

Supplementary Materials:

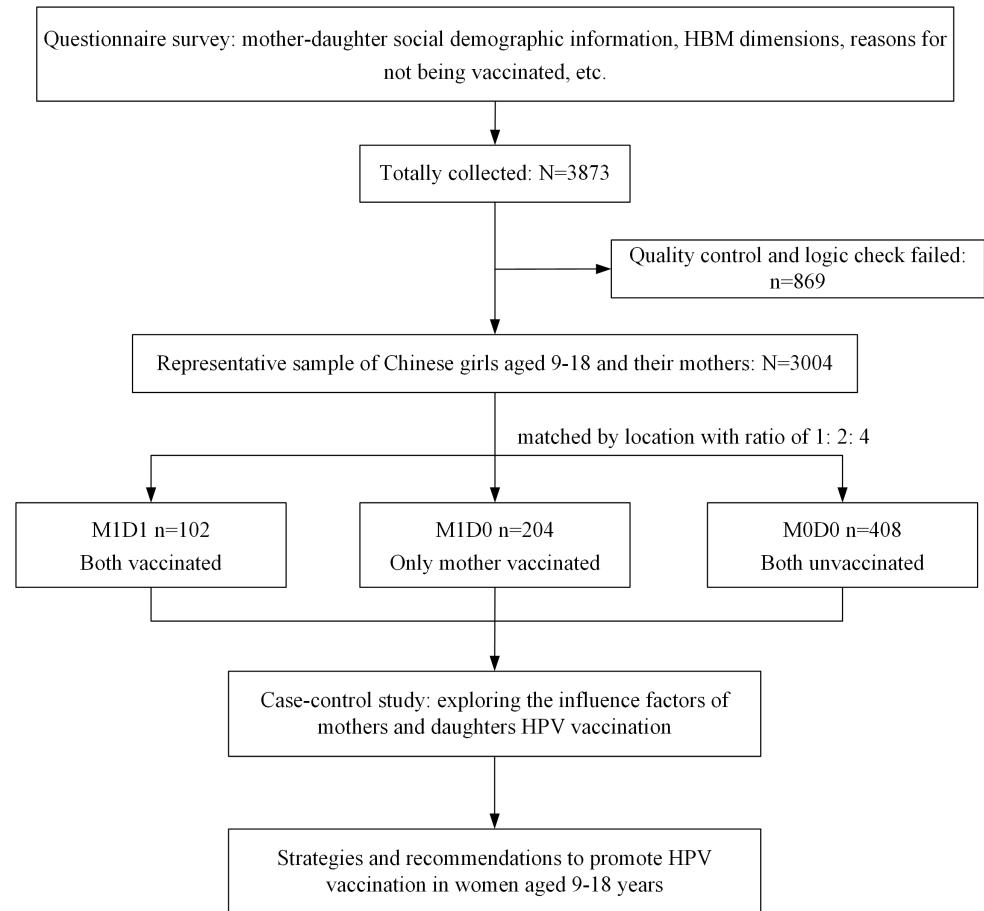


Figure S1. Research path map and sample collection status.

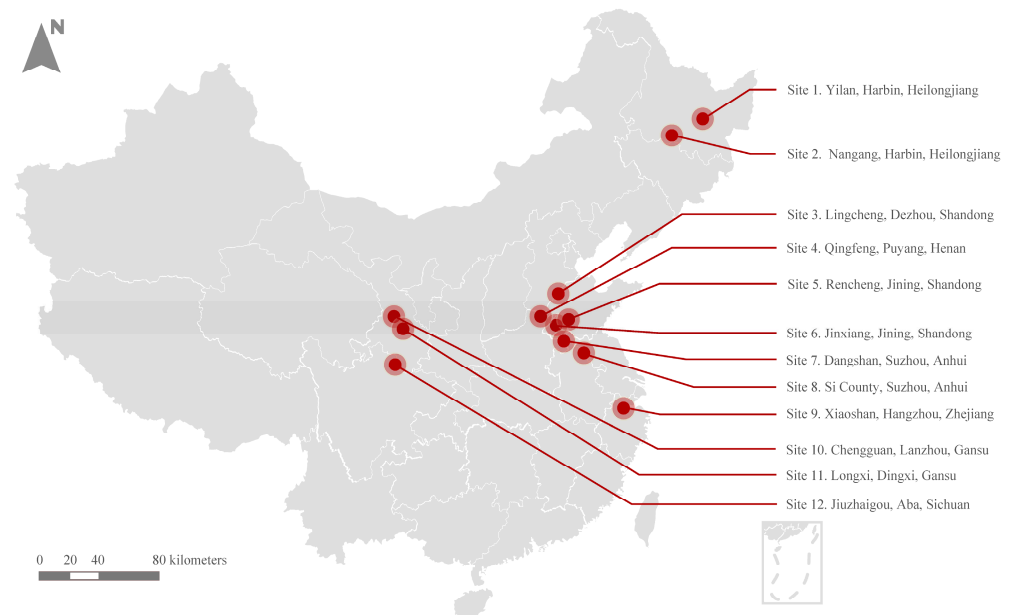


Figure S2. Distribution of investigation sites.

Table S1. Questions and scoring of each dimension of health belief model.

| Dimension | Number | Question | Score/Points |
|---|--------|---|--|
| A. HPV and HPV vaccine knowledge | A1 | Most cervical cancer is caused by a human papillomavirus infection | 1: "Yes"; 0: "No", "Not sure" |
| | A2 | The population infected with human papillomavirus HPV is | 1: "Both male and female"; 0: "Male only", "Female only", "Not sure" |
| | A3 | The main route of transmission of HPV is | 1: "sexual transmission"; 0: "mother to child transmission", "Close contact transmission", "Indirect contact transmission" |
| | A4 | The body can automatically clear the HPV after being infected | 1: "Yes"; 0: "No", "Not sure" |
| | A5 | Is it certain to get sick after an HPV infection | 1: "No"; 0: "Yes", "Not sure" |
| | A6 | How many doses of the 9-valent HPV vaccine need to be administered | 1: "3 times"; 0: "1 time", "2 times", "4 times", "Not sure" |
| | A7 | Who needs HPV vaccination | 1: "Both male and female"; 0: "Male only", "Female only", "Not required for either sex" |
| | A8 | The best time to get HPV vaccinated is | 1: "Before the first sexual behavior"; 0: "After birth", "After the first sexual behavior", "Any time", "Not sure" |
| B. Perception of behavioral benefit | B1 | I think HPV vaccines are important for protecting myself from HPV infection and related diseases | 4-0: "Strongly agree"–"Strongly disagree" |
| | B2 | I think the safety of the HPV vaccine can be guaranteed | 4-0: "Strongly agree"–"Strongly disagree" |
| | B3 | I think the HPV vaccine is effective | 4-0: "Strongly agree"–"Strongly disagree" |
| C. Perception of barriers | C1 | Compared with myself, I treat my daughter to take medicine or play HPV vaccine more cautiously | 4-0: "Strongly agree"–"Strongly disagree" |
| | C2 | The current domestic bivalent HPV vaccine price is about 300 CNY. Do you think the price is reasonable? | 3: "Reasonable"; 2: "Acceptable"; 1: "A little expensive"; 0: "Very expensive" |
| D. Perception of disease susceptibility | D1 | As long as I keep a normal lifestyle, I will not be infected by HPV | 4: "No"; 0: "Yes", "Not sure" |
| | D2 | I think infection by HPV is because of sexual arbitrariness | 4-0: "Strongly agree"–"Strongly disagree" |
| | D3 | My daughter is in good health and not afraid of an HPV infection | 4-0: "Strongly agree"–"Strongly disagree" |
| E. Perception of disease severity | E1 | HPV infection has serious consequences | 1: "Yes"; 0: "No", "Not sure" |
| | E2 | HPV infection can bring serious harm to my daughter's health | 4-0: "Strongly agree"–"Strongly disagree" |
| | E3 | I think cervical cancer is a serious disease | 4-0: "Strongly agree"–"Strongly disagree" |
| | E4 | I worry that HPV infection will affect the child's fertility | 4-0: "Strongly agree"–"Strongly disagree" |
| F. Trust in formal information | F1 | I trust the HPV vaccine knowledge and services provided by vaccination clinic and doctor | 4-0: "Strongly agree"–"Strongly disagree" |
| | F2 | I trust the HPV vaccine knowledge and services provided by CDC, hospitals and other professional institutions | 4-0: "Strongly agree"–"Strongly disagree" |
| | F3 | I trust HPV vaccine manufacturers and companies | 4-0: "Strongly agree"–"Strongly disagree" |

Table S2. Classification of reasons for not getting the HPV vaccine.

| Category | Reasons for mothers | Reasons for daughters |
|-------------------------------------|--|---|
| Non-vaccine hesitancy | (1) Older ages (2) Illness or medical reasons (3) HPV vaccines shortage | (1) Daughter's illness or medical reasons (2) HPV vaccines shortage |
| Vaccine/vaccination-specific issues | (1) Doubts about the vaccine efficacy (2) Doubts about the vaccine safety (3) Expensiveness (4) Troublesome vaccination procedure | (1) Doubts about the vaccine efficacy. (2) Doubts about the vaccine safety (3) Expensiveness (4) Troublesome vaccination procedure (1) Don't know if my daughter can be vaccinated (2) Wait for my daughter growing up and make the decision herself. (3) My daughter has not started sexual behavior |
| Individual and group influences | (1) Don't know where to get vaccinated (2) Infection with HPV usually has no serious consequences (3) Never heard of the HPV vaccine (4) No time to vaccinate (5) My risk of HPV infection is low (6) Be afraid of pain (7) Poor service and attitude at the vaccination sites | (4) Wait for my daughter being old enough to receive the 9-valent vaccine (5) Don't know where to get vaccinated (6) Worry my daughter will have high-risk sexual behavior after vaccination (7) Never heard of the HPV vaccine (8) Infection with HPV usually has no serious consequences (9) No time to vaccinate (10) My daughter's risk of HPV infection is low (11) My daughter is afraid of pain (12) Poor service and attitude at the vaccination sites (13) My daughter is too young |
| Contextual influences | (1) Less people around me were vaccinated or they do not recommend this vaccine (2) The HPV vaccine is not yet widely available (3) Not convenient to reach the vaccination site | (1) Less people around me were vaccinated or they do not recommend this vaccine (2) The HPV vaccine is not yet widely available (3) Not convenient to reach the vaccination site |