**Supplementary materials to**

**Assessment of vaccinations and breakthrough infections after adjustment of the dynamic zero-COVID-19 strategy in China: An online survey**

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**Captions of supplementary figures S1-S6. Refer to the high-resolution figures submitted separately.**

**Figure S1. Baseline characteristics of questionnaire participants.**

A: diagram showing the proportion of SARS-CoV-2–positive participants. B: Diagram showing the sex ratio of the participants. C: Diagram showing the age distribution of the participants. D: Bar plot showing the proportion of vaccination doses among participants. E: Bar plot showing the smoking habit distribution among participants. F: Graph shows the drinking habit distribution among participants. G: Diagram showing the infection time periods of the participants.

**Figure S2. Complete forest plots showing the effects** **different vaccination statuses on different symptoms.**

Unvaccinated cases were used as controls. OR > 1 represents an increased risk of symptoms, OR < 1 represents a reduced risk of symptoms, which is a potential protective factor, and OR = 1 represents no association with symptoms.

**Figure S3. Complete forest plots showing the effects of** **different vaccination statuses on symptoms on symptoms at 1**–**2 months (A**–**B).**

Unvaccinated cases were used as controls. OR > 1 represents an increased risk of symptoms, OR < 1 represents a reduced risk of symptoms, which is a potential protective factor, and OR = 1 represents no association with symptoms.

**Figure S4. Complete forest plots showing the effects of different vaccination statuses on symptoms at 3 months.**

Unvaccinated cases were used as controls. OR > 1 represents an increased risk of symptoms, OR < 1 represents a reduced risk of symptoms, which is a potential protective factor, and OR = 1 represents no association with symptoms.

**Figure S5. Complete forest plot showing the effects of different vaccination timings on symptoms at 1**–**2 months (A**–**B).**

Unvaccinated cases were used as controls. OR > 1 represents an increased risk of symptoms, OR < 1 represents a reduced risk of symptoms, which is a potential protective factor, and OR = 1 represents no association with symptoms.

**Figure S6. Complete forest plot showing the effects of different vaccination timings on symptoms at 3 months.**

Unvaccinated cases were used as controls. OR > 1 represents an increased risk of symptoms, OR < 1 represents a reduced risk of symptoms, which is a potential protective factor, and OR = 1 represents no association with symptoms.

**Table S1. Questionnaire on SARS-CoV-2 infection among Chinese residents**

**Questions with \* are requested, and those without \* are optional.**

1. **Basic information**

**Where is your current permanent residence located? [single choice] \***

□a. East China (Provinces: Jiangsu, Zhejiang, Shandong, Anhui, Jiangxi, Fujian, Taiwan, Shanghai)

□b. South China (Provinces: Guangdong, Guangxi, Hainan, Hong Kong, Macau)

□c. Central China (Provinces: Hubei, Hunan, Henan)

□d. North China (Provinces: Shanxi, Hebei, Inner Mongolia, Beijing, Tianjin)

□e. Northeast China (Provinces: Jilin, Liaoning, Heilongjiang)

□f. Northwest China (Provinces: Xinjiang, Shaanxi, Gansu, Ningxia, Qinghai)

□g. Southwest China (Provinces: Sichuan, Xizang, Guizhou, Yunnan, Chongqing)

□h. Other countries (Countries and regions can be added) \_\_\_\_\_\_\_\_\_\_

**What is your sex? [single choice] \***

□a. Male

□b. Female

**How old are you? [single choice] \***

□a. Under 18 years old

□b. Ages 18 to 29

□c. Ages 30 to 39

□d. Ages 40 to 49

□e. Ages 50 to 59

□f. Ages 60 to 69

□g. Ages 70 to 80

□h. Over 80 years old

**What is your COVID vaccination status? [single choice]\***

□ a. Vaccinated once

□ b. Vaccinated twice

□ c. Vaccinated three times

□ d. Vaccinated four times

□ e. Vaccinated five times

□ f. Not vaccinated

**What was the type of vaccine for the first dose you received? (Warm prompt: you can log in to the national government affairs service platform through Alipay/WeChat) [single choice]\***

□ a. Inactivated vaccine

□ b. Adenovirus vectored vaccine

□ c. Recombinant protein vaccine

□ d. Not clear, don't remember

□ e. Other types of vaccines (can be noted)\_\_\_\_\_\_\_\_\_\_

**What was the type of vaccine for the second dose you received? (Warm prompt: you can log in to the national government affairs service platform through Alipay/WeChat) [single choice]\***

□ a. Inactivated vaccine

□ b. Adenovirus vectored vaccine

□ c. Recombinant protein vaccine

□ d. Not clear, don't remember

□ e. Other types of vaccines (can be noted)\_\_\_\_\_\_\_\_\_\_

**What was the type of vaccine for the third dose you received? (Warm prompt: you can log in to the national government affairs service platform through Alipay/WeChat) [single choice]\***

□ a. Inactivated vaccine

□ b. Adenovirus vectored vaccine

□ c. Recombinant protein vaccine

□ d. Not clear, don't remember

□ e. Other types of vaccines (can be noted)\_\_\_\_\_\_\_\_\_\_\_

**What was the type of vaccine for the fourth dose you received? (Warm prompt: you can log in to the national government affairs service platform through Alipay/WeChat) [single choice]\***

□ a. Inactivated vaccine

□ b. Adenovirus vectored vaccine

□ c. Recombinant protein vaccine

□ d. Not clear, don't remember

□ e. Other types of vaccines (can be noted)\_\_\_\_\_\_\_\_\_\_\_

**What was the type of vaccine for the fifth dose you received? (Warm prompt: you can log in to the national government affairs service platform through Alipay/WeChat) [single choice]\***

□ a. Inactivated vaccine

□ b. Adenovirus vectored vaccine

□ c. Recombinant protein vaccine

□ d. Not clear, don't remember

□ e. Other types of vaccines (can be noted)\_\_\_\_\_\_\_\_\_\_\_

**How long has it been since your last vaccination? [single choice]\***

□ a.Within 3 months

□ b.3-6 months

□ c.7-12 months

□ d. Over 12 months

**2、 Personal health and infection status**

**Did you test (nucleic acid and/or antigen) positive for SARS-CoV-2? [single choice]\***

□ a. Negative

□ b. Positive (Including already positive or currently positive)

□ c. Not tested, with symptoms speculated to be positive

□ d. Not clear

**When did you probably discover that you were positive? [single choice]\***

□ a. After October 2022

□ b. January 2022 to September 2022

□ c. Before 2022

**Did you have the following symptoms during infection? [Multiple choice]\***

□ a. High fever (highest temperature above 39.1 degrees Celsius)

□ b. Fever (between 37.4 and 39 degrees Celsius)

□ c. Fatigue

□ d. Headache/dizziness

□ e. Full body soreness

□ f. Fear of cold/shivering

□ g. Pharyngeal pain

□ h. Nasal congestion

□ i. Runny nose

□ j. Cough

□ k. Expectoration

□ l. Decrease in taste and smell

□ m. Diarrhea

□ n. Nausea

□ o. Vomiting

□ p. Abdominal pain

□ q. Difficulty breathing/shortness of breath

□ r. Conjunctivitis

□ s. Sore eyes and prone to fatigue

□ t. Palpitations

□ u. Tinnitus/Earache

□ v. Other symptoms (can be filled in)\_\_\_\_\_\_\_\_\_\_\_\_\_\_

□ w. No above or any other symptoms (Asymptomatic infection)

**How many days after infection your symptoms have significantly improved? [single choice]\***

□ a. Within 3 days

□ b. Day 3-5

□ c. Day 6-7

□ d. Week 2 (8-14 days)

□ e. Over 2 weeks

□ f. Not yet improved

**How did you seek medical attention after infection and how severe was of your condition? [single choice]\***

□ a. No need to go to the hospital

□ b. Went to the hospital without hospitalization

□ c. Hospitalization required, waiting for bed availability

□ d. In hospital treatment

□ e. Emergency or ICU rescue

□ f. Other (can be noted)\_\_\_\_\_\_\_\_

**How many people in your family have vaccination and infection symptoms similar to yours? [single choice]**

□ a.1 family member

□ b. 2 family members

□ c. 3 family members

□ d. 4 family members

□ e. 5 family members

□ f. Above 5 family members

□ g. Other (unclear)

**Do you have the following medical conditions? [Multiple choice question]\***

□ a. Chronic obstructive pulmonary disease

□ b. Emphysema

□ c. Other respiratory disease (such as asthma, chronic bronchitis)

□ d. Diabetes

□ e. Hypertension

□ f. Cardio cerebrovascular disease

□ g. Chronic kidney disease

□ h. Chronic liver disease

□ i. Pregnant or parturient women

□ j. Malignant tumor under treatment

□ k. Malignant tumor but treatment have ended (radiotherapy and chemotherapy have ended)

□ l. Benign tumor

□ m. Autoimmune disease (such as Rheumatoid arthritis, SLE or immunodeficiency disease)

□ n. None of the above situations

**Do you smoke? [single choice]\***

□ a. No

□ b. 1-5 cigarettes per month

□ c. 1-5 cigarettes per day

□ d. 6-10 cigarettes per day

□ e. 11-20 cigarettes per day

□ f. More than 20 cigarettes per day

**Do you drink alcohol? [single choice]\***

□ a. Never drink alcohol

□ b. 1-3 times per year on average

□ c. 1-3 times per month on average

□ d. 1-3 times per week on average

□ e. once or more times per day on average

**Did you still have the following symptoms one month after infection? (If the infection has been over a month, please fill in) [Multiple choice]**

□ a. Fatigue

□ b. Drowsiness

□ c. Headache/dizziness/migraine

□ c. Cough

□ e. Pharyngeal discomfort

□ f. Change or decrease in taste perception

□ g. Changes or decreases in olfactory perception

□ h. Gastrointestinal discomfort

□ i. Eye soreness and eye fatigue

□ j. Decreased vision

□ k. Difficulty breathing/shortness of breath

□ l. Decreased athletic ability

□ m. Arrhythmias/palpitations

□ n. Chest pain

□ o. Abnormal blood sugar

□ p. Anemia

□ q. Anxiety

□ r. Depression

□ s. Sleep disorder

□ t. Hair loss

□ u. Tinnitus/Earache

□ v. Other symptoms (can be noted)\_\_\_\_\_\_\_\_\_\_\_\_\_\_

□ w. No symptoms above (completely recovered)

**Did you still have the following symptoms two months after infection? (If the infection has been two months, please fill in) [Multiple choice]**

□ a. Fatigue

□ b. Drowsiness

□ c. Headache/dizziness/migraine

□ c. Cough

□ e. Pharyngeal discomfort

□ f. Change or decrease in taste perception

□ g. Changes or decreases in olfactory perception

□ h. Gastrointestinal discomfort

□ i. Eye soreness and eye fatigue

□ j. Decreased vision

□ k. Difficulty breathing/shortness of breath

□ l. Decreased athletic ability

□ m. Arrhythmias/palpitations

□ n. Chest pain

□ o. Abnormal blood sugar

□ p. Anemia

□ q. Anxiety

□ r. Depression

□ s. Sleep disorder

□ t. Hair loss

□ u. Tinnitus/Earache

□ v. Other symptoms (can be noted)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

□ w. No symptoms above (completely recovered)

**Did you still have the following symptoms three months after infection? (If the infection has been three months, please fill in) [Multiple choice]**

□ a. Fatigue

□ b. Drowsiness

□ c. Headache/dizziness/migraine

□ c. Cough

□ e. Pharyngeal discomfort

□ f. Change or decrease in taste perception

□ g. Changes or decreases in olfactory perception

□ h. Gastrointestinal discomfort

□ i. Eye soreness and eye fatigue

□ j. Decreased vision

□ k. Difficulty breathing/shortness of breath

□ l. Decreased athletic ability

□ m. Arrhythmias/palpitations

□ n. Chest pain

□ o. Abnormal blood sugar

□ p. Anemia

□ q. Anxiety

□ r. Depression

□ s. Sleep disorder

□ t. Hair loss

□ u. Tinnitus/Earache

□ v. Other symptoms (can be noted)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

□ w. No symptoms above (completely recovered)

**Did you still have the following symptoms four months after infection? (If the infection has been four months, please fill in) [Multiple choice]**

□ a. Fatigue

□ b. Drowsiness

□ c. Headache/dizziness/migraine

□ c. Cough

□ e. Pharyngeal discomfort

□ f. Change or decrease in taste perception

□ g. Changes or decreases in olfactory perception

□ h. Gastrointestinal discomfort

□ i. Eye soreness and eye fatigue

□ j. Decreased vision

□ k. Difficulty breathing/shortness of breath

□ l. Decreased athletic ability

□ m. Arrhythmias/palpitations

□ n. Chest pain

□ o. Abnormal blood sugar

□ p. Anemia

□ q. Anxiety

□ r. Depression

□ s. Sleep disorder

□ t. Hair loss

□ u. Tinnitus/Earache

□ v. Other symptoms (can be noted)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

□ w. No symptoms above (completely recovered)

**Revised Table S2. Comparison of disease severity between comorbidity group and non- comorbidity COIVD-19 participants.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Comparison of disease severity between comorbidity group and non- comorbidity COIVD-19 participants** | | | |
| **Comorbidities** | **Mild illness** | **Hospitalization required** | **p-value** |
| Chronic obstructive pulmonary disease (No) | 6493 (98.95%) | 69 (1.05%) | p < 0.001 |
| Chronic obstructive pulmonary disease (Yes) | 42 (91.3%) | 4 (8.7%) |
| Emphysema (No) | 6502 (98.89%) | 73 (1.11%) | 1 |
| Emphysema (Yes) | 33 (100%) | 0 (0%) |
| Respiratory diseases (asthma, chronic bronchitis, etc.) (No) | 6254 (99%) | 63 (1%) | p < 0.001 |
| Respiratory diseases (asthma, chronic bronchitis, etc.) (Yes) | 281 (96.56%) | 10 (3.44%) |
| Diabetes (No) | 6342 (99%) | 64 (1%) | p < 0.001 |
| Diabetes (Yes) | 193 (95.54%) | 9 (4.46%) |
| Hypertension (No) | 6000 (99.21%) | 48 (0.79%) | p < 0.001 |
| Hypertension (Yes) | 535 (95.54%) | 25 (4.46%) |
| Cardio-cerebrovascular disease (No) | 6397 (99.21%) | 51 (0.79%) | p < 0.001 |
| Cardio-cerebrovascular disease (Yes) | 138 (86.25%) | 22 (13.75%) |
| Chronic nephrosis (No) | 6506 (99%) | 66 (1%) | p < 0.001 |
| Chronic nephrosis (Yes) | 29 (80.56%) | 7 (19.44%) |
| Chronic liver disease (No) | 6492 (98.92%) | 71 (1.08%) | 0.15 |
| Chronic liver disease (Yes) | 43 (95.56%) | 2 (4.44%) |
| Pregnancy (No) | 6468 (98.91%) | 71 (1.09%) | 0.39 |
| Pregnancy (Yes) | 67 (97.1%) | 2 (2.9%) |
| Malignant tumor in treatment (No) | 6518 (98.89%) | 73 (1.11%) | 1 |
| Malignant tumor in treatment (Yes) | 17 (100%) | 0 (0%) |
| Malignant tumor after treatment (No) | 6474 (98.96%) | 68 (1.04%) | p < 0.001 |
| Malignant tumor after treatment (Yes) | 61 (92.42%) | 5 (7.58%) |
| Benign tumor (No) | 6481 (98.89%) | 73 (1.11%) | 0.90 |
| Benign tumor (Yes) | 54 (100%) | 0 (0%) |
| Autoimmune disease (No) | 6429 (98.92%) | 70 (1.08%) | 0.23 |
| Autoimmune disease (Yes) | 106 (97.25%) | 3 (2.75%) |

**Revised Table S3. Comparison of time for significant improvement in symptoms between comorbidity group and non- comorbidity COIVD-19 participants.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Comparison of time for significant improvement in symptoms between comorbidity group and non- comorbidity COIVD-19 participants** | | | | | | | |
| **Comorbidities** | **Within 3 days** | **Day 3-5** | **Day 6-7** | **8-14 days** | **More than 2 weeks** | **Not yet improved** | **p-value** |
| Chronic obstructive pulmonary disease (No) | 1549 (23.18%) | 2562 (38.34%) | 1438 (21.52%) | 674 (10.09%) | 404  (6.05%) | 55  (0.82%) | p < 0.001 |
| Chronic obstructive pulmonary disease (Yes) | 6  (13.04%) | 14 (30.43%) | 9  (19.57%) | 6 (13.04%) | 6  (13.04%) | 5  (10.87%) |
| Emphysema (No) | 1549 (23.14%) | 2562 (38.27%) | 1442 (21.54%) | 678 (10.13%) | 404  (6.03%) | 60  (0.9%) | 0.08 |
| Emphysema (Yes) | 6  (18.18%) | 14 (42.42%) | 5  (15.15%) | 2  (6.06%) | 6  (18.18%) | 0  (0%) |
| Respiratory diseases (asthma, chronic bronchitis, etc.) (No) | 1501 (23.37%) | 2485 (38.68%) | 1374 (21.39%) | 647 (10.07%) | 370  (5.76%) | 47  (0.73%) | p < 0.001 |
| Respiratory diseases (asthma, chronic bronchitis, etc.) (Yes) | 54  (17.76%) | 91 (29.93%) | 73 (24.01%) | 33 (10.86%) | 40  (13.16%) | 13  (4.28%) |
| Diabetes (No) | 1505 (23.08%) | 2514 (38.55%) | 1400 (21.47%) | 654 (10.03%) | 390  (5.98%) | 58  (0.89%) | 0.08 |
| Diabetes (Yes) | 50 (24.15%) | 62 (29.95%) | 47 (22.71%) | 26 (12.56%) | 20  (9.66%) | 2  (0.97%) |
| Hypertension (No) | 1445 (23.49%) | 2398 (38.98%) | 1321 (21.47%) | 596 (9.69%) | 343  (5.58%) | 49  (0.8%) | p < 0.001 |
| Hypertension (Yes) | 110  (19.1%) | 178 (30.9%) | 126 (21.88%) | 84 (14.58%) | 67  (11.63%) | 11  (1.91%) |
| Cardio-cerebrovascular disease (No) | 1537 (23.42%) | 2530 (38.54%) | 1411 (21.5%) | 655 (9.98%) | 378  (5.76%) | 53  (0.81%) | p < 0.001 |
| Cardio-cerebrovascular disease (Yes) | 18 (10.98%) | 46 (28.05%) | 36 (21.95%) | 25 (15.24%) | 32  (19.51%) | 7  (4.27%) |
| Chronic nephrosis (No) | 1550 (23.17%) | 2565 (38.34%) | 1441 (21.54%) | 672 (10.04%) | 407 (6.08%) | 56 (0.84%) | p < 0.001 |
| Chronic nephrosis (Yes) | 5  (13.51%) | 11 (29.73%) | 6 (16.22%) | 8 (21.62%) | 3  (8.11%) | 4  (10.81%) |
| Chronic liver disease (No) | 1545 (23.13%) | 2561 (38.33%) | 1438 (21.52%) | 672 (10.06%) | 406  (6.08%) | 59  (0.88%) | 0.52 |
| Chronic liver disease (Yes) | 10 (21.28%) | 15 (31.91%) | 9  (19.15%) | 8 (17.02%) | 4  (8.51%) | 1  (2.13%) |
| Pregnancy (No) | 1547 (23.24%) | 2548 (38.27%) | 1428 (21.45%) | 670 (10.06%) | 405  (6.08%) | 60  (0.9%) | 0.20 |
| Pregnancy (Yes) | 8  (11.43%) | 28  (40%) | 19 (27.14%) | 10 (14.29%) | 5  (7.14%) | 0  (0%) |
| Malignant tumor in treatment (No) | 1550 (23.1%) | 2569 (38.29%) | 1444 (21.52%) | 679 (10.12%) | 409  (6.1%) | 59  (0.88%) | 0.40 |
| Malignant tumor in treatment (Yes) | 5  (27.78%) | 7  (38.89%) | 3  (16.67%) | 1  (5.56%) | 1  (5.56%) | 1  (5.56%) |
| Malignant tumor after treatment (No) | 1548 (23.25%) | 2555 (38.37%) | 1432 (21.5%) | 671 (10.08%) | 399  (5.99%) | 54  (0.81%) | p < 0.001 |
| Malignant tumor after treatment (Yes) | 7  (10.14%) | 21 (30.43%) | 15 (21.74%) | 9 (13.04%) | 11  (15.94%) | 6  (8.7%) |
| Benign tumor (No) | 1540 (23.08%) | 2557 (38.33%) | 1435 (21.51%) | 677 (10.15%) | 405  (6.07%) | 57  (0.85%) | 0.01 |
| Benign tumor (Yes) | 15  (26.32%) | 19 (33.33%) | 12 (21.05%) | 3  (5.26%) | 5  (8.77%) | 3  (5.26%) |
| Autoimmune disease (No) | 1527 (23.08%) | 2543 (38.44%) | 1431 (21.63%) | 667 (10.08%) | 392  (5.93%) | 55  (0.83%) | p < 0.001 |
| Autoimmune disease (Yes) | 28  (24.78%) | 33  (29.2%) | 16 (14.16%) | 13 (11.5%) | 18  (15.93%) | 5  (4.42%) |