**Table S2: Studies reporting both HIV and syphilis prevalence among men who have sex with men in China.** Each section represents different Chinese regions. The lines in each section separate different time periods: 2003-2004, 2005-2006 and 2007-2008.

|  |  |  |
| --- | --- | --- |
| **First author,****published year ^** | **Study design** | **Prevalence %(n)** |
| **Study Period** | **Study****Location** | **Age range (Mean)** | **Study base** | **Sampling method &** | **Sample size** | **Syphilis testing method ¶** | **Syphilis infection** | **HIV** **infection** | **HIV-syphilis****Co-infection** |
| ***East China*** |  |  |  |  |  |  |  |  |  |  |
| Jiang J, 2006 [1] | 2003 | 5 cities in Jiangsu (Nanjing, Yangzhou, Changzhou, Wuxi, Suzhou) | 18-29 | MSM venues | VBS | 144 | RPR, TPPA | 6.94% (10) \* | 0.00% (0) | - |
| Jiang SM, 2006 [2] | 2004 | Weihai | 19-59 (30) | - | - | 19 | Unspecified | 15.79% (3) | 0.00% (0) | - |
| Cai GF, 2008 [3] | 2006 | Zhejiang | 16-46 | MSM venues | - | 59 | ELISA, TRUST, TPPA | 8.47% (5) \* | 3.39% (2) | - |
| Cai X, 2007 [4] | 2006 | Liaocheng | 18-38 (26) | Participates in a health symposium | - | 94 | ELISA, TPPA | 6.38% (6) \* | 1.06% (1) | - |
| Choi KH, 2007 [5] | 2004-2005 | Shanghai | 18-56 (28) | MSM venues | Snowball | 475 | TRUST, TPPA | 13.47% (64) \* | 1.47% (7) | 0.42% (2) † |
| Fu LJ, 2007 [6] | 2006 | Zhejiang | 19-41 (26) | Peer referral  | Snowball | 51 | Unspecified | 11.76% (6) | 0.00% (0) | - |
| Guo H, 2009 [7] | 2006 | Nanjing | N/A | MSM venues | - | 296 | TPPA, RPR | 26.69% (79) \* | 4.73% (14) | 2.70% (8) † |
| Liao MZ, 2006 [8] | 2005 | 3 cities in Shandong (Yantai, Jinan, Weihai) | 18-73 (26) | MSM venues | - | 142 | Unspecified | 4.92% (7) | 4.92% (7) | - |
|  |  |  |  |  |  |  |  |  |  |  |
| Wu J, 2008 [9] | 2006 | Shanghai | 18-54 (27) | MSM venues | - | 203 | RPR, TPPA | 10.34% (21) \* | 4.43% (9) | 2.96% (6) † |
| Xu J, 2007 [10] | 2005 | Hefei | 18-42 (23) | Peer referral, internet advertisement  | RDS | 223 | TRUST, TPPA | 8.07% (18) \* | 1.79% (4) | - |
| Xu J, 2007 [11] | 2005 | Hefei | 15-24 (21) | Peer referral, internet advertisement  | RDS | 199 | RPR, TPPA | 13.07% (26) \* | 1.01% (2) | - |
| Zhu JL, 2007 [12] | 2005 | Hefei | 18-29 (20) | Peer referral, internet advertisement | RDS | 121 | TRUST, TPPA | 13.22% (16) \* | 1.65% (2) | - |
| Zhu YW, 2007 [13] | 2006 | Jinan | 17-66 (25) | CDC Clinic | - | 282 | TPPA | 9.57% (27) | 1.06% (3) | - |
| Bao YG, 2009 [14] | 2008 | Hangzhou | N/A | - | RDS | 474 | RPR, TPPA | 16.03% (76) \* | 5.06% (24) | - |
| Bao YG, 2009 [14] | 2008 | Shanghai | N/A | - | RDS | 465 | RPR, TPPA | 12.26% (57) \* | 7.53% (35) | - |
| Bao YG, 2009 [14] | 2008 | Nanjing | N/A | - | RDS | 430 | RPR, TPPA | 11.86% (51) \* | 4.65% (20) | - |
| Bao YG, 2009 [14] | 2008 | Qingdao | N/A | - | RDS | 350 | RPR, TPPA | 4.00% (14) \* | 1.14% (4) | - |
| Feng JF, 2008 [15] | 2007 | Zhejiang | 18-48 (28) | MSM venues | - | 73, 77 | ELISA | 24.66% (18) | 3.90% (3) | 0.00% (0) |
| Guo H, 2009 [7] | 2007 | Yangzhou | N/A | MSM venues | - | 137 | TPPA, RPR | 29.93% (41) \* | 8.03% (11) | 5.84% (8) † |
| Han XY, 2007 [16] | 2005-2007 | Jinan | 17-62 | CDC Clinic | - | 635 | TPPA | 9.76% (62) | 2.20% (14) | - |
| Hu J, 2008 [17] | 2007 | Huai'an | 19-54 | Internet recruitment  | - | 65 | TRUST, RPR, TPPA | 6.15% (4) \* | 1.54% (1) | - |
| Lu ZX, 2009 [18] | 2007 | Yancheng | 17-53 | Internet recruitment  | - | 61 | Unspecified | 1.64% (1) | 1.64% (1) | - |
| Lu ZX, 2009 [18] | 2008 | Yancheng | 17-53 | Internet recruitment | - | 68 | Unspecified | 7.35% (5) | 4.41% (3) | - |
| Ruan S, 2008 [19] | 2007 | Jinan | N/A | Peer referral | RDS | 428 | Unspecified | 4.91% (21) | 0.70% (3) | - |
| Yang H, 2010 [20] ^ | 2008 | Nanjing | N/A | MSM venues | RDS | 397/416 | RPR, TPPA | 12.34% (49)\* | 4.57% (19) | - |
| ***Northeast China*** |  |  |  |  |  |  |  |  |  |  |
| Gu Y, 2004 [21] | 2003 | Shenyang | 16-49 | MSM venues | - | 202 | TPPA | 20.79% (42)  | 0.99% (2) | - |
| Wang J, 2004 [22] | 2003 | Dalian | 17-40 | MSM venues, internet recruitment  | - | 157 | TRUST, RPR, TPPA | 1.27% (2) \* | 0.00% (0) | - |
| Wang J, 2008 [23] | 2006 | Harbin | N/A | MSM venues | Convenience | 401 | RPR | 8.98% (36) | 1.00% (4) | - |
| Xiao Y, 2010 [24] | 2006 | Liaoning | 15-68 | MSM venues, internet advertisement, community outreach, peer referral  | VBS, snowball | 1243 | RPR, TPPA | 8.37% (104) \* | 1.93% (24) | - |
| Xiao Y, 2010 [24] | 2006 | Heilongjiang | 15-68 | MSM venues, internet advertisement, community outreach, peer referral | VBS, snowball | 809 | RPR, TPPA | 9.77% (79) \* | 0.74% (6) | - |
| Xiao Y, 2010 [24] ^ | 2006 | Jilin | 15-68 | MSM venues, internet advertisement, community outreach, peer referral | VBS, snowball | 1211 | RPR, TPPA | 12.80% (155) \* | 0.83% (10) | - |
| Xu JJ, 2010 [25] ^ | 2006 | Shenyang | 18-60 | Health education outreach (NGO) | - | 218/231 | RPR, TPPA | 33.49% (73) \* | 5.63% (13) | - |
| Bao YG, 2009 [14] | 2008 | Shenyang | N/A | - | RDS | 450 | RPR, TPPA | 11.78% (53) \* | 8.67% (39) | - |
| Bao YG, 2009 [14] | 2008 | Harbin | N/A | - | RDS | 451 | RPR, TPPA | 19.07% (86) \* | 4.43% (20) | - |
| Sun M, 2009 [26] | 2008 | Dalian | 18-59 | MSM venues, VCT sites | - | 401 | RPR, ELISA | 17.46% (70) \* | 4.24% (17) | - |
| Xu H, 2009 [27] | 2008 | Anshan | N/A | MSM venues | Snowball | 400 | TPPA | 8.75% (35) | 2.75% (11) | - |
| Xu ZH, 2009 [28] | 2007 | Tieling | 16-45 | MSM venues | - | 34 | Unspecified | 2.94% (1) | 0.00% (0) | - |
| Zhang JD, 2008 [29] | 2007 | Harbin | 17-59 (33) | MSM venues | - | 121 | RPR, TPPA | 15.70% (19) \* | 3.31% (4) | - |
| Zhao HP, 2009 [30] | 2008 | Harbin | 17-52 (25) | VCT Clinic | - | 89 | ELISA , WB | 15.73% (14) \* | 2.25% (2) | - |
| ***North China*** |  |  |  |  |  |  |  |  |  |  |
| Ma X, 2007 [31] | 2004 | Beijing | ≥18  | Peer referral | RDS | 325 | ELISA, RPR | 7.69% (25) \* | 1.54% (5) | - |
| Liu H, 2007 [32] | 2005 | Beijing | 18-55 (27) | MSM venues | - | 416 | RPR, TPPA | 10.34% (43) \* | 1.68% (7) | 0.48% (2) † |
| Lu HY, 2008 [33] | 2006 | Beijing | 18-44 (26) | CDC Clinic | Snowball | 200 | RPR, ELISA, TPPA | 24.00% (48) \* | 6.50% (13) | - |
| Ma J, 2007 [34] | 2006 | Tianjin | N/A (25) | Internet recruitment  | - | 62 | Unspecified | 16.13% (10) | 4.84% (3) | - |
| Ma X, 2007 [31] | 2005 | Beijing | ≥16 | Peer referral | RDS | 427 | ELISA, RPR | 12.65% (54) \* | 6.09% (26) | - |
| Ma X, 2007[31] | 2006 | Beijing | ≥16 | Peer referral | RDS | 540 | ELISA, RPR | 10.00% (54) \* | 6.85% (37) | - |
| Ruan Y, 2007 [35] | 2005 | Beijing | 17-54 (26) | MSM venues, internet advertisement, peer referral  | - | 526 | ELISA, TPPA | 11.22% (59) \* | 3.23% (17) | - |
| Wang CH, 2007 [36] | 2006 | Chengde | 15-28 (22) | MSM venues, internet advertisement  | Snowball | 82 | ELISA | 21.95% (18) | 3.66% (3) | - |
| Xiao Y, 2010 [24]  | 2006 | Inner Mongolia | 15-68 | MSM venues, internet advertisement, community outreach, peer referral | VBS, snowball | 167 | RPR, TPPA | 29.34% (49) \* | 0.00% (0) | - |
| Zhang X, 2007 [37] | 2006 | Beijing | 18-55 (26) | VCT Clinic | - | 735 | RPR, TPHA | 7.21% (53) \* | 2.18% (16) | - |
| Bao YG, 2009 [14] | 2008 | Beijing | N/A | - | RDS | 607 | RPR, TPPA | 18.62% (113) \* | 5.93% (36) | - |
| Bao YG, 2009 [14] | 2008 | Tianjin | N/A | - | RDS | 419 | RPR, TPPA | 18.85% (79) \* | 6.44% (27) | - |
| Guo Y, 2009 [38] | 2007 | Tianjin | 17-57 (28) | MSM venues | - | 204 | RPR, TPPA | 18.63% (38) \* | 5.88% (12) | 3.43% (7) † |
| Liang L, 2009 [39] | 2008 | Hebei | N/A | VCT Clinic, peer referral  | Snowball | 450 | TRUST, TPPA | 7.56% (34) \* | 2.22% (10) | 0.67% (3) † |
| Qu L, 2009 [40] | 2008 | Inner Mongolia | 18-63 (27) | MSM venues | - | 604 | RPR, TPPA | 20.03% (121) \* | 3.31% (20) | - |
| Ruan Y, 2009 [41] | 2006-2007 | Beijing | 18-62 | Peer referral, community outreach, internet | - | 541 | EIA, TPPA | 19.80% (107) \* | 4.80% (26) | - |
| Wang XL, 2009 [42] | 2008 | Tangshan | 19-53 | - | - | 77 | ELISA, RPR | 29.87% (23) \* | 7.79% (6) | - |
| ***South Central China*** |  |  |  |  |  |  |  |  |  |  |
| Cai WD, 2005 [43] | 2004 | Shenzhen | 17-58 (26) | MSM venues | - | 261 | TPPA | 18.01% (47) | 1.53% (4) | - |
| He Q, 2005 [44] | 2003 | Guangzhou | N/A | Peer referral, internet advertisement  | Snowball | 117 | ELISA, RPR | 11.11% (13) \* | 1.71% (2) | - |
| He Q, 2008 [45] | 2004 | Guangzhou | 16-66 (30) | Newspaper advertisement, the Internet, referral by acquaintance, television advertisement | Convenience | 201 | Unspecified | 1.99% (4) | 0.00% (0) | - |
| Tao XY, 2004 [46] | 2003 | Shenzhen | 17-47 (24) | MSM venues | - | 114 | Unspecified  | 2.63% (3) | 1.75% (2) | - |
| Cai YM, 2008 [47] | 2005 | Shenzhen | 18-50 (28) | MSM venues | - | 242 | TRUST, TPPA | 9.92% (24) \* | 1.65% (4) | 1.24% (3) † |
| Chen SH, 2007 [48] | 2006 | Nanning | 18-45 (26) | Website | Convenience | 185 | TRUST, TPPA | 10.81%(20) \* | 0.00% (0) | - |
| He Q, 2008 [45] | 2006 | Guangzhou | ≥18 | Newspaper advertisement, the Internet, referral by acquaintance, television advertisement | Convenience | 423 | Unspecified | 4.90% (21) | 1.70% (7) | - |
| Bao YG, 2009 [14] | 2008 | Guangzhou | N/A | - | RDS | 379 | RPR, TPPA | 17.41% (66) \* | 5.28% (20) | - |
| Bao YG, 2009 [14] | 2008 | Wuhan | N/A | - | RDS | 456 | RPR, TPPA | 21.49% (98) \* | 5.04% (23) | - |
| Bao YG, 2009 [14] | 2008 | Haikou | N/A | - | RDS | 98 | RPR, TPPA | 12.24% (12) \* | 2.04% (2) | - |
| Feng F, 2009 [49] | 2008 | Haikou | 18-55 (28) | MSM venues, internet recuriment | Snowball, convenience  | 104 | RPR, TRUST, TPPA | 12.50% (13) \* | 1.92% (2)  | - |
| Feng TJ, 2008 [50] | 2005-2007 | Shenzhen | 17-68 (29) | MSM venues & clinic | - | 1376 | TRUST, TPPA | 19.19% (264) \* | 3.34% (46) | - |
| Hong FC, 2009 [51] | 2007 | Shenzhen | N/A | MSM venues, STD clinic | - | 1146 | TRUST, TPPA | 20.70% (241) \* | 3.66% (42) | - |
| Lan GH, 2009 [52] | 2008 | Guangxi | 18-59 (30) | - | - | 179 | RPR, TRUST | 7.82% (14) \* | 1.68% (3) | - |
| Shi WD, 2009 [53] | 2008 | Wuhan | 18-60 (28) | Peer referral  | RDS | 456 | RPR, TPPA | 21.49% (98) \* | 5.04% (23) | - |
| Wen F, 2010 [54] | 2008 | Guangzhou | 18-64 (28) | MSM venues, internet  | Snowball | 452 | RPR, TPPA | 5.97% (27) \* | 4.87% (22) | 1.33% (6) † |
| Weng YQ, 2009 [55] | 2008 | Guangxi | 18-57 (28) | MSM venues, VCT Clinic | Snowball | 239 | RPR | 4.60% (11) | 3.35% (8) | - |
| Zhong F, 2009 [56] | 2008 | Guangzhou | 18-51 | VCT Clinic | RDS | 379 | RPR, TPPA | 17.94% (68) \* | 5.28% (20) | - |
| ***Northwest China*** |  |  |  |  |  |  |  |  |  |  |
| Li Y, 2007 [57] | 2006 | Lanzhou | 18-61 (30) | MSM venues | Snowball | 264 | RPR, TPPA | 2.65% (7) \* | 0.76% (2) | - |
| Xiao Y, 2010 [24] | 2006 | Gansu | 15-68 | MSM venues, internet advertisement, community outreach, peer referral | VBS, snowball | 477 | RPR, TPPA | 1.89% (9) \* | 0.42% (2) | - |
| Xiao Y, 2010 [24] | 2006 | Ningxia | 15-68 | MSM venues, internet advertisement, community outreach, peer referral | VBS, snowball | 76 | RPR, TPPA | 1.32% (1) \* | 0.00% (0) | - |
| Yang SP, 2008 [58] | 2006 | Hami Prefecture | 15-57 (28) | - | - | 61 | RPR | 1.64% (1) | 3.28% (2) | - |
| Bao YG, 2009 [14] | 2008 | Xi’an | N/A | - | RDS | 98 | RPR, TPPA | 17.80% (79) \* | 3.29% (15) | - |
| Miao ZF, 2009 [59] | 2008 | Yinchuan  | 18-55 (28) | MSM venues, , Internet | Snowball | 312 | Unspecified | 2.88% (9) | 1.92% (6) | - |
| Qiao XW, 2009[60] | 2008 | Lanzhou | 16-68 | VCT sites | - | 619 | TRUST, TPPA | 10.34% (64) \* | 4.85% (30) | 1.94% (12) † |
| Zhang M, 2009 [61] | 2008 | Ürümqi | 18-54 (27) | - | RDS | 231 | RPR, TPPA | 10.82% (25) \* | 2.16% (5) | - |
| Zhang Y, 2008 [62] | 2007 | Ürümqi | N/A | Internet recruitment  | - | 143 | RPR, TPPA | 9.79% (14) \* | 5.59% (8) | - |
| ***Southwest China*** |  |  |  |  |  |  |  |  |  |  |
| Lu CG, 2006 [63] | 2003-2005 | Guizhou | 17-81 | Peer referral | Snowball | 200 | Unspecified | 1.00 (2) | 2.00 (4) | - |
| Lu CG, 2006 [64] | 2003-2005 | Guiyang | 15-81 | MSM venues  | Snowball | 276 | Unspecified | 0.72 (2) | 2.17 (6) | - |
| Feng L, 2009 [65] | 2006 | Chongqing | N/A | MSM venues, peer referral, web-based recruitment | VBS, ABCS | 1000 | RPR, TPPA | 9.30 (93) \* | 10.40 (104)  | 1.70 (17) † |
| Zhou J, 2008 [66] | 2006 | Guiyang | 15-49 (24) | Peer referral, MSM hotlines, internet recruitment  | - | 406 | RPR, TPPA | 1.97 (8) \* | 5.91 (24)  | 0.73 (3) † |
| Bao YG, 2009 [14] | 2008 | Chongqing | N/A | - | RDS | 617 | RPR, TPPA | 7.29% (45) \* | 10.86% (67) | - |
| Bao YG, 2009 [14] | 2008 | Kunming | N/A | - | RDS | 450 | RPR, TPPA | 7.33% (33) \* | 11.78% (53) | - |
| Ding XB, 2010 [67] | 2008 | Chongqing | 18-67 (26) | CDC clinic  | Snowball | 743 | RPR, TPPA | 8.48% (63) \* | 16.55% (123) | 4.31% (32) † |
| Feng L, 2009 [65] | 2007 | Chongqing | N/A | MSM venues, peer referral, web-based recruitment | VBS, ABCS | 1044 | RPR, TPPA | 8.52% (89) \* | 12.55% (131)  | 2.68% (28) † |
| Feng Y, 2010 [68] | 2007 | Chengdu | 16-44 | MSM venues | Snowball | 513 | ELISA | 28.07 (14) | 9.55% (49) | - |
| Wang Y, 2008 [69] | 2006-2007 | Mianyang | 16-57 (25) | - | RDS | 81 | RPR, TPPA | 8.60% (7) \* | 0.00% (0) | - |
| Wang Y, 2009 [70] | 2007 | Mianyang | 16-40  | MSM venues  | RDS | 111 | RPR, TPPA | 17.12% (19) \* | 7.21% (8) | 3.60% (4) † |
| Xiao, Y, 2009 [71] | 2007 | Chongqing | 18-68(28) | MSM venues, internet advertisement, community outreach, peer referral | VBS, snowball | 1692 | RPR, TPPA | 8.57 (145) \* | 10.76% (182)  | - |

^  represents cohort study.

& RDS: Respondent Driven Sampling; VBS: Venue-based sampling; ABCS: area-based conveience sampling

\* Have both screening and confirmatory tests for syphilis and hence used in meta-analyses to estimate the prevalence of syphilis among MSM during 2003-2008.

† Used in meta-analyses to estimate the prevalence of HIV-syphilis co-infection among MSM during 2003-2008.

**¶** EIA: Enzyme immunoassay; ELISA: Enzyme-linked immunosorbent assay; RPR: Rapid Plasma Reagin; TPPA: Treponema pallidum Particle Agglutination assay; TPHA: Treponema pallidum hemagglutination assays; TRUST: Toluidine red unheated serum test; Unspecified: method of syphilis testing did not mention in the study.

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