**Age-dependent gender differences of COVID-19 in mainland China: comparative study**

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**Supplementary Table 1: Case criterion of 2019-nCoV in mainland China**

|  |  |  |
| --- | --- | --- |
| Suspected case† | | Confirmed case |
| Epidemiological history | Clinical manifestation |  |
| * 1. Travel or residence history of Wuhan and surrounding areas, or other case-reported communities within 14 days before onset of illness;   2. Having had contact with novel coronavirus infected persons (nucleic acid test positive) within 14 days before onset of illness;   3. Having had contact with the patients with fever or respiratory symptoms from Wuhan and surrounding areas, or other case-reported communities within 14 days before onset of illness;   4. Clustered onset of illness (2 or more cases of fever and / or respiratory symptoms within 2 weeks in small areas such as family, office, school class, etc.). | * 1. Fever and/ or respiratory symptoms;   2. With imaging characteristics of pneumonia: multiple small patchy shadows and interstitial changes appeared in early stage, and the extrapulmonary bands were obvious. Furthermore, it would develop bilateral ground-glass opacities and infiltrating shadow. In severe cases, pulmonary consolidation may occur, and pleural effusion was rare;   3. Normal or reduced white blood cell count, normal or reduced lymphocyte count in early stage. | Suspected case +   * 1. Real-time fluorescent RT-PCR of novel coronavirus was detected positive;   or   * 1. The virus was genetically sequenced and highly homologous to known novel coronavirus;   or   * 1. The serum of 2019-nCoV specific IgM and IgG antibodies were positive; the serum of 2019-nCoV specific IgG antibodies were changed from negative to positive or the serum of 2019-nCoV specific IgG antibodies in the recovery stage were 4 times or higher than the acute stage. |

† Suspected cases: Having any of the epidemiological history and any 2 of the clinical manifestations; Without any of the epidemiological history but having all the clinical manifestations

**Supplemental Table 2. Comparison of Attack Rate of COVID-19 between Female and Male Population by Age Group in mainland China**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age group** | **Attack rate (per million persons) (95% CI)** | | | **RR (95% CI)** | ***P* value** |
| **Total** | **Female** | **Male** |
| 0-; n / N | 6.60 (6.18, 7.01); 966 / 146414159 | 6.70 (6.08, 7.32); 448 / 66886928 | 6.51 (5.95, 7.07); 518 / 79527231 | 1.03 (0.91, 1.17) | 0.68 |
| 10-; n / N | 6.41 (6.04, 6.79); 1121 / 174797576 | 5.17 (4.68, 5.66);427 / 82625469 | 7.53 (6.97, 8.09); 694 / 92172107 | 0.69 (0.61, 0.77) | < .001 |
| 20-; n / N | 28.15 (27.46, 28.84); 6430 / 228426370 | 26.54 (25.59, 27.48); 3014 / 113580759 | 29.74 (28.75, 30.74); 3416 / 114845611 | 0.89 (0.85, 0.94) | < .001 |
| 30-; n / N | 62.25 (61.2, 63.31); 13395 / 215164162 | 60.79 (59.30, 62.28); 6398 / 105251236 | 63.66 (62.17, 65.15); 6997 / 109912926 | 0.95 (0.92, 0.99) | <0.01 |
| 40-; n / N | 66.34 (65.29, 67.39); 15280 / 230348517 | 67.00 (65.49, 68.50); 7568 / 112963421 | 65.71 (64.24, 67.17); 7712 / 117385096 | 1.02 (0.99, 1.05) | 0.23 |
| 50-; n / N | 114.63 (112.97, 116.29); 18348 / 160065645 | 126.2 (123.72, 128.69); 9922 / 78619473 | 103.45 (101.25,105.66); 8426 / 81446172 | 1.22 (1.18, 1.26) | < .001 |
| 60-; n / N | 165.49 (162.97, 168.02); 16513 / 99780564 | 175.46 (171.75, 179.16); 8632 / 49197667 | 155.8 (152.36, 159.24); 7881 / 50582897 | 1.13 (1.09, 1.16) | < .001 |
| 70-; n / N | 138.86 (136.24, 141.48); 10805 / 77813876 | 125.03 (121.63, 128.44); 5171 / 41356812 | 154.54 (150.5, 158.57); 5634 / 36457064 | 0.81 (0.78, 0.84) | < .001 |

RR=rate ratio; CI= confidence interval; ; n, numerators; N, denominators.

**Supplemental Table 3. Comparison of Proportion of Severe and Critical COVID-19 Cases between Female and Male Population by Age Group in Mainland China**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Case severity rate (%) (95% CI) | | | OR (95% CI) | p-value |
| Total | Female | Male |
| 0-; n / N | 3.31 (2.18, 4.44); 32 / 966 | 2.23 (0.86, 3.60); 10 / 448 | 4.25 (2.51, 5.98); 22 / 518 | 0.52 (0.24, 1.10) | 0.10 |
| 10-; n / N | 3.03 (2.03, 4.04); 34 / 1121 | 2.81 (1.24, 4.38);12 / 427 | 3.17 (1.87, 4.47); 22 / 694 | 0.88 (0.43, 1.80) | 0.86 |
| 20-; n / N | 7.12 (6.49, 7.75); 58 / 6430 | 7.37 (6.43, 8.30); 222 / 3014 | 6.91 (6.06, 7.76); 236 / 3416 | 1.07 (0.89, 1.30) | 0.50 |
| 30-; n / N | 10.22 (9.71, 10.73); 1369 / 13395 | 8.89 (8.20, 9.59); 569 / 6398 | 11.43 (10.69, 12.18); 800 / 6997 | 0.76 (0.68, 0.85) | < .001 |
| 40-; n / N | 12.45 (11.93, 12.98); 1903 / 15280 | 10.57 (9.88, 11.26); 800 / 7568 | 14.30 (13.52, 15.08); 1103 / 7712 | 0.71 (0.64, 0.78) | < .001 |
| 50-; n / N | 16.72 (16.18, 17.26); 3068 / 18348 | 15.10 (14.39, 15.80); 1498 / 9922 | 18.63 (17.8, 19.46); 1570 / 8426 | 0.78 (0.72, 0.84) | < .001 |
| 60-; n / N | 24.60 (23.94, 25.26); 4062 / 16513 | 23.42 (22.53, 24.32); 2022 / 8632 | 25.89 (24.92, 26.85); 2040 / 7881 | 0.88 (0.82, 0.94) | < .001 |
| 70-; n / N | 38.28 (37.36, 39.20); 4136 / 10805 | 36.43 (35.12, 37.75); 1884 / 5171 | 39.97 (38.69, 41.25); 2252 / 5634 | 0.86 (0.80, 0.93) | < .001 |

OR= odds ratio; CI= confidence interval; ; n, numerators; N, denominators.

**Supplemental Table 4. Comparison of Case Fatality Rate** **of COVID-19 between Female and Male Patients by Age Group in Mainland China**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Case Fatality Rate (%) (95% CI) | | | OR (95% CI) | *P* value |
| Total | Female | Male |
| 0-; n / N | 0 (0, 0); 0 / 966 | 0 (0, 0); 0 / 448 | 0 (0, 0); 0 / 518 | - | - |
| 10-; n / N | 0.27 (0.06, 0.78); 3 / 1121 | 0 (0, 0); 0 / 427 | 0.43 (0.09, 1.26); 3 / 694 | - | - |
| 20-; n / N | 0.34 (0.21, 0.52); 22 / 6430 | 0.23 (0.09, 0.48); 7 / 3014 | 0.44 (0.25, 0.72); 15 / 3416 | 0.53 (0.22, 1.30) | 0.20 |
| 30-; n / N | 0.61 (0.49, 0.76); 82 / 13395 | 0.34 (0.22, 0.52); 22 / 6398 | 0.86 (0.65, 1.10); 60 / 6997 | 0.40 (0.24, 0.65) | < .001 |
| 40-; n / N | 1.13 (0.97,1.31); 173 / 15280 | 0.63 (0.47, 0.84); 48 / 7568 | 1.62 (1.35, 1.93); 125 / 7712 | 0.39 (0.28, 0.54) | < .001 |
| 50-; n / N | 3.24 (2.98, 3.50); 594 / 18348 | 2.00 (1.73, 2.29); 198 / 9922 | 4.70 (4.25, 5.19); 396 / 8426 | 0.41 (0.35, 0.49) | < .001 |
| 60-; n / N | 8.29 (7.86, 8.74); 1369 / 16513 | 5.94 (5.44, 6.48); 513 / 8632 | 10.86 (10.15, 11.61); 856 / 7881 | 0.52 (0.46, 0.58) | < .001 |
| 70-; n / N | 22.12 (21.24, 23.02); 2390 / 10805 | 17.27 (16.16, 18.44); 893 / 5171 | 26.57 (25.24, 27.95); 1497 / 5634 | 0.58 (0.53, 0.63) | < .001 |

OR= odds ratio; CI= confidence interval; ; n, numerators; N, denominators.

**Supplemental Table 5.** **Comparison of Attack Rate of COVID-19 between Female and Male Population by Affected Province in Mainland China**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Province** | **Attack rate (per million persons) (95% CI)** | | | **RR(95%*CI*)** | ***P* value** |
| **Total** | **Female** | **Male** |
| Hubei; n / N | 1190.26 (1181.33, 1199.20); 68128 / 57237727 | 1247.05 (1233.94, 1260.16); 34726 / 27846480 | 1136.46(1124.28,1148.64); 33402 / 29391247 | 1.10 (1.08, 1.11) | < .001 |
| Henan; n / N | 13.57 (12.83, 14.31); 1276 / 94029939 | 12.48 (11.47, 13.50); 581 / 46536876 | 14.63(13.55,15.72); 695 / 47493063 | 0.85 (0.76, 0.95) | 0.005 |
| Zhejiang; n / N | 23.30 (22.01, 24.58); 1268 / 54426891 | 22.98 (21.15, 24.80); 608 /26461250 | 23.60(21.80,25.40); 660 / 27965641 | 0.97 (0.87, 1.09) | 0.65 |
| Guangdong; n / N | 15.22 (14.47, 15.97); 1588 / 104320459 | 15.24 (14.16, 16.33); 761 /49919921 | 15.20(14.17,16.24); 827 / 54400538 | 1.00 (0.91, 1.11) | 0.96 |
| Hunan; n / N | 15.51 (14.56, 16.46); 1019 / 65700762 | 15.47 (14.11, 16.84); 494 / 31924303 | 15.54(14.21,16.87); 525 / 33776459 | 1.00 (0.88, 1.13) | 0.94 |
| Anhui; n / N | 16.66 (15.62, 17.69); 991 / 59500468 | 15.66 (14.22, 17.09); 458 / 29254955 | 17.62(16.13,19.12); 533 / 30245513 | 0.89 (0.78, 1.00) | 0.06 |
| Jiangxi; n / N | 21.02 (19.68, 22.37); 937 / 44567797 | 20.64 (18.72, 22.55); 445 / 21564276 | 21.39(19.5,23.28); 492 / 23003521 | 0.96 (0.85, 1.09) | 0.58 |
| Shandong; n / N | 8.22 (7.64, 8.79); 787 / 95792719 | 5.39 (4.72, 6.05); 255 / 47345775 | 10.98(10.05,11.91); 532 / 48446944 | 0.48 (0.41, 0.56) | < .001 |
| Jiangsu; n / N | 8.30 (7.66, 8.94); 653 / 78660941 | 7.63 (6.77, 8.50); 298 / 39034234 | 8.96(8.03,9.89); 355 / 39626707 | 0.85 (0.73, 0.99) | 0.04 |
| Chongqing; n / N | 20.07 (18.44, 21.71); 579 / 28846170 | 19.32 (17.03, 21.60); 275 / 14237300 | 20.81(18.47,23.15); 304 / 14608870 | 0.93 (0.78, 1.09) | 0.38 |
| Sichuan; n / N | 6.98 (6.40, 7.55); 561 / 80417528 | 6.64 (5.84, 7.45); 263 / 39589694 | 7.30(6.47,8.13); 298 / 40827834 | 0.92 (0.79, 1.09) | 0.27 |
| Others; n / N | 8.91 (8.66, 9.15); 5071 / 569309468 | 8.73 (8.38, 9.08); 2416 / 276766701 | 9.08(8.73,9.42); 2655 / 292542767 | 0.96 (0.91, 1.02) | 0.17 |

RR=rate ratio; CI= confidence interval; ; n, numerators; N, denominators.

**Supplemental Table 6.** **Comparison of Proportion of Severe and Critical COVID-19 Cases between Female and Male Population by Affected Province in Mainland China**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Proportion of severe and critical cases (%) (95% CI) | | | OR(95% *CI*) | *P* value |
| Total | Female | Male |
| Hubei; n / N | 19.24 (18.95, 19.54); 13109 / 68128 | 17.89 (17.49, 18.29); 6212 / 34726 | 20.65 (20.21, 21.08); 6897 / 33402 | 0.87 (0.84, 0.89) | < .001 |
| Henan; n / N | 16.85 (14.80, 18.90); 215 / 1276 | 15.49 (12.55, 18.43); 90 / 581 | 17.99 (15.13, 20.84); 125 / 695 | 0.86 (0.67, 1.10) | 0·24 |
| Zhejiang; n / N | 15.46 (13.47, 17.45); 196 / 1268 | 12.17 (9.57, 14.77); 74 / 608 | 18.48 (15.52, 21.45); 122 / 660 | 0.66 (0.50, 0.86) | 0.002 |
| Guangdong; n / N | 7.68 (6.37, 8.99); 122 / 1588 | 5.65 (4.01, 7.29); 43 / 761 | 9.55 (7.46, 11.42); 79 / 827 | 0.59 (0.41, 0.86) | 0.004 |
| Hunan; n / N | 15.41 (13.19, 17.62); 157 / 1019 | 12.15 (9.27, 15.03); 60 / 494 | 18.48 (15.19, 21.45); 97 / 525 | 0.66 (0.49, 0.88) | 0.005 |
| Anhui; n / N | 14.83 (12.62, 17.05); 147 / 991 | 12.45 (9.42, 15.47); 57/458 | 16.89 (13.68, 20.03); 90 / 533 | 0.74 (0.54, 1.00) | 0·05 |
| Jiangxi; n / N | 13.77 (11.56, 15.97); 129 / 937 | 10.79 (7.91, 13.67); 48/445 | 16.46 (13.19, 19.74); 81 / 492 | 0.66 (0.47, 0.92) | 0.01 |
| Shandong; n / N | 8.64 (6.68, 10.60); 68 / 787 | 10.20 (6.48, 13.91); 26 / 255 | 7.89 (5.60, 10.19); 42 / 532 | 1.29 (0.83, 2.11) | 0·28 |
| Jiangsu; n / N | 8.58 (6.43, 10.72); 56 / 653 | 6.38 (3.60, 9.15); 19 / 298 | 10.42 (7.22, 13.56); 37 / 355 | 0.61 (0.36, 1.04) | 0.07 |
| Chongqing; n / N | 17.79 (14.67, 20.90); 103 / 579 | 15.64 (11.34, 19.93); 43 / 275 | 19.74 (15.22, 24.15); 60 / 304 | 0.79 (0.56, 1.13) | 0.20 |
| Sichuan; n / N | 16.93 (13.83, 20.04); 95 / 561 | 15.97 (11.54, 20.40); 42 / 263 | 17.79 (13.48, 22.19); 53 / 298 | 0.90 (0.62, 1.30) | 0.57 |
| Others; n / N | 13.11 (12.18, 14.04); 665 / 5071 | 12.54 (11.22, 13.56); 303 / 2416 | 13.63 (12.59, 14.94); 362 / 2655 | 0.92 (0.80, 1.06) | 0.25 |

OR= odds ratio; CI= confidence interval; ; n, numerators; N, denominators.

**Supplemental Table 7.** **Comparison of Case Fatality Rate of COVID-19 between Female and Male Population by Affected Province in Mainland China**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Case fatality rate (%) (95% CI) | | | OR (95% *CI*) | *P* value |
| Total | Female | Male |
| Hubei; n / N | 6.62 (6.43, 6.82); 4512 / 68128 | 4.71 (4.48, 4.94); 1635 / 34726 | 8.61 (8.30, 8.93); 2877 / 33402 | 0.55 (0.52, 0.58) | < .001 |
| Henan; n / N | 1.72 (1.08, 2.61); 22 / 1276 | 1.03 (0.38, 2.25); 6 / 581 | 2.30 (1.32, 3.74); 16/695 | 0.45 (0.18, 1.14) | 0.09 |
| Zhejiang; n / N | 0.08 (0.00, 0.44); 1 / 1268 | 0.16 (0.00, 0.92); 1 / 608 | 0 (0, 0); 0 / 660 | - | - |
| Guangdong; n / N | 0.50 (0.22, 0.99); 8 / 1588 | 0 (0, 0); 0 / 761 | 0.97 (0.42, 1.90); 8 / 827 | - | - |
| Hunan; n / N | 0.39 (0.11, 1.01); 4 / 1019 | 0.40 (0.05, 1.46); 2 / 494 | 0.38 (0.05, 1.38); 2 / 525 | 1.06 (0.15, 7.49) | 1.00 |
| Anhui; n / N | 0.61 (0.22, 1.32); 6 / 991 | 0.22 (0.01, 1.22); 1 /458 | 0.94 (0.30, 2.19); 5 / 533 | 0.23 (0.03, 1.99) | 0.23 |
| Jiangxi; n / N | 0.11 (0.00, 0.60); 1 / 937 | 0.23 (0.00, 1.25); 1 / 445 | 0 (0, 0); 0 / 492 | - | - |
| Shandong; n / N | 0.89 (0.36, 1.83); 7 / 787 | 1.57 (0.43, 4.02); 4 / 255 | 0.56 (0.12, 1.64); 3 / 532 | 2.78 (0.63, 12.34) | 0.22 |
| Jiangsu; n / N | 0 (0, 0); 0 / 653 | 0 (0, 0); 0 / 298 | 0 (0, 0); 0 / 355 | - | - |
| Chongqing; n / N | 1.04 (0.38, 2.26); 6 / 579 | 1.46 (0.40, 3.74); 4 / 275 | 0.66 (0.08, 2.37); 2 / 304 | 2.21 (0.41, 12.00) | 0.35 |
| Sichuan; n / N | 0.53 (0.11, 1.56); 3 / 561 | 0.76 (0.09, 2.74); 2 / 263 | 0.34 (0.01, 1.87); 1 / 298 | 2.27 (0.21, 24.85) | 0.60 |
| Others; n / N | 1.24 (0.95, 1.59); 63 / 5071 | 1.03 (0.67, 1.53); 25 / 2416 | 1.43 (1.01, 1.96); 38 / 2655 | 0.72 (0.44, 1.19) | 0.20 |

OR= odds ratio; CI= confidence interval; ; n, numerators; N, denominators.