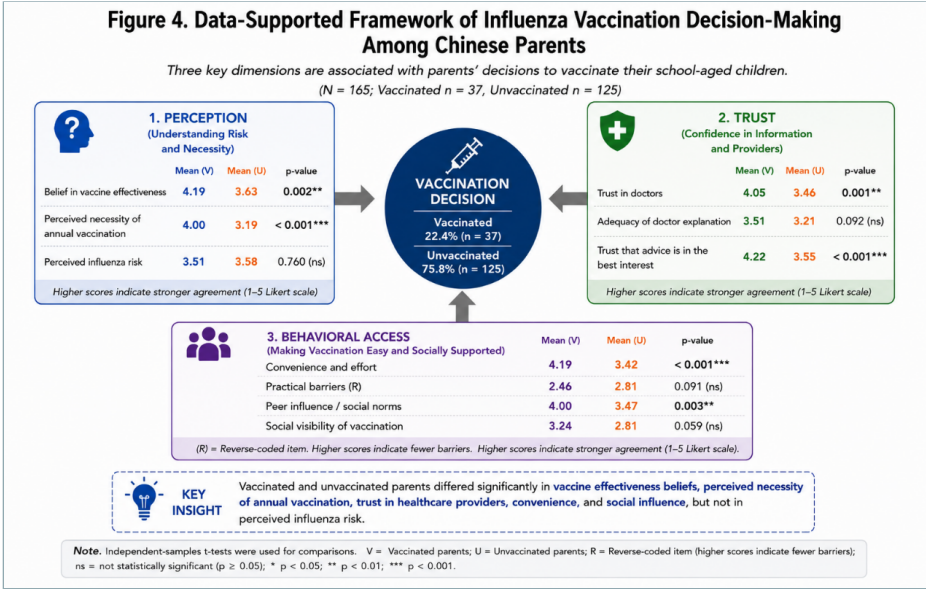


Figure 4. Data-Supported Framework of Influenza Vaccination Decision-Making Among Chinese Parents.

The framework integrates findings from the overall survey sample of 165 eligible parents, quantitative comparisons among the 162 respondents with clearly reported vaccination status, and the available open-ended responses. It summarizes the relationships among perception, trust, and behavioral access and should be interpreted as an exploratory framework rather than a causal model.

4.5 Implications for Community-Based Strategies

It is essential to work on confidence, trust, and behavioral access simultaneously. If parents are not convinced that a vaccine works or do not feel they need to get the vaccine every year, then merely informing them may not be enough. Simply making vaccines available may not be enough if it is not convenient or if it is too easy to delay the vaccination. More than just belief, it is also important that trusted providers offer clear vaccine recommendations.

A better approach might combine risk communication, clear provider recommendations, easy vaccination pathways, and visible community support. The Dandelion Project may be a case in point. Its services focus on education, engagement, and trust-building. These address the hindrances mentioned in this research. Vaccination uncertainty may be alleviated through public education on vaccines. In the same manner, social norms may enhance community involvement. Finally, providing local delivery may reduce friction in practice. However, the Dandelion Project should be recognized as a suggested community-level initiative rather than evidence of success. This study did not evaluate its impact on vaccination knowledge, intention, or uptake. A future pre-post evaluation would be needed before more definitive conclusions could be reached.

Evidence suggests that factors beyond just the availability of the vaccine or general awareness affected the flu vaccine decision in this exploratory sample. Parents relied on their belief in the vaccine, provider endorsement, the ease of getting vaccinated, and social support to take action. It may be more useful to see vaccine hesitancy as resulting from the interaction of confidence, trust, and behavioral access, rather than as a single problem of awareness, access, or trust.

5. Strengths and Limitations

There are several strengths of the study. This paper addresses an important public health issue in China, where influenza vaccination uptake remains low despite vaccine availability and public health recommendations. The study included a substantial number of eligible parent respondents for an exploratory student-led survey. The research could find general trends through closed-ended survey items, while also providing an opportunity for parents to say why they selected those items through optional open-ended answers. The comparison to Australia also positioned parents' decisions within a broader health system context.

The research has its own limitations. The final sample, comprising 165 eligible parent respondents, was recruited online and through community networks. Thus, it does not represent all Chinese parents. Moreover, participants may have had a higher health awareness or interest in the vaccine than the general population. Vaccination status and reported attitudes were based on self-report and may therefore have been affected by recall error. In particular, some participants may have misremembered their influenza vaccination history, which could have resulted in misclassification of vaccination status. Furthermore, three of the 165 respondents were unsure or could not remember their vaccination status; thus, the comparison between vaccinated and not-vaccinated parents is analyzed using 162 respondents with a clear vaccination status.

The numerical comparisons were exploratory and cannot show causation. The comparison between Australia and China was descriptive rather than causal. Because the project relied mainly on a convenience sample and brief open-ended responses, future research should use larger and more diverse samples, richer qualitative methods, and updated study designs such as pre-post evaluation to test whether community-based interventions can improve vaccination confidence and uptake.

6. Conclusion

This exploratory study suggests that awareness alone does not shape Chinese parents' decision-making with regard to influenza vaccine use. In the sample, vaccinated and unvaccinated parents shared similar perspectives on influenza risk. However, their differences were more pronounced regarding confidence in the effectiveness of the vaccine, trust in doctors' recommendations for annual vaccination, convenience, and social influence. Parents may understand that influenza is a health concern but still choose not to vaccinate if they are unsure about the vaccine, receive no clear recommendation, or find vaccination inconvenient.

The findings illustrate that perception, trust, and behavioral access are all important in understanding influenza vaccination decisions. Public health strategies may need to do more than just inform to improve uptake. Schools, community organizations, and health care providers may all help support this process. They should help parents in determining the annual vaccination's usefulness. They should also support doctors in issuing unequivocal recommendations. In addition, they should assist in making vaccination easier and more socially normal. There are possibilities for future research through larger and more diverse samples, more detailed qualitative research, and formal evaluations of community-based activities, such as the Dandelion Project.

Supplementary Materials

[Supplementary File](#)

Competing Interests

The authors have declared that no competing interests exist.

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