A Reversed Gender Pattern? A Meta-Analysis of Sex Differences in the Prevalence of Non-Suicidal Self-Injurious Behaviour Among Chinese Adolescents

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Background

- Since the 1990s, the suicide rate in China has deceased greatly but remains a unique reversed gender pattern.

- China is nearly the only country (except for Pakistan and Bangladesh, based on 2011 data from WHO) with a higher suicide rate among women than among men.

- This reversed gender pattern in suicide rate is especially apparent in the younger population (15–34 years).

Background

- Non-suicidal self-injurious (NSSI) behaviour is defined as direct, deliberate destruction of one's own body without an intent to die.

- Like suicidal behaviour, NSSI is a health-risk behaviour; similarities between these two behaviours also appear to exist.

- In studies from Western countries, NSSI is usually viewed as primarily a female behaviour.

Questions?

- Is there any sex difference in the prevalence of NSSI behaviour among adolescents in China?

- If so, is there a female bias in NSSI behaviour among Chinese adolescents, or is there a reversed gender pattern as with the suicide rate in China compared to other countries?

Methods

- **The literature search database**
  - The periodical full-text database of the China National Knowledge Infrastructure and of the China Networked Digital Library of Thesis and Dissertations
  - Google Scholar database

- **Key words**
  - ‘self-harm’, ‘self-injury’, and ‘self-mutilation’ for Chinese literatures
  - ‘self-harm + China’, ‘self-injury + China’, ‘self-cutting + China’, and ‘self-mutilation + China’ for English literatures

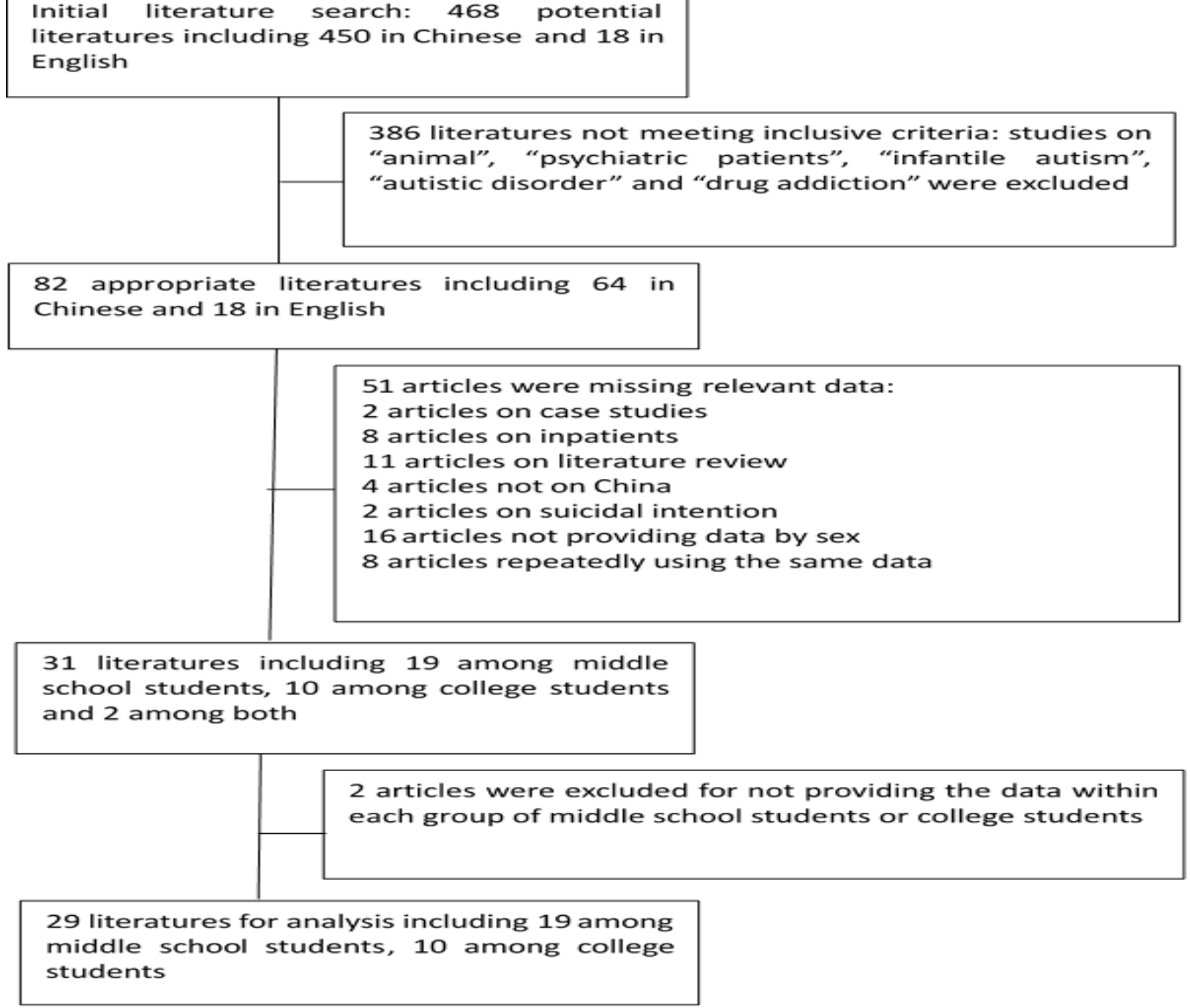

Figure 1. Flow chart of literature search and selection

Methods

- The information about the authors and the titles, journals, investigation sites, time of the survey, measurements of NSSI behaviour, target groups, and cases of NSSI behaviour by sex were extracted from the selected papers.

- Review Manager 5·3 was used for the meta-analysis.

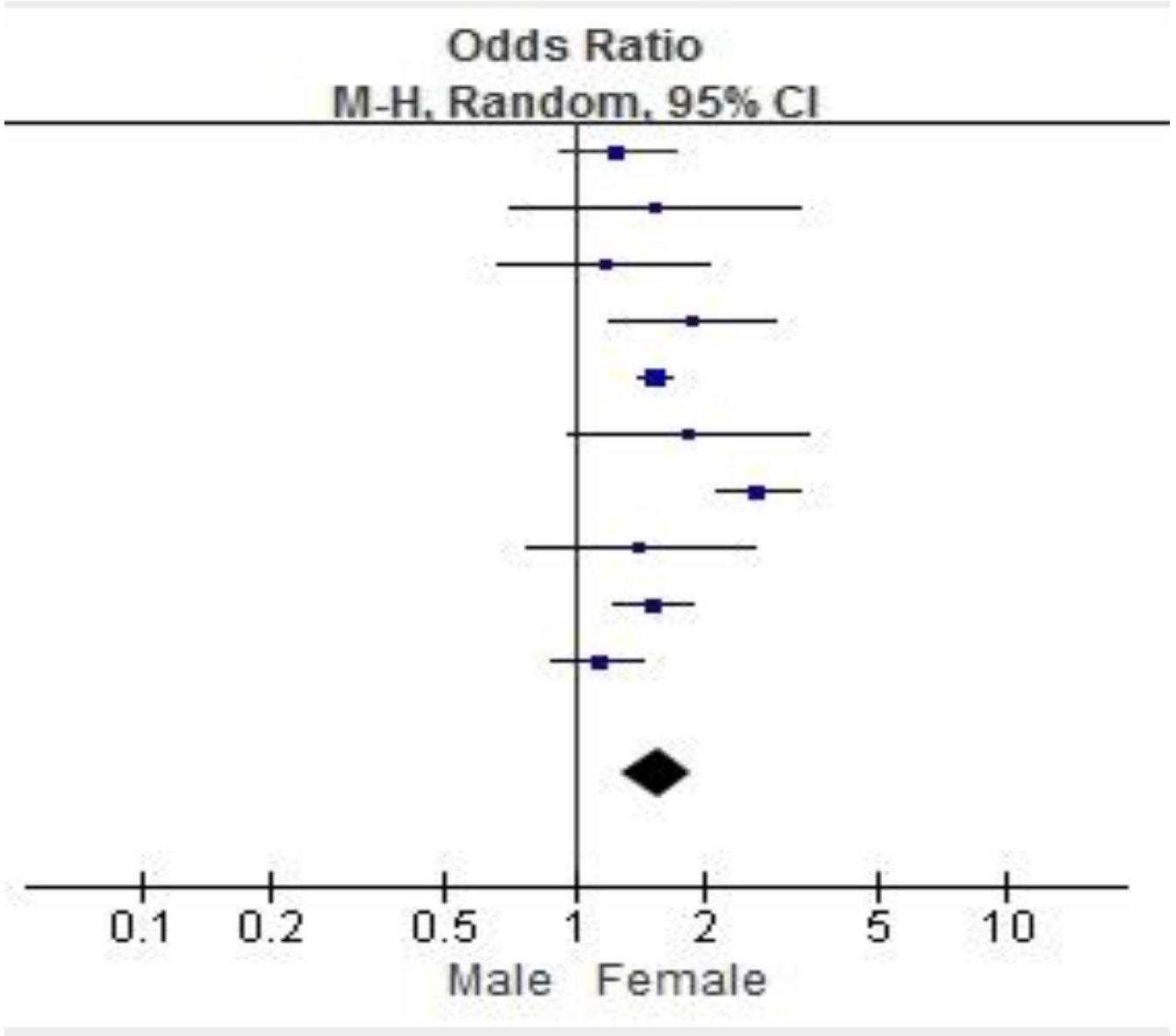

Figure 2. Forest plot of sex difference in prevalence of self-injurious behavior among college students

Table 1. Sex difference in prevalence of self-injurious behavior among college students

Authors	Measurements	Male		Female		Weight	Odds Ratio M-H, Random, 95% CI
		Events	Total	Events	Total		
Chao et al., 2015	NSSI-AT (14 SI behaviors) by Whitlock et al.	121	481	97	458	11.6%	1.25[0.92,1.70]
Li & Meng, 2014	18 SI behaviors by authors	1501	3900	1199	4150	16.4%	1.54[1.40,1.69]
Pan et al., 2014	Functional assessment self-mutilation (FASM) by Lloyd (1997), modified by Zheng Ying, 20 SI behaviors)	66	79	267	364	5.5%	1.84[0.97,3.49]
Tao et al., 2014	Eight self-injurious behaviors defined by authors	156	1141	151	1235	13.2%	1.14[0.89,1.45]
Qiao & Chen, 2013	NSSI-AT (16 SI behaviors) by Whitlock et al.	16	219	12	247	4.2%	1.54[0.71,3.34]
You et al., 2013	NSSI-AT (five SI behaviors) by Whitlock et al.	58	380	36	413	8.6%	1.89[1.21,2.93]
Liu & Chen, 2012	No detailed information	35	149	29	140	6.6%	1.18[0.87,.2.05]
Wang, 2013	Functional assessment self-mutilation (FASM) by Lloyd (1997) (eight SI behaviors)	189	764	259	1457	13.9%	1.52[1.23,1.88]
Wang, 2010	Questionnaire by Author	264	676	217	1114	13.9%	2.65[2.14,3.28]
Wang et al., 2007	Seven NSSI behaviors by authors	19	103	37	268	5.9%	1.41[0.77,2.59]
Total (95%CI)		2425	7892	2304	9846	100%	1.56[1.30, 1.87]
Heterogeneity: $Tau^2=0.05$; $Chi^2=34.33$; df=9; ($p<0.0001$); $I^2=74\%$							
Test for overall effect: Z=4.78 (p<0.00001)							

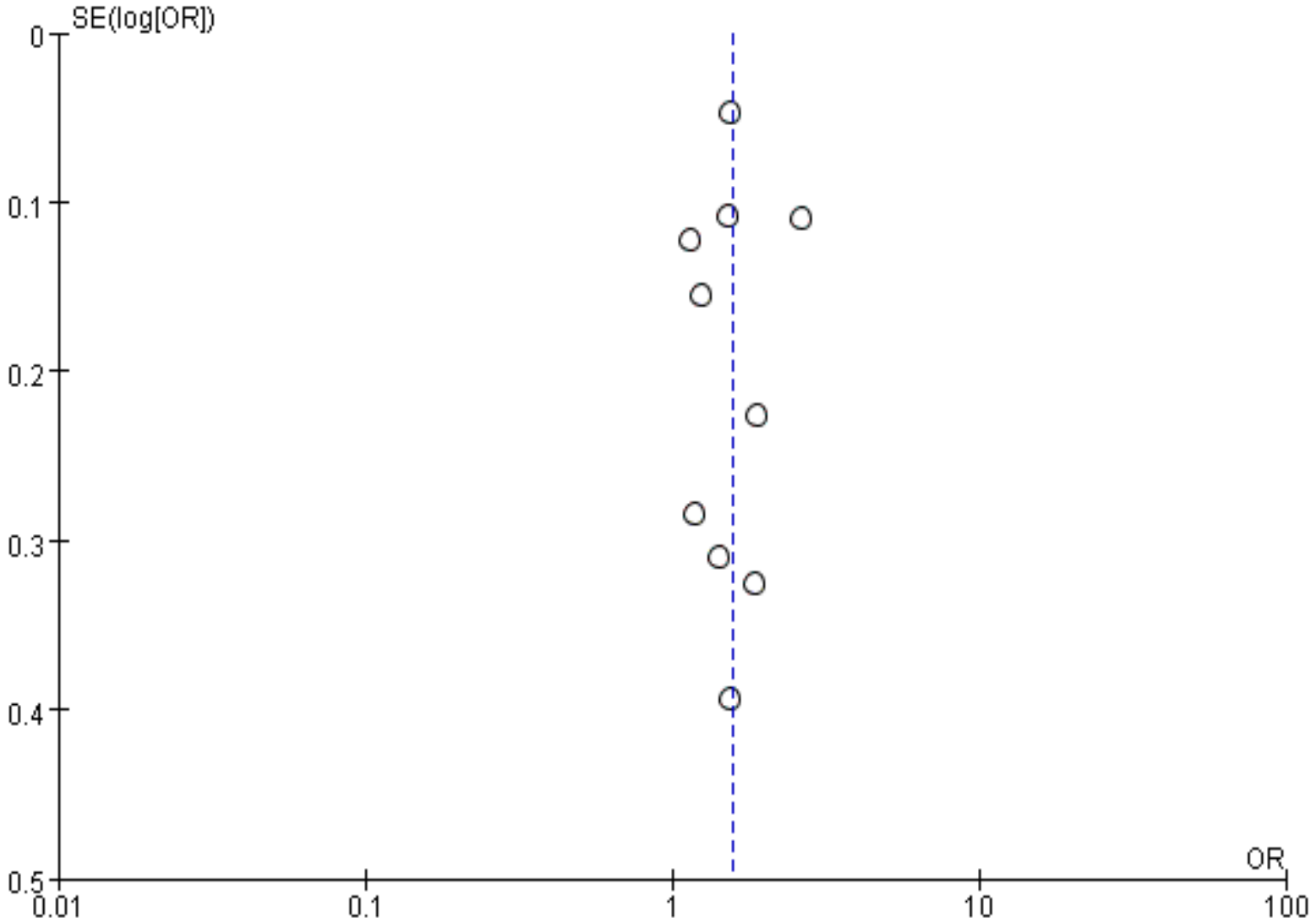

Figure 3. Funnel plot of sex difference in prevalence of self-injurious behavior among college students

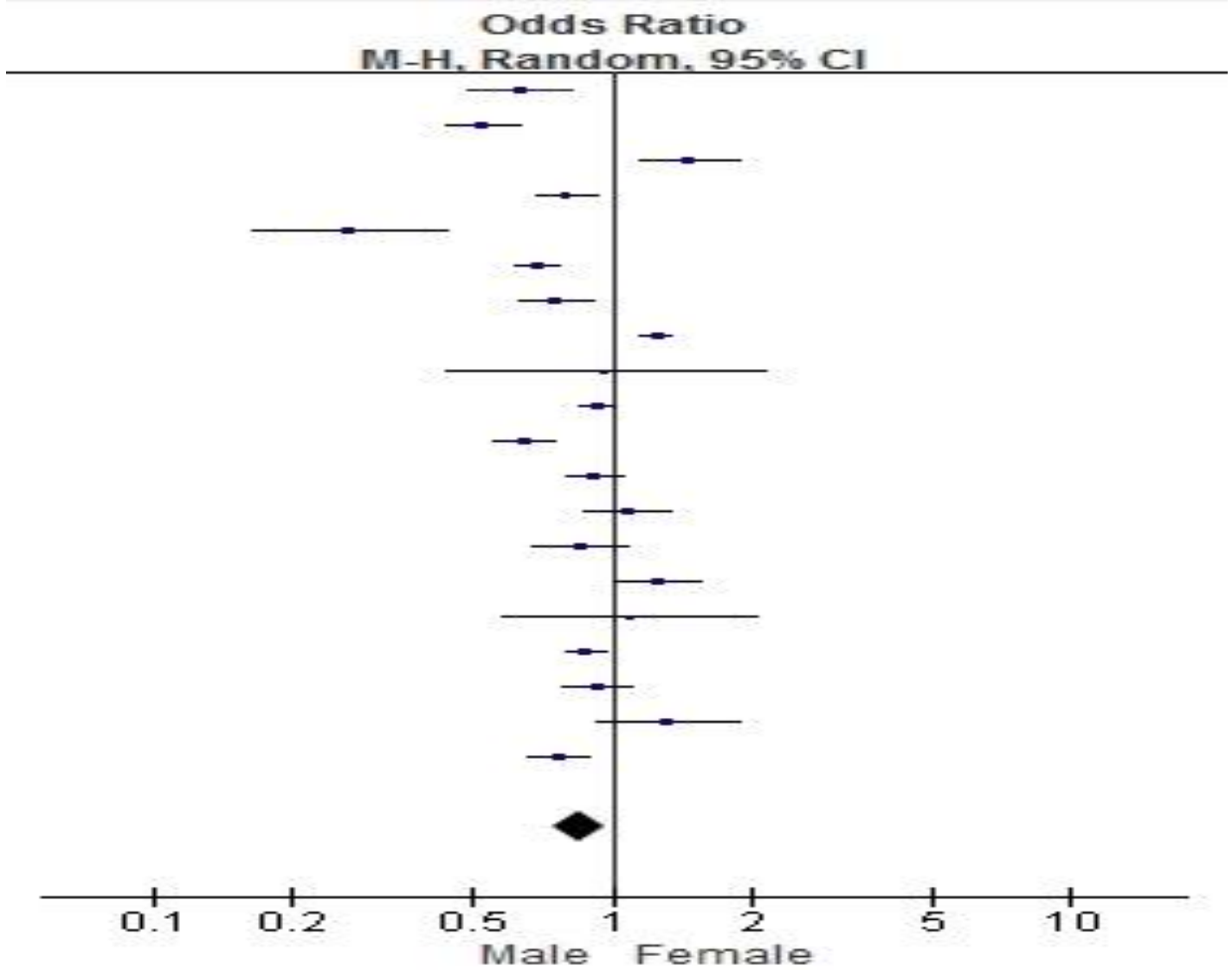

Figure 4. Forest plot of sex difference in prevalence of self-injurious behavior among middle school students

Table 1. Sex difference in prevalence of self-injurious behavior among college students

Authors	Measurements	Male		Female		Weight	Odds Ratio M-H, Random, 95% CI
		Events	Total	Events	Total		
Yuan et al., 2015	Eight SI behaviors by authors	327	1113	351	1131	5.8%	0.92 [0.77, 1.11]
Kong et al., 2014	Revised FASM (Lloyd, 1997) by Zheng (2006), 22 SI behaviors	13	107	15	120	1.9%	0.97 [0.44, 2.14]
Xuan, 2014	Revised Deliberate Self-Harm Inventory (Gratz, 2001) by Feng (2008), 19 SI behaviors	135	246	111	231	4.3%	1.31 [0.92, 1.88]
Cheung et al., 2013.	Five SI behaviors by authors	107	801	166	841	5.1%	0.63 [0.48, 0.82]
Law & Shek, 2013	Checklist of self-harm behaviors by authors (14 SI behaviors)	227	1282	379	1297	5.7%	0.52 [0.43, 0.63]
Tang et al., 2013	Functional Assessment of Self-Mutilation (FASM) by Lloyd (1997) (10 SI behaviors)	444	1436	531	1471	6.0%	0.79 [0.68, 0.92]
Fu et al., 2013	Eight SI behaviors by Authors.	2033	6644	1872	7173	6.4%	1.25 [1.16, 1.34]
Yang, et al., 2013 (2008)	Six SI behaviors by Xiao (2008)	196	1321	192	1378	5.5%	1.08 [0.87, 1.33]
Yang et al., 2013 (2010)		148	1142	194	1299	5.4%	0.85 [0.67, 1.07]
Yang et al., 2013 (2012)		192	1001	182	1146	5.4%	1.26 [1.01, 1.57]

Authors	Measurements	Male		Female		Weight	Odds Ratio M-H, Random, 95% CI
		Events	Total	Events	Total		
You et al., 2012-1	Twelve SI behaviors by authors	479	4028	1415	8577	6.2%	0.68 [0.61, 0.76]
You, Leung, & Fu (2012)-2		226	1037	377	1398	5.7%	0.75 [0.62, 0.91]
Lei et al., 2012	DSH questionnaire by authors, eight SI behaviors	500	1463	504	1244	5.9%	0.76 [0.65, 0.89]
Zhang, 2011	Deliberate Self-Harm Inventory by Gratz (2001), eight SI behaviors	422	1841	670	2116	6.0%	0.64 [0.56, 0.74]
Xu, 2011	Functional assessment self-mutilation (FASM) by Lloyd (1997), six SI behaviors	511	1745	517	1657	6.0%	0.91 [0.79, 1.06]
Wang, 2011	Ottawa Self-injury Inventory, OSI, 17 SI behaviors	21	737	19	726	2.5%	1.09 [0.58, 2.05]
Xiao, 2009	Six SI behaviors by author	1123	5274	1220	5170	6.3%	0.88 [0.80, 0.96]
Sun et al., 2008	Six SI behaviors by authors	1259	5695	1222	5199	6.3%	0.92 [0.84, 1.01]
Wong et al., 2007.	Cutting, poisoning and recklessness (Hawton et al., 2002; Paton et al., 1997) , three SI behaviors	27	893	49	468	3.4%	0.27 [0.16, 0.43]
Total (95%CI)		8390	37806	9986	42642	100%	0.83 [0.73, 0.94]
Heterogeneity: $Tau^2=0.07$; $Chi^2=211.44$; df=18; ($p<0.00001$); $I^2=91\%$							
Test for overall effect: Z=2.92 (p<0.004)							

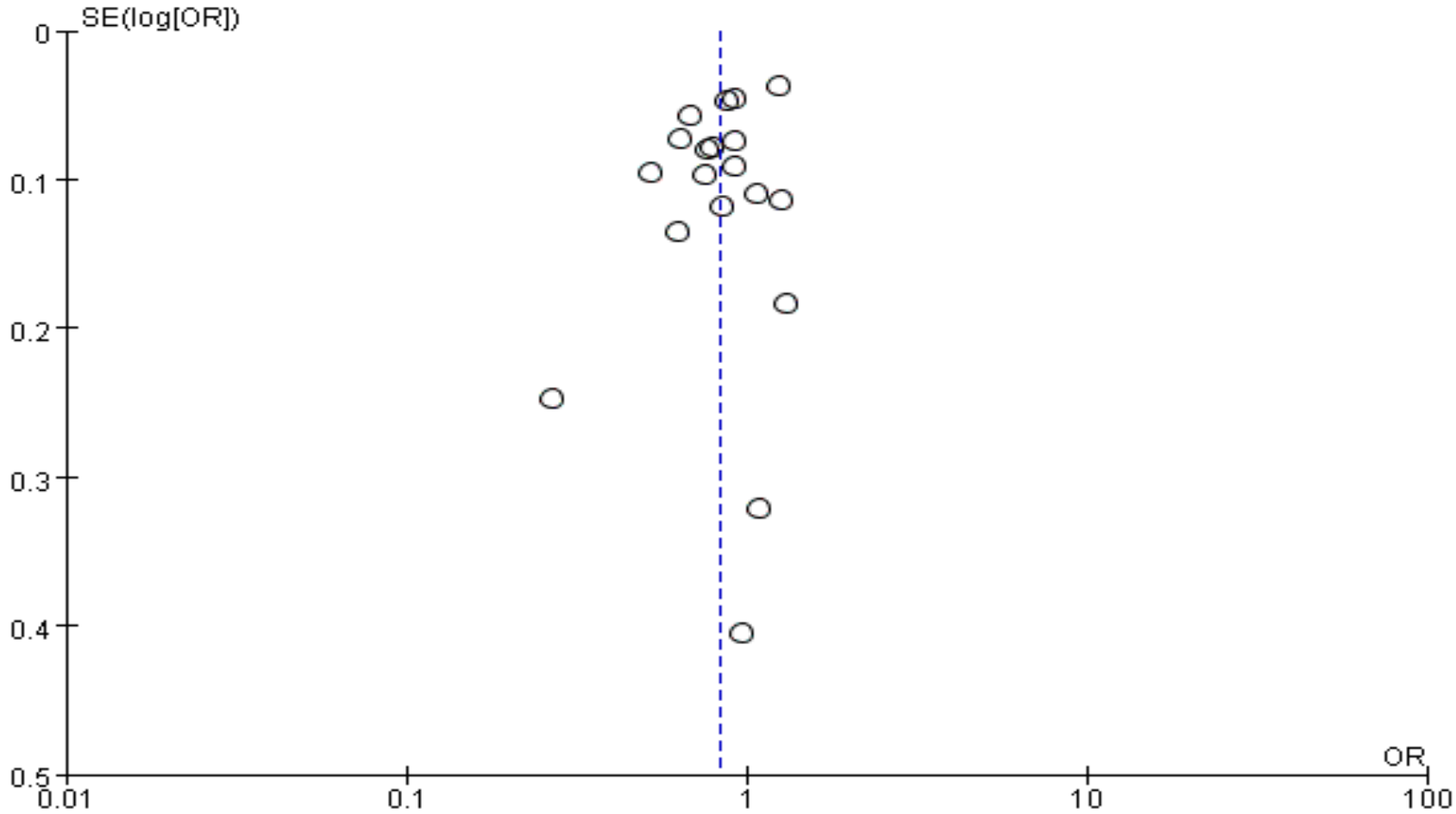

Figure 5. Funnel plot of sex difference in prevalence of self-injurious behavior among middle school students

Discussions and Conclusions

- A unique gender pattern was found in NSSI behaviour among adolescents, with the prevalence of NSSI behaviour among males being higher than among females, but only for college students.

- For middle school students, the prevalence of NSSI behaviour followed the usual female bias, at least to some extent, which is in accordance with findings obtained from studies in Western countries.

Discussions and Conclusions

- Gender inequality due to the patrilineal culture in China, Confucianism, social structure, marital status, interpersonal conflicts, financial crises, and interactions between society, culture, and economy are reported to be the main causes for this reversed gender pattern.

- But what are the reasons behind the different gender patterns found in the prevalence of NSSI behaviour among Chinese adolescents of different ages?

Discussions and Conclusions

- Unfortunately, most articles cited in the present study did not analyse sex differences in the prevalence of NSSI behaviour among Chinese adolescents.

- Studies in Western countries do not explain the unusual gender pattern of sex differences in NSSI behaviour among Chinese adolescents but provide a biological and socio-environmental perspectives for explaining female bias in NSSI in Western countries.

Discussions and Conclusions

- We might infer:
- Biological causes: the difference between boys and girls in physical development is the main reason for female bias in these behaviours among middle school students and for male bias in NSSI behaviour among college students, as girls enter puberty earlier than boys do.

- Socio-environmental causes: China is a modified patriarchal society, which might underlie a gender role conflict in female middle school students and male college students, and lead to a higher prevalence of NSSI behaviour in these groups.

Thanks for your patience and listening!