Supplemental Tables

Table S1. List of manuscripts and case-control studies included

Author	Year Published	Country	Setting	WHO Case Definition	Recall Period	Cases	Controls	Summary Bias Score
Alba et al	2015	Indonesia	Rural, Urban, Peri-urban	No	Typical	449	484	HIGH
Alba et al	2015	Indonesia	Rural, Urban, Peri-urban	No	Typical	235	259	HIGH
Aye et al	2004	Myanmar	Rural	No	Unknown	33	52	HIGH
Bhan et al	2002	India	Urban	Yes	<3 weeks	83	166	LOW
Bhunnia et al	2009	India	Suburban	No	<2 weeks	65	65	HIGH
Bruh et al	2017	Indonesia	Urban	No	Unknown	45	45	HIGH
Kabwama et al	2017	Uganda	Urban	No	Typical	33	78	HIGH
Karkey et al	2013	Nepal	Urban	Yes	<2 weeks	49	136	HIGH
Luby et al	1998	Pakistan	Urban	Yes	<2 weeks	100	200	LOW
Luxemburger et al	2001	Vietnam	Rural and Urban	Yes	Typical	149	144	HIGH
Luxemburger et al	2001	Vietnam	Rural and Urban	Yes	Typical	149	144	HIGH
Mermin et al	1999	Tajikistan	Urban	Yes	<30 days	45	123	HIGH
Muti et al	2014	Zimbabwe	Suburban	No	Unknown	115	115	HIGH
Nyamusore et al	2018	Rwanda	Rural	No	Unknown	260	770	HIGH
Ram et al	2007	Bangladesh	Urban	Yes	<2 weeks	41	82	MEDIUM
Sharma et al	2009	India	Rural and Urban	No	<2 weeks	123	123	HIGH
Siddiqui et al	2008	Pakistan	Urban	No	Typical	88	165	HIGH
Srikantia et al	2007	Uzbekistan	Rural	Yes	<2 weeks	97	192	HIGH
Tran et al	2005	Vietnam	Rural	Yes	Typical	90	180	HIGH
Velema et al	1997	Indonesia	Rural	No	Unknown	50	42	HIGH
Vollard et al	2004	Indonesia	Rural	Yes	Typical	69	378	HIGH
Vollard et al	2004	Indonesia	Rural	Yes	Typical	69	289	HIGH

Please note that some manuscripts reported results for multiple case-control studies, which may or may not have been conducted using the same methods.

Table S2. Summary odds ratios and heterogeneity analysis for WASH exposures in typhoid outbreaks

	E(n)	M(n)	OR (95% CI)	I^2	E(n)	M(n)	OR (95% CI)	I^2
	Improved Water Source				**Surface Water Contact**			
All	16	9	0.73 (0.56, 0.95)	76%**	7	4	1.9 (1.4, 2.5)	32%
Low & Med Bias	5	2	-	-	0	0	-	-
WHO Def	11	6	0.68 (0.50, 0.95)	69%**	5	2	-	-
Low & Med & WHO Def	5	2	-	-	0	0	-	-
Recall Period <2week	11	6	0.71 (0.51, 0.97)	79%**	4	2	-	-
Recall of Typical Habits	2	1	-	-	2	1	-	-
	Treated Water				**Untreated Water**			
All	9	7	0.59 (0.45, 0.75)	39%	12	6	2.4 (2.0, 2.9)	69%**
Low & Med Bias	2	1	-	-	2	1	-	-
WHO Def	5	3	0.49 (0.35, 0.68)	0.0%	10	5	3.2 (2.5, 4.2)	56%*
Low & Med & WHO Def	2	1	-	-	2	1	-	-
Recall Period <2week	6	4	0.59 (0.44, 0.80)	26%	2	1	-	-
Recall of Typical Habits	1	1	-	-	0	0	-	-
	Safe Water Management							
All	9	6	0.67 (0.51, 0.86)	84%**				
Low & Med Bias	0	0	-	-				
WHO Def	3	2	-	-				
Low & Med & WHO Def	0	0	-	-				
Recall Period <2week	6	4	0.30 (0.20, 0.44)	0.0%				
Recall of Typical Habits	0	0	-	-				
	Household Latrine Available/Used				**Open Defecation**			
All	7	4	0.87 (0.68, 1.1)	79%**	6	3	0.99 (0.84, 1.2)	18%
Low & Med Bias	4	1	-	-	0	0	-	-
WHO Def	5	2	-	-	3	2	-	-
Low & Med & WHO Def	4	1	-	-	0	0	-	-
Recall Period <2week	6	3	0.50 (0.34, 0.75)	69%**	1	1	-	-
Recall of Typical Habits	1	1	-	-	5	2	-	-
	Good Hygiene				**Lack of Hygiene**			
All	8	4	0.52 (0.40, 0.67)	82%**	15	7	2.2 (1.9, 2.6)	36%
Low & Med Bias	1	1	-	-	1	1	-	-
WHO Def	1	1	-	-	3	2	-	-
Low & Med & WHO Def	1	1	-	-	1	1	-	-

Recall Period <2week	4	2	-	-	0	0	-	-
Recall of Typical Habits	3	1	-	-	11	3	2.3 (1.9, 2.8)	33%
					Unsafe Waste Management			
All					6	4	1.6 (1.3, 2.0)	55%*
Low & Med Bias					0	0	-	-
WHO Def					1	1	-	-
Low & Med & WHO Def					0	0	-	-
Recall Period <2week					1	1	-	-
Recall of Typical Habits					3	2	-	-

*E (N) = number of exposure; M (N) = number of manuscripts; *significant at the p<0.05 level; **significant at the p<0.01 level*

Table S3. Summary odds ratios and heterogeneity analysis for food exposures in typhoid outbreaks

	E(n)	M(n)	OR (95% CI)	I^2	E(n)	M(n)	OR (95% CI)	I^2	E(n)	M(n)	OR (95% CI)	I^2
	Protective Food Practices				**Risky Food Practices**				**Shellfish & Fish consumption**			
All	8	5	0.74 (0.55, 1.0)	80%**	15	4	1.7 (1.5, 2.0)	63%**	9	3	0.98 (0.79, 1.2)	75%**
Low & Med Bias	3	1	-	-	0	0	-	-	1	1	-	-
WHO Def	4	2	-	-	2	1	-	-	9	3	0.98 (0.79, 1.2)	75%**
Low & Med & WHO Def	3	1	-	-	0	0	-	-	1	1	-	-
Recall Period <2week	5	3	0.62 (0.43, 0.89)	84%**	0	0	-	-	1	1	-	-
Recall of Typical Habits	2	1	-	-	13	3	1.6 (1.4, 1.9)	62%**	8	2	-	-
					Food and Drink Outside of Home				**Dairy Consumption**			
All					39	15	1.6 (1.4, 1.8)	72%**	12	7	1.4 (1.1, 1.7)	75%**
Low & Med Bias					17	3	1.4 (1.2, 1.7)	4.8%	5	2	-	-
WHO Def					26	9	1.4 (1.2, 1.6)	38%*	8	5	0.88 (0.67, 1.2)	59%**
Low & Med & WHO Def					17	3	1.4 (1.2, 1.7)	4.8%	5	2	-	-
Recall Period <2week					21	5	1.3 (1.1, 1.6)	41%*	11	6	1.5 (1.2, 1.9)	67%**
Recall of Typical Habits					13	6	2.0 (1.6, 2.4)	84%**	0	0	-	-
									Ice Cream Consumption			
All									10	7	1.5 (1.2, 1.9)	31%
Low & Med Bias									5	4	1.4 (1.1, 1.9)	63%*
WHO Def									8	5	1.5 (1.2, 1.9)	46%
Low & Med & WHO Def									5	3	1.4 (1.1, 1.9)	63%*
Recall Period <2week									7	5	1.3 (1., 1.7)	17%
Recall of Typical Habits									2	1	-	-

	Fruit and Juice Consumption			
All	21	6	1.5 (1.2, 1.8)	52%**
Low & Med Bias	13	2	-	
WHO Def	16	4	1.1 (0.86, 1.4)	39%
Low & Med & WHO Def	13	2	-	-
Recall Period <2week	18	4	1.4 (1.2, 1.7)	38%*
Recall of Typical Habits	2	1	-	-
	Vegetable Consumption			
All	14	7	1.1 (0.97, 1.3)	63%
Low & Med Bias	3	3	-	-
WHO Def	7	4	0.93 (0.69, 1.3)	0.0%
Low & Med & WHO Def	3	3	-	-
Recall Period <2week	11	5	1.4 (1.1, 1.7)	59%**
Recall of Typical Habits	2	1	-	-

*E (N) = number of exposure; M (N) = number of manuscripts; *significant at the p<0.05 level; **significant at the p<0.01 level*