**Supplementary Material**

Table S1 Comparison of baseline characteristics between the subjects aged 18-65 years included and excluded in this study

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** | **Subjects IncludedN=744** | **Subjects ExcludedN=7897** | **P value a** |
| **Age group (years) (n, %)** |
| 18-25 | 32 (4.3) | 382 (4.8) | 0.09 |
| 25-35 | 306 (41.1) | 2900 (36.7) |
| 35-45 | 138 (18.5) | 1731 (21.9) |
| 45-55 | 135 (18.1) | 1515 (19.2) |
| 55-65 | 133 (17.9) | 1369 (17.3) |
| **Gender (n, %)** |
| Male | 405 (54.4) | 4121 (52.2) | 0.24 |
| Female | 339 (45.6) | 3776 (47.8) |
| **Ethnicity (n, %)** |
| Han | 723 (97.2) | 7666 (97.1) | 0.874 |
| Non-Han | 21 (2.8) | 231 (2.9) |
| **Marital status (n, %)** |
| unmarried | 62 (8.3) | 636 (8.1) | 0.529 |
| married | 665 (89.4) | 7124 (90.2) |
| Divorced/widowed | 17 (2.3) | 137 (1.7) |
| **Education levels (n, %)** |
| Junior school / below  | 119 (16.0) | 1213 (15.4) | 0.896 |
| High school | 162 (21.8) | 1744 (22.1) |
| University / above | 463 (62.2) | 4940 (62.6) |

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a: *P* value was calculated using Chi-square test.

Table S2 Age difference for the subjects according to the characteristics analyzed

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** | **No. Tested** | **Age (year) a** | **P value b** |
| **Median** | **interquartile range**  |
| **Gender** |
| Male | 405 | 34 | 28 - 47 | <0.001 |
| Female | 339 | 42 | 31 - 54 |
| **Ethnicity** |
| Han | 723 | 38 | 29 - 50 | 0.015 |
| Non-Han | 21 | 29 | 27 - 40 |
| **Marital status** |
| unmarried | 62 | 26 | 24 - 28 | <0.001 |
| married | 665 | 40 | 31 - 51 |
| Divorced/widowed | 17 | 49 | 33 - 55 |
| **Education levels** |
| Junior school / below  | 119 | 59 | 50 - 61 | <0.001 |
| High school | 162 | 47 | 37 - 56 |
| University / above | 463 | 31 | 28 - 40 |

a: Enrolment age of participants.

b: *P* value was calculated by the Mann-Whitney U-test.

Table S3 Association between *C. trachomatis* seropositive frequency and marital status and education levels in a community population of Northern China in 2014

|  |  |  |
| --- | --- | --- |
| **Age group (years)** | **Frequency (n/N, %)**  | **Frequency (n/N, %)** |
| **Unmarried** | **Married** | **P value** | **High school and below b** | **College and above** | **P value c** |
| 18-29 | 7/59 (11.9) | 17/140 (12.1) | 0.956 | 2/19 (10.5) | 22/181 (12.2)  | 0.835 |
| 30-39 | 0/3 (0) | 40/188 (21.3) | 0.604 | 7/35 (20) | 34/161 (21.1) | 0.883 |
| 40-49 | - | 47/147 (32.0) | - | 20/65 (30.8) | 29/86 (33.7) | 0.701 |
| 50-59 | - | 59/121 (48.8) | - | 48/98 (49) | 13/29 (44.8) | 0.694 |
| 60-65 | - | 34/69 (49.3) | - | 31/64 (48.4) | 3/6 (50) | 0.942 |
| Total | 7/62 (11.3) | 197/665 (29.6) | 0.002 | 108/281 (38.4) | 101/463 (21.8) | <0.001 |

Table S4 Comparison of *C. trachomatis* incidence and reinfection rate in different years and characteristic groups during 2014-2018

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** | **Seroincidence(/1000 person-years)** | **Reinfection rate(/1000 person-years)** | **P value a** |
| **Age group (years)** |  |  |
| 18-29 | 19 | 36 | 0.355 |
| 30-39 | 10 | 26 | 0.156 |
| 40-49 | 13 | 10 | >0.999 |
| 50-59 | 4 | 5 | >0.999 |
| 60-70 | 4 | 9 | 0.962 |
| Total | 11 | 14 | 0.468 |
| **Gender** |  |  |
| Male | 11 | 16 | 0.432 |
| Female | 10 | 11 | >0.999 |
| **Ethnicity** |  |  |
| Han | 10 | 14 | 0.415 |
| Non-Han | 15 | 0 | >0.999 |
| **Marital status** |  |  |
| unmarried | 24 | 28 | >0.999 |
| married | 9 | 13 | 0.268 |
| Divorced/widowed | 22 | 0 | >0.999 |
| **Education levels** |  |  |
| Junior school / below  | 4 | 10 | 0.744 |
| High school | 10 | 12 | >0.999 |
| University / above | 12 | 16 | 0.526 |
| **Year of investigation** |  |  |
| 2015 | 24 | 19 | 0.88 |
| 2016 | 4 | 9 | 0.737 |
| 2017 | 6 | 18 | 0.249 |
| 2018 | 8 | 9 | >0.999 |

a: *P* value was calculated using Chi-square tests.

Table S5 Summary of *C. trachomatis* seroprevalence, incidence and reinfection rate in previous studies

1. Seroprevalence of *C. trachomatis* infection.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Country and city** | **Date of study** | **Subjects** | **Antibody tested** | **Whole population** | **Men** | **Women** |
| **Sp %****a** | **Adj-Sp % b** | **Adj-Sp % (our study) c** | **P d value** | **Sp %** | **Adj-Sp %** | **Adj-Sp % (our study)**  | **P value** | **Sp %** | **Adj-Sp %** | **Adj-Sp % (our study)**  | **P value** |
| Zhang XM et al. 2016 [37] | China, Tianjin | 2014.3 - 2014. 12 | Non-STD clinic outpatients,15 - 40 years | Combination of Pgp3, CT875, CT694 | 21.0  | 22.9  | 17.6  | 0.077 | NA | NA | NA | NA | NA | NA | NA | NA |
| Woodhall et al.2017 [25] | England | 1994 - 2012 | General population in the nationally-representative Healthy Surveys, 16 - 44 years | Pgp3 | 19.7  | 32.2  | 19.7  | **<0.001** | 13.9 | 30.4  | 17.9  | **0.001** | 24.4 | 34.8  | 22.5  | **0.008**  |
| van Aar et al. 2014 [28] | Netherlands | 1996 and 2007 | General population, 15 - 39 years | MOMP | 7.7  | 12.2  | 17.7  | **0.028** | 5.6  | 8.1  | 16.6  | **0.004** | 9.8  | 16.1  | 19.5  | 0.449  |
| Petersen et al. 2020 [7] | United States of America | 2013 - 2016 | Women from national health and nutrition examination surveys, 18 - 39 years | Pgp3 | NA | NA | NA | NA | NA | NA | NA | NA | 30 | 34.4  | 19.5  | **0.004**  |

1. Incidence of *C. trachomatis* infection

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Country and city** | **Date of study** | **Subjects** | **Testing methods** | **Total population (/1000 py) e** | **Men (/1000 py)** | **Women (/1000 py)** |
| **Inci**  | **adj-Inci** | **adj-Inci (our study)** | **P value** | **Inci** | **adj-Inci** | **adj-Inci (our study)** | **P value** | **Inci** | **adj-Inci** | **adj-Inci (our study)** | **P value** |
| Righarts AA et al.2017 [26] | New Zealand | 1998 - 2011 | General population from a birth cohort, under 38 years | Anti-Pgp3 IgG  | 16  | 19  | 14  | 0.326 | 13  | 22  | 14  | 0.332 | 19  | 15  | 13  | 0.732 |
| Silver BJ et al.2015 [38] | Australia | 2009 - 2011 | Adolescents and young adults from communities,over 16 years | Nucleic acid test | 95  | 55  | 13  | **<0.001** | 86  | 57  | 13  | **<0.001** | 100  | 53  | 13  | **0.001** |

1. Reinfection rate of *C. trachomatis* infection.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Study** | **Country and city** | **Date of study** | **Population and age, years** | **Testing methods** | **Total population (/1000 py)** |
| **Reinfection rate** | **adj-Reinfection rate** | **adj-Reinfection rate (our study)** | **P value** |
| Barnett SD et al.2001 [39] | USA | 1994 - 1998 | Soldiers with CT infection,16 - 51 years | Nucleic acid test | 52  | 21  | 18  | 0.655 |

a: Sp, seroprevalence, directly reported by previous studies, so do the Inci (incidence) and reinfection rate;

b: Adj-Sp, adjusted-seroprevalence for previous study, the reported seroprevalence adjusted by their assays firstly, and then adjusted according to the age-gender distribution in our study for the total population, according to the age distribution in our study for men or women. So do the adj-Inci (adjusted-incidence) and adj-Reinfection rate;

c: Adjusted-seroprevalence for our study, the seroprevalence is adjusted by the sensitivity (92.8%) and specificity (100%) of our serological assay. So do the adj-Inci (adjusted-incidence) and adj-Reinfection rate for our study;

d: *P* value was calculated using Chi-square tests.

e: /1000 py, per 1000 person-year.



**Fig S1 Anti-Pgp3 IgG responses according to different *C. trachomatis* serovars.**