

Appendix to Association between Processed and Unprocessed Red Meat Consumption and Risk of Non-alcoholic Fatty Liver Disease: A Systematic Review and Dose-response Meta-analysis

The example of search strategy:

((("non-alcoholic" OR "nonalcoholic" OR "steatohepatitis") AND ("fatty liver")) OR "NAFLD" OR "non-alcoholic fatty liver disease" OR "nonalcoholic fatty liver disease" OR "NASH" OR "NAFL" OR "metabolic dysfunction-associated fatty liver disease" OR "mafld") AND ("meat" OR "beef" OR "veal" OR "hot dog" OR "salami" OR "sausage" OR "lamb" OR "bacon" OR "deli meat" OR "pastrami" OR "hamburger" OR "schnitzel" OR "diet").

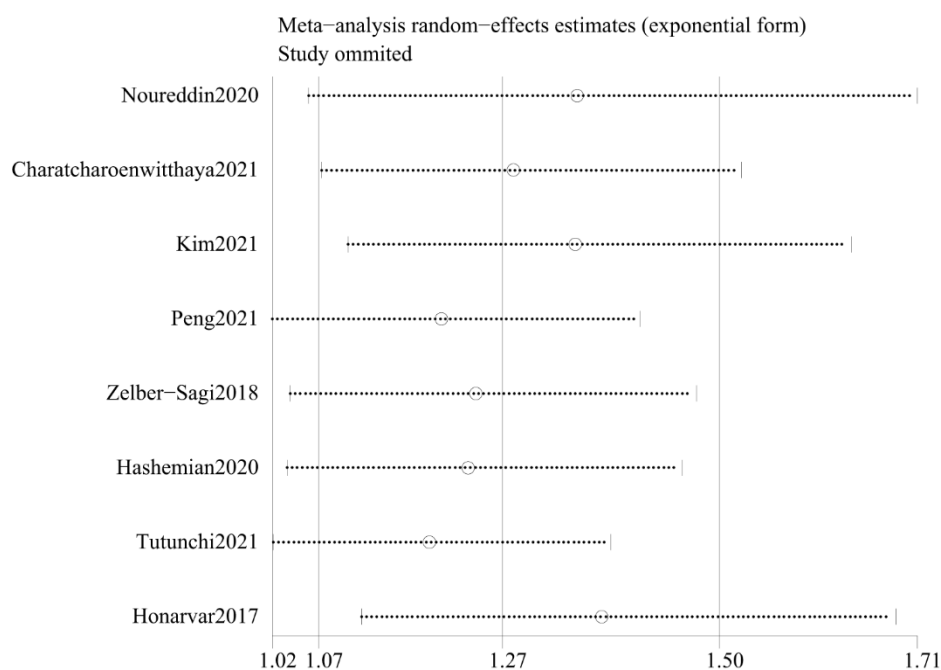


Figure S1. Sensitive analysis for red meat

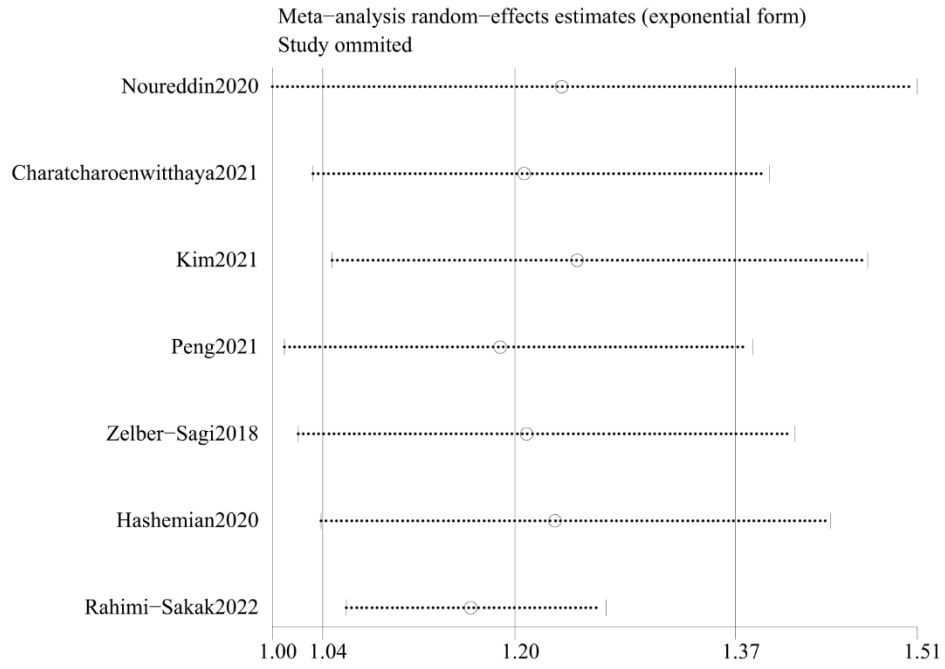


Figure S2. Sensitive analysis for processed red meat

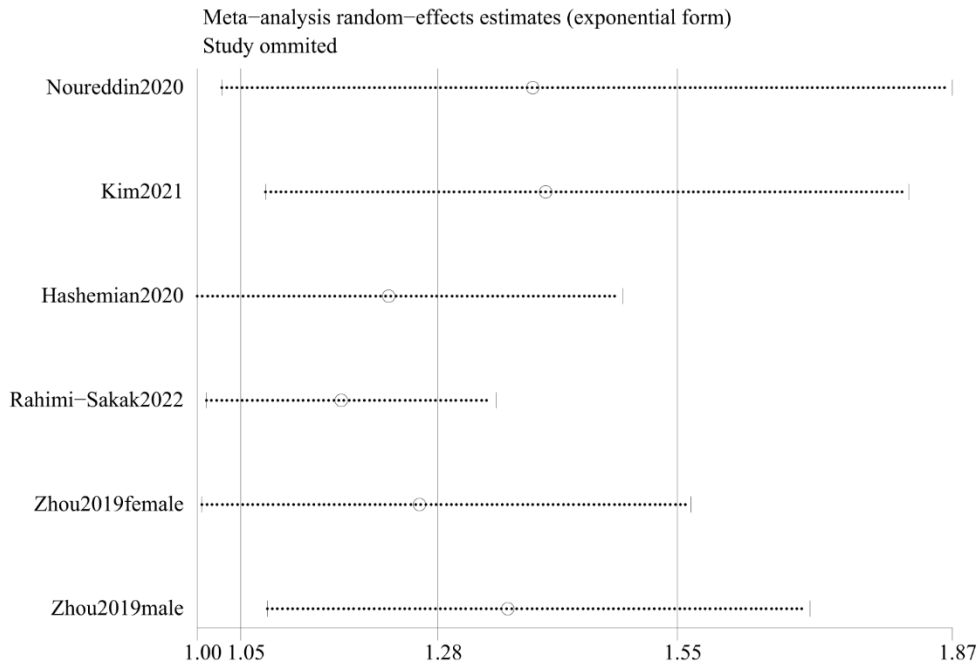


Figure S3. Sensitive analysis for unprocessed red meat

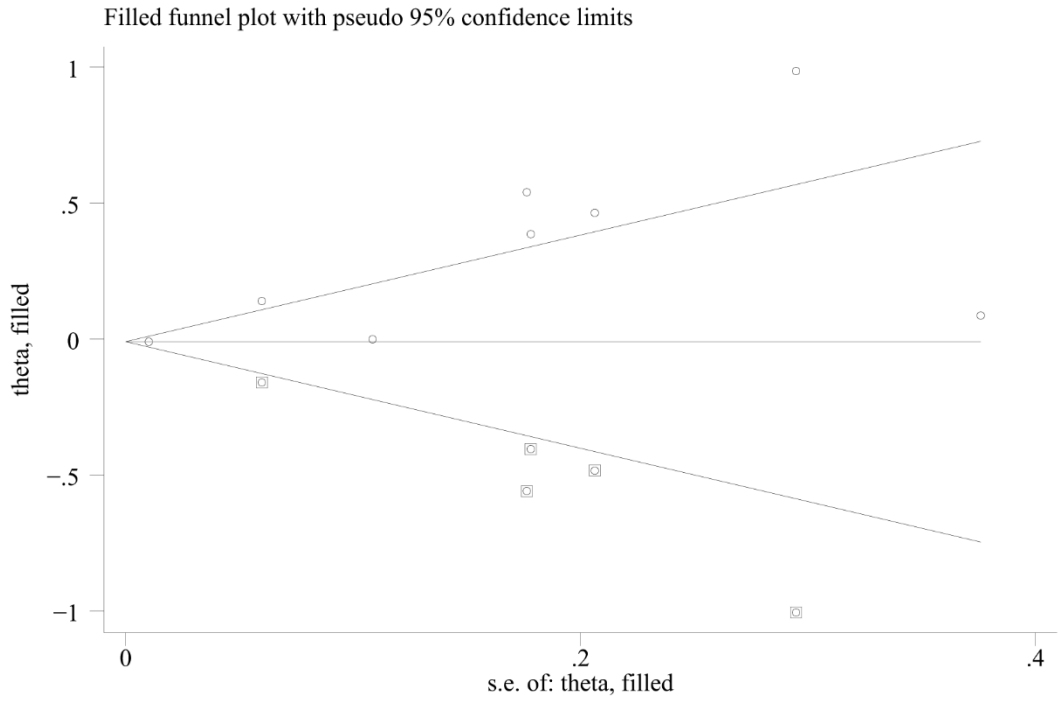


Figure S4. trim-and-fill funnel plot for red meat

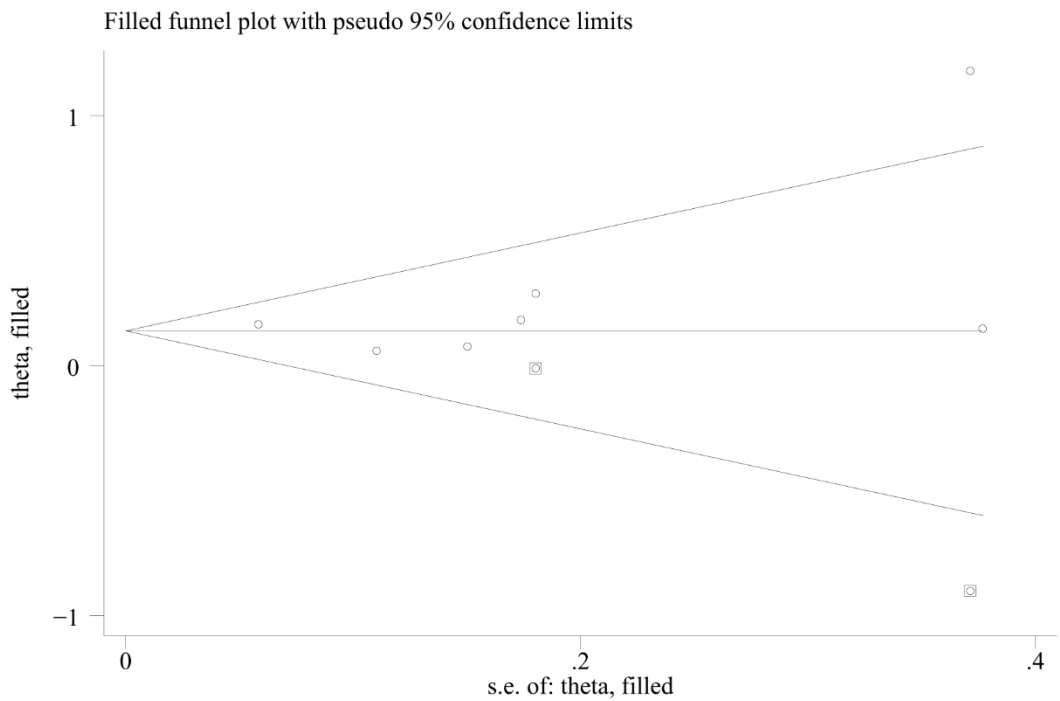


Figure S5. trim-and-fill funnel plot for processed red meat

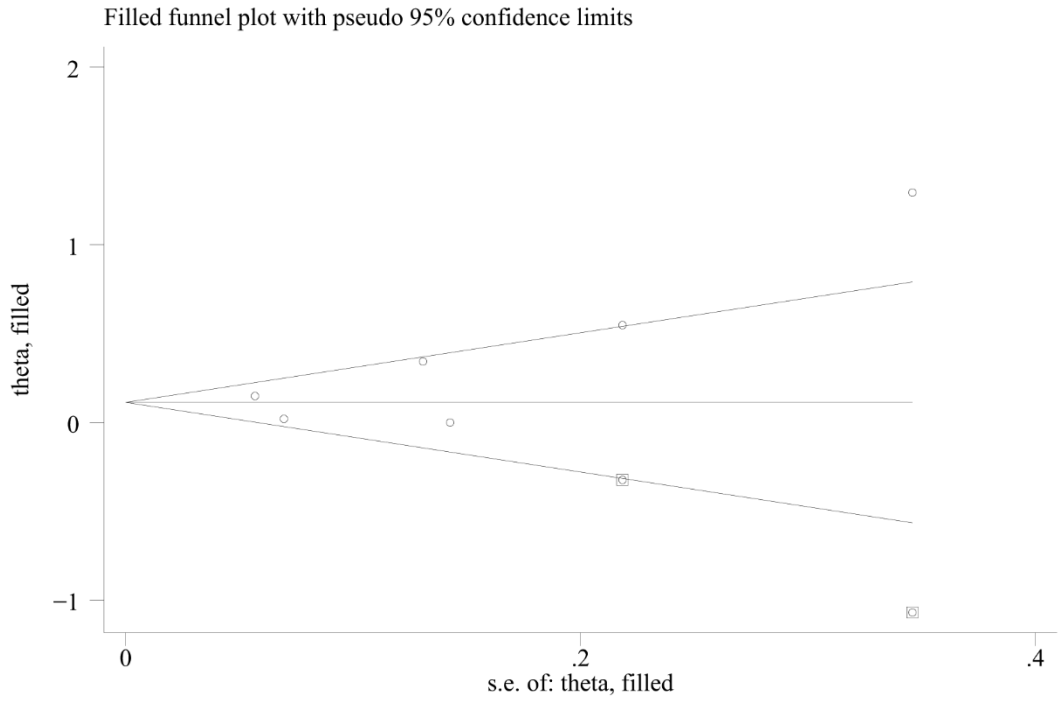


Figure S6. trim-and-fill funnel plot for unprocessed red meat

Table S1. Definitions of red meat, unprocessed red meat and processed meat used in studies included in the systematic review.

Study ID	Red meat		Unprocessed red meat		Processed red meat	
	Terminology in the study	Description in the study	Terminology in the study	Description in the study	Terminology in the study	Description in the study
Noureddin2020	Red meat	none	red meat excluding processed meat	none	Processed red meat	none
Charatcharoenwithaya2021	Red meat	none	none	none	none	none
Kim2021	Total red meat	none	unprocessed red meat	unprocessed red meat intake included, “beef, pork or lamb as main dish”, “hamburger”, and “beef, pork or lamb as a sandwich or mixed dish”	processed red meat	Processed red meat included “bacon”, “hot dogs”, and “sausage, salami, bologna and other processed red meat”
Peng2021	none	none	Red meat	Red meat consisted of pork, beef and lamb	none	none
Zelber-Sagi2018	Total red meat	Total red meat was composed of: beef steak or roast, beef internal organs, fried beef patties, lamb and pork	none	none	processed meat	Processed meat included: hamburger, salami, pastrami, sausages, processed schnitzel and canned meat

Hashemian2020	Total red meat	total red meat intake including unprocessed meat (lamb, beef, and hamburger), organ meat (liver, kidney, gizzard, and heart), and processed meat (sausage and deli meat)	unprocessed red meat	unprocessed meat (lamb, beef, and hamburger)	none	none
Zhou2019	none	none	Red meat	Red meat intake was defined as the total amount of pork, beef and mutton	none	none
Tutunchi2021	Red and processed meat	Red and processed meat: Beef, lamb, camel, sausages, hamburger, processed meats, organ meats	none	none	none	none
Rahimi-Sakak2022	none	none	Red meat	red meat (beef or lamb or ground red meat)	processed meat	processed meat (sausages or burgers)
Honarvar2017	red meat	none	none	none	none	none

Table S2. Quality of the studies included in the meta-analysis according to Newcastle-Ottawa Scale.

Risk Bias Assessment using Newcastle-Ottawa Scale for cross-sectional studies								
Study	selection				Comparability based on design and analysis	outcome		Total score
	Representativeness of the samples	Sample size	Non-respondents	Ascertainment of red meat eating		Assessment of outcome	Statistical test	
Charatcharoenwitthaya2021	0	0	0	0	1	0	1	2
Peng2021	0	0	1	2	0	1	1	5

Zelber-Sagi2018	0	0	0	2	2	1	1	6
Zhou2019	1	0	1	1	1	1	1	6
Honarvar2017	1	1	1	2	1	0	1	7

Risk Bias Assessment using Newcastle-Ottawa Scale for cohort studies

Study	Selection				Comparability of cohorts on the basis of the design or analysis controlled for confounders	Outcome			Total score
	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study		Assessment of outcome	Was follow-up long enough for outcomes to occur	Adequacy of follow-up	
Kim2021	1	1	1	1	2	0	1	1	8
Hashemian2020	1	1	1	0	2	0	1	1	7
Noureddin2020	1	1	1	1	2	1	1	1	9

Risk Bias Assessment using Newcastle-Ottawa Scale for case-control studies

Study	Selection				Comparability of cases and controls based on the design or analysis	Outcome			Total score
	Is the case definition adequate?	Representativeness of the cases	Selection of controls	Definition of controls		Assessment of exposure	Same method of ascertainment for cases and controls	Non-response rate	
Tutunchi2021	1	0	0	1	1	1	1	0	5
Rahimi-Sakak2022	1	0	0	1	1	1	0	1	5

Table S3. Results of publication bias

	Egger's test	before trim-and-fill			after trim-and-fill		
		point estimation	interval estimation	study number	point estimation	interval estimation	study number
red meat	0.008	1.267	(1.073, 1.496)	8	0.994	(0.863, 1.144)	13
unprocessed red meat	0.100	1.279	(1.053, 1.552)	6	1.129	(0.909, 1.401)	8
processed red meat	0.298	1.195	(1.043, 1.370)	7	1.136	(0.965, 1.339)	9