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Supplementary Material

HIV and syphilis and sexual risk behaviours among men who have sex with men attending university in China: a systematic review and meta-analysis

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Table S1. PRISMA checklist

Section/topic	#	Checklist item	Reported Section #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Title
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	Abstract
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	Introduction – 1st to 2nd paragraphs
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	Introduction – 3rd paragraph
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed, and, if available, provide registration information including registration number.	N/A
Eligibility criteria	6	Specify study characteristics and report characteristics used as criteria for eligibility, giving rationale.	Methods – Search strategy
Information sources	7	Describe all information sources in the search and date last searched.	Methods – Search strategy
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Methods – Search strategy
Study selection	9	State the process for selecting studies.	Methods – Search strategy
Data collection process	10	Describe method of data extraction from reports and any processes for obtaining and confirming data from investigators.	Methods – Data Extraction
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Methods – Data Extraction
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies, and how this information is to be used in any data synthesis.	Methods – Statistical analysis
Summary measures	13	State the principal summary measures.	Methods – Statistical analysis
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency for each meta-analysis.	Methods – Statistical analysis

Section/topic	#	Checklist item	Reported Section #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence.	Methods – Statistical analysis
Additional analyses	16	Describe methods of additional analyses, if done, indicating which were pre-specified.	Methods – Statistical analysis
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	Figure 1
Study characteristics	18	For each study, present characteristics for which data were extracted and provide the citations.	Results – Overview of studies and Table 1
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Results – Table S2,S3
Results of individual studies	20	For all outcomes considered, present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Results – All, Table 2-5 Figure 2
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Results – All, Table 2-5 Figure 2
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	Results –All
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups.	Discussion – 1st to 3rd paragraphs
Limitations	25	Discuss limitations at study and outcome level, and at review-level.	Discussion – 5th paragraph
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	Discussion – 6th paragraph
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support; role of funders for the systematic review.	This work was supported by the National Natural Science Foundation of China (NSFC) under grant 81703278 and the National Health and Medical Research Council (NHMRC) under grant APP1092621. NSFC and NHMRC do not have a role in the design of the study and explanation of data.

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Table S2. Agency for Healthcare Research and Quality (AHRQ) checklist
Cross-Sectional/Prevalence Study Quality

Item	Yes	No	Unclear
1) Define the source of information (survey, record review)			
2) List inclusion and exclusion criteria for exposed and unexposed subjects (cases and controls) or refer to previous publications			
3) Indicate time period used for identifying patients			
4) Indicate whether or not subjects were consecutive if not population-based			
5) Indicate if evaluators of subjective components of study were masked to other aspects of the status of the participants			
6) Describe any assessments undertaken for quality assurance purposes (e.g., test/retest of primary outcome measurements)			
7) Explain any patient exclusions from analysis			
8) Describe how confounding was assessed and/or controlled.			
9) If applicable, explain how missing data were handled in the analysis			
10) Summarize patient response rates and completeness of data collection			
11) Clarify what follow-up, if any, was expected and the percentage of patients for which incomplete data or follow-up was obtained			

Table S3. Quality assessment of included studies

First author	Study year	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Overall
Ruan YH	2005	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Zhang XX	2005-2006	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Zhu JL	2005	Y	Y	Y	Y	U	Y	Y	Y	U	Y	Y	H
Cong LM	2003	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Guo XJ	2008	Y	Y	Y	Y	U	N	N	N	U	Y	Y	L
Cheng GM	2008	Y	Y	Y	Y	U	N	N	N	Y	Y	Y	L
Deng B	2009	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Feng LG	2006-2009	Y	Y	Y	Y	U	U	U	N	Y	Y	Y	M
Wang LX	2005-2006	Y	Y	Y	Y	U	U	U	U	Y	Y	Y	M
Zhou C	2008	Y	Y	Y	Y	U	U	Y	Y	Y	Y	Y	H
Zhou C	2008	Y	Y	Y	Y	U	U	Y	Y	Y	Y	Y	H
Zhou ZH	2008	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Zou HC	2007	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Du GY	2010	Y	Y	Y	Y	U	U	U	U	Y	Y	Y	M
He QY	2008	Y	Y	Y	Y	U	Y	Y	U	Y	Y	Y	H
Xi QH	2009	Y	Y	Y	Y	U	Y	Y	U	Y	Y	Y	H
Xu JJ	2008-2009	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Zheng JD	2007	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Zhang L	2009	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Wei S	2008	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Xu JJ	2009-2011	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Dong ZX	2009-2010	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Huang CY	2012-2013	Y	Y	Y	Y	U	U	U	U	Y	Y	Y	M
Bai JY	2014	Y	Y	Y	Y	U	U	U	Y	Y	Y	Y	H
Wang YM	2015	Y	Y	Y	Y	U	U	U	U	Y	Y	Y	M
Zou HC	2012-2013	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	H
Cai Y	2014-2015	Y	Y	Y	Y	U	Y	Y	U	U	Y	Y	H
Fan AP	2015-2016	Y	Y	Y	Y	U	U	U	U	U	Y	Y	M
Jin W	2014	Y	Y	Y	Y	U	Y	U	Y	Y	Y	Y	H
Luo H	2016	Y	Y	Y	Y	U	U	Y	Y	Y	Y	Y	H
Wei SS	2014-2016	Y	Y	Y	Y	U	U	U	U	Y	Y	Y	M
Wei W	2011-2015	Y	Y	N	Y	Y	Y	Y	Y	U	N	Y	L

Q: Question

Y: Yes; N: No; U: Unclear

H: High quality; M: Middle quality; L: Low quality

Table S4. Egger's test for publication bias

Variables	Number of studies	Egger's test *P*
HIV prevalence	27	<0.001
Syphilis prevalence	21	<0.001
First sex partner is male	17	<0.001
Had commercial sex	18	<0.001
Had paid for sex	14	0.003
Had sold sex	15	<0.001
Had sex with women in the past month	18	<0.001
Finding sex partner online	17	0.179
Had ever used drug	8	0.019
Had HIV testing lifetime	22	0.264