

Supplementary Material

Table S1. Literature search results from Medline, Embase, and Web of Science.

	Medline	Results
1	exp colorectal neoplasms/	187315
2	(colorectal cancer* or colorectal or neoplasm* or colon cancer* or colon neoplasm* or bowel cancer* or colorectal adenoma* or colorectal adenocarcinoma* or colorectal polyp*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	2688871
3	(25-OH-D or cholecalciferol or calcidiol or calcitriol or 25-hydroxyVitamin D or hydroxycholecalciferols or 25-hydroxyVitamin D3 or 1-alpha-hydroxylase or Vitamin D).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	80293
4	(Asia* or Afghanistan or Armenia or Azerbaijan or Bahrain or Bangladesh or Bhutan or Brunei or Cambodia or China or Cyprus or Georgia or India or Indonesia or Iran or Iraq or Israel or Japan or Jordan or Kazakhstan or Kuwait or Kyrgyzstan or Laos or Lebanon or Malaysia or Maldives or Mongolia or Myanmar or Burma or Nepal or North Korea or Oman or Pakistan or Palestine or Philippines or Qatar or Russia or Saudi Arabia or Singapore or South Korea or Sri Lanka or Syria or Taiwan or Tajikistan or Thailand or Timor-Leste or Turkey or Turkmenistan or United Arab Emirates or Uzbekistan or Vietnam or Yemen).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	1074938
5	1 or 2	2690742
6	3 and 4 and 5	258
7	limit 6 to English language	250

	Embase	Results
1	exp colorectal neoplasms/	26250
2	(colorectal cancer* or colorectal or neoplasm* or colon cancer* or colon neoplasm* or bowel cancer* or colorectal adenoma* or colorectal adenocarcinoma* or colorectal polyp*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	1075151
3	(25-OH-D or cholecalciferol or calcidiol or calcitriol or 25-hydroxyVitamin D or hydroxycholecalciferols or 25-hydroxyVitamin D3 or 1-alpha-hydroxylase or Vitamin D).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	137427
4	(Asia* or Afghanistan or Armenia or Azerbaijan or Bahrain or Bangladesh or Bhutan or Brunei or Cambodia or China or Cyprus or Georgia or India or Indonesia or Iran or Iraq or Israel or Japan or Jordan or Kazakhstan or Kuwait or Kyrgyzstan or Laos or Lebanon or Malaysia or Maldives or Mongolia or Myanmar or Burma or Nepal or North Korea or Oman or Pakistan or Palestine or Philippines or Qatar or Russia or Saudi Arabia or Singapore or South Korea or Sri Lanka or Syria or	1562807

	Taiwan or Tajikistan or Thailand or Timor-Leste or Turkey or Turkmenistan or United Arab Emirates or Uzbekistan or Vietnam or Yemen).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	
5	1 or 2	1075151
6	3 and 4 and 5	279
7	limit 6 to English language	272

	Web of science	Results
1	TS=(colorectal neoplasm or colorectal cancer* or colorectal or neoplasm* or colon cancer* or colon neoplasm* or bowel cancer* or colorectal adenoma* or colorectal adenocarcinoma* or colorectal polyp*)	460,541
2	TS=(25-OH-D or cholecalciferol or calcidiol or calcitriol or 25-hydroxyVitamin D or hydroxycholecalciferols or 25-hydroxyVitamin D3 or 1-alpha-hydroxylase or Vitamin D)	99,758
3	TS=(Asia* or Afghanistan or Armenia or Azerbaijan or Bahrain or Bangladesh or Bhutan or Brunei or Cambodia or China or Cyprus or Georgia or India or Indonesia or Iran or Iraq or Israel or Japan or Jordan or Kazakhstan or Kuwait or Kyrgyzstan or Laos or Lebanon or Malaysia or Maldives or Mongolia or Myanmar or Burma or Nepal or North Korea or Oman or Pakistan or Palestine or Philippines or Qatar or Russia or Saudi Arabia or Singapore or South Korea or Sri Lanka or Syria or Taiwan or Tajikistan or Thailand or Timor-Leste or Turkey or Turkmenistan or United Arab Emirates or Uzbekistan or Vietnam or Yemen)	2,184,572
4	#1 AND #2 AND #3	106
5	(#4) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article)	89

Table S2. List and details of the excluded studies from the meta-analysis

Reason for exclusion	Author	Year	Study title	Journal
Studied genotype of Vitamin D receptor(n=7)	Wong HL, et al.	2003	Vitamin D receptor start codon polymorphism and colorectal cancer risk: Effect modification by dietary calcium and fat in Singapore Chinese	Carcinogenesis
	Li C, et al.	2009	Vitamin D receptor gene polymorphisms and the risk of colorectal cancer in a Chinese population	Digestive Diseases and Sciences
	Kang JW et al.	2015	Role of vitamin D and local vitamin D receptor expression in colon carcinogenesis	Journal of Gastroenterology and Hepatology
	Takehige N , et al.	2015	Associations between vitamin D receptor (VDR) gene polymorphisms and colorectal cancer risk and effect modifications of dietary calcium and vitamin D in a Japanese population	Asian Pac J Cancer Prev
	Aumpansub P , et al.	2016	Strong association of single nucleotide polymorphisms of vitamin D receptor gene, BSMT1, and colorectal cancer in Asian population	Gastroenterology
	Budhathoki S , et al.	2016	Vitamin D receptor gene polymorphism and the risk of colorectal cancer: A nested case-control study	PLoS ONE
	Gong C , et al.	2017	Dietary factors and polymorphisms in vitamin D metabolism genes: the risk and prognosis of colorectal cancer in northeast China	Scientific Reports
Not report the association with estimation(n=4)	Mizoue T, et al.	2005	Dietary patterns and colorectal adenomas in Japanese men - The self-defense forces health study.	American Journal of Epidemiology
	Atoum MF, et al.	2014	Association between circulating vitamin D, the Taq1 vitamin D receptor gene polymorphism and colorectal cancer risk among Jordanians. Asian Pacific journal of cancer prevention	Asian Pacific Journal of Cancer Prevention
	Kumagai Y, et al.	2014	Dietary patterns and colorectal cancer risk in Japan: the Ohsaki Cohort Study.	Cancer Causes & Control
	Hessami Arani S, et al.	2017	Rising rates of colorectal cancer among younger iranians: Is diet to blame?	Current Oncology
Meeting proceeding (n=3)	Grant WB, et al.	2011	Ecological study findings regarding vitamin D and cancer.	Anticancer Research
	Li K, et al.	2014	The association between serum vitamin D concentrations and colorectal cancer.	Clinical Chemistry and Laboratory Medicine
	Ozer C, et al.	2015	The relationship between serum 25-hydroxy vitamin D levels and insulin resistance in breast and colon cancer.	Clinical Chemistry and Laboratory Medicine
Letter to the reviewer (n=2)	Dunnigan MG, et al.	1990	Serum 25-hydroxyvitamin D and colon cancer.	Lancet
	Qu B, et al.	2017	Role of Circulating and Supplemental Calcium and Vitamin D in the Occurrence and Development of Colorectal Adenoma or Colorectal Cancer.	J Clin Gastroenterol
Reports from same study sample (n=2)	Byeon JS, et al.	2007	Colorectal neoplasm in asymptomatic Asians: a prospective multinational multicenter colonoscopy survey.	Gastrointestinal Endoscopy
	Shin A, et al.	2011	Site-specific risk factors for colorectal cancer in a korean population.	PLoS ONE
Studied survivorship (n=2)	Wesa KM, et al.	2015	Serum 25-hydroxy vitamin D and survival in advanced colorectal cancer: a retrospective analysis.	Nutr Cancer
	Woo KW, et al.	2015	Vitamin D deficiency in Hong Kong advanced cancer patients: Result of first 50 patients.	Annals of Oncology
Vitamin D intake (n=2)	Mizoue T, et al.	2008	Calcium, dairy foods, vitamin D, and colorectal cancer risk: The Fukuoka colorectal cancer study.	Cancer Epidemiology Biomarkers and Prevention
	Ishihara J, et al.	2008	Dietary calcium, vitamin D, and the risk of colorectal cancer.	American Journal of Clinical Nutrition
Western population (n=1)	Sy AM, et al.	2013	Association between serum vitamin D levels and colonic carcinomatous polyps.	Journal of Gastrointestinal Cancer
Review (n=1)	Grant WB, et al.	2009	Ecological Studies Of Ultraviolet B, Vitamin D And Cancer Since 2000.	Annals of Epidemiology

Table S3. Newcastle-Ottawa Scale for assessing the quality of studies in the systematic review

Author (Year)	Country	Region	Selection				Comparability		Exposure			Total Score
			S1	S2	S3	S4	C1	C2	E1	E2	E3	
Budhathoki et al. (2018)[1]	Japan	Eastern Asian	★	★	★	★	★	★	★	★	★	8
Choi et al. (2015)[2]	Korea	Eastern Asian	★				★	★	★	★		5
Hong et al. (2012)[3]	Korea	Eastern Asian	★	★	★	★	★	★	★	★		8
Otani et al. (2007)[4]	Japan	Eastern Asian	★	★	★	★	★	★	★	★	★	9
Takahashi et al. (2010)[5]	Japan	Eastern Asian	★	★	★	★		★	★	★	★	8
Yamaji et al. (2012)[6]	Japan	Eastern Asian	★	★	★	★	★	★	★	★	★	9
Ying et al. (2015)[7]	China	Eastern Asian	★			★	★	★	★	★		7
Yurekli et al.(2015)[8]	Turkey	Western Asian	★				★	★	★	★		5

Guidelines for reviewSelection:

S1, Case definition adequacy: ★a) requires independent validation (>1 person/record/time/process to extract information or reference to primary record sources such as colonoscopy or medical/hospital records); b) record linkage or self-report with no reference to primary record; c) no description

S2, Representativeness of the cases: ★a) consecutive or representative series of cases; b) potential for selection biases or not stated

S3, Selection of controls: ★a) community controls; b) hospital controls, within same community as cases; c) no description

S4, Definition of controls: ★a) no history of colorectal cancer or adenoma; b) no description of the source

Comparability:

C1, ★ Study adjusted for confounder, such as age and sex (the most important factors);

C2, ★ Study adjusted for any additional confounders (1> additional factors, e.g., BMI, drinking or smoking)

Exposure:

E1, Ascertainment of exposure: ★a) secure record (e.g., medical records); ★b) structured interview were blind to case/control status; c) interview not blinded to case/control status; d) written self-report or medical record only; e) no description

E2, Same method of ascertainment for cases and controls: ★a) yes; b) no

E3, Non-response rate: ★a) the same rate for both groups; b) non-respondents described; c) rate different and no designation

Figure S1. Subgroup meta-analysis, including stratified by outcome (colorectal cancer or colorectal adenoma, **S1A**), sex (women, men or both, **S1B**), blood sample type (serum or plasma, **S1C**), range (≤ 15 or >15 ng/mL **S1D**), subregion (Eastern Asia or Western Asia, **S1E**).

Figure S1A

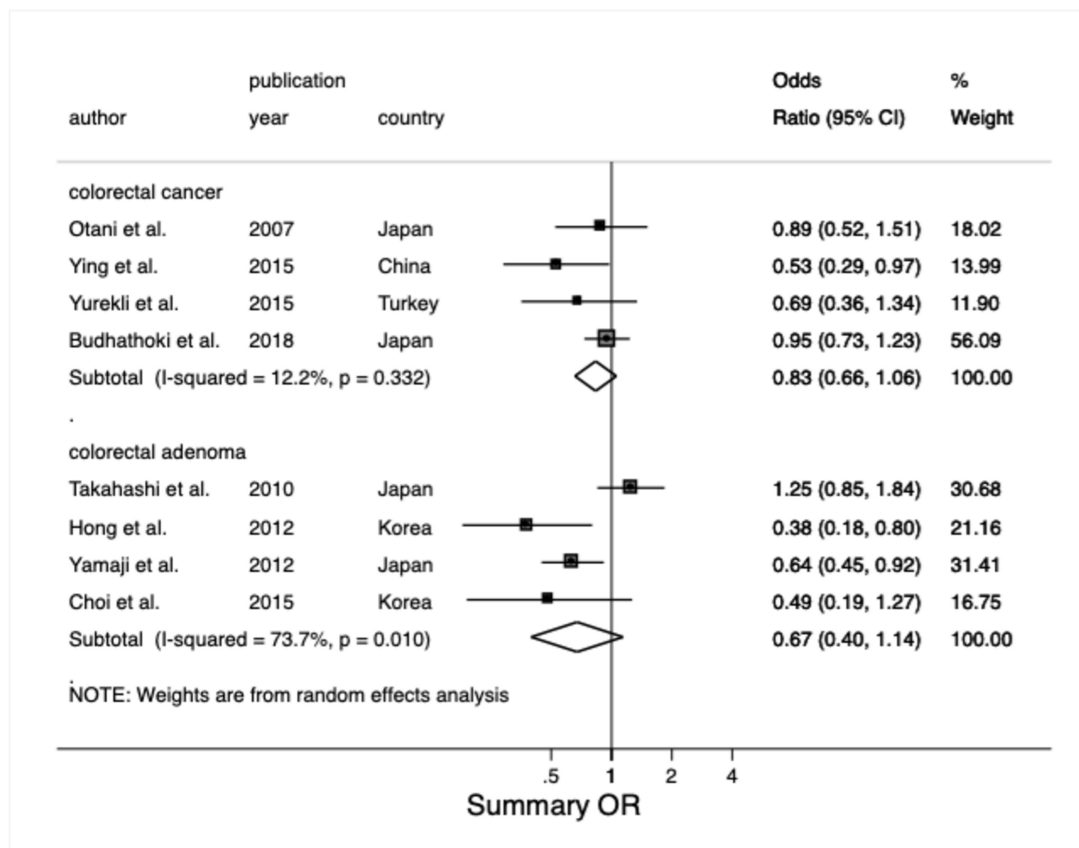


Figure S1B

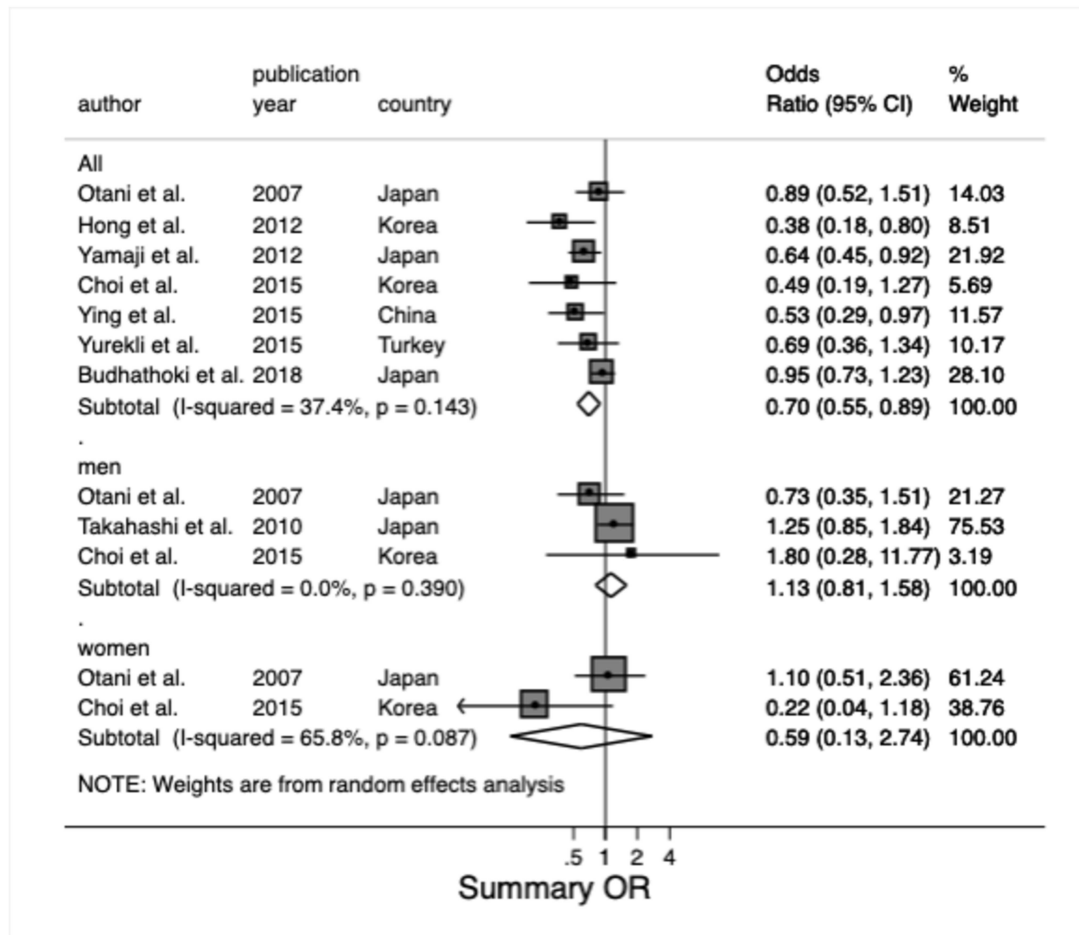


Figure S1C

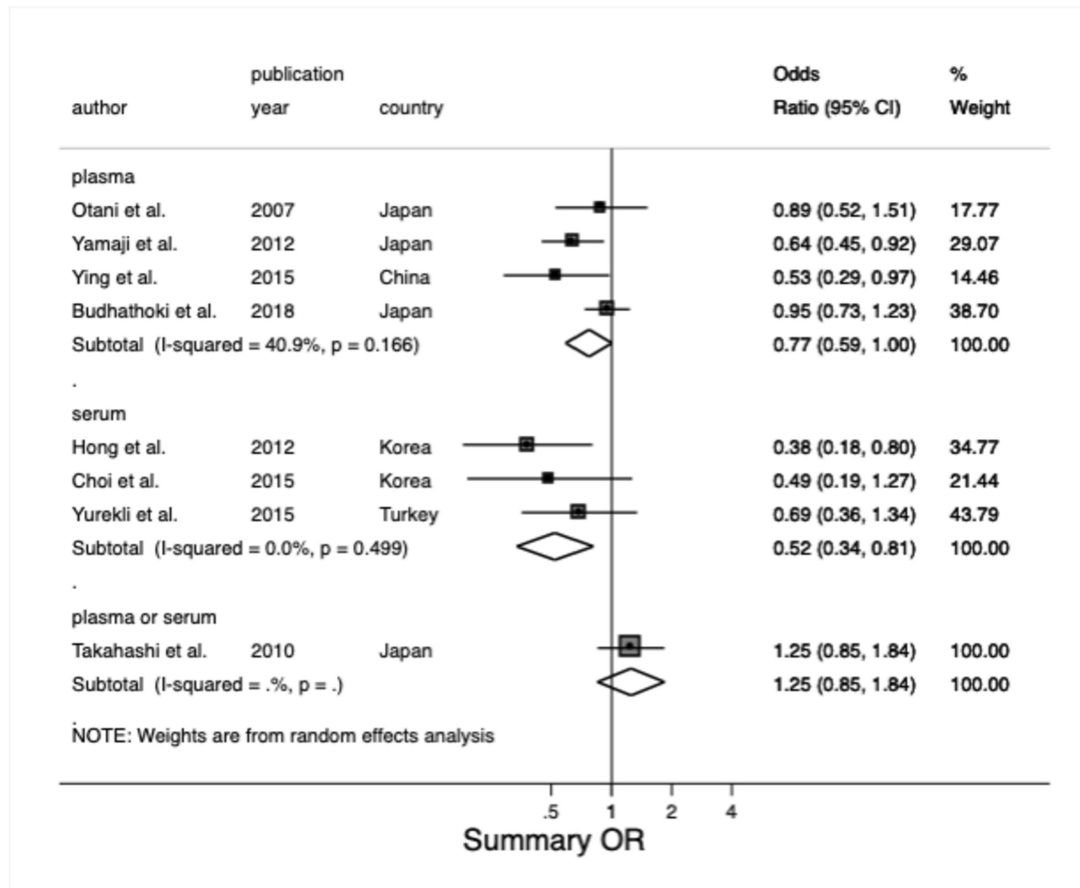


Figure S1D

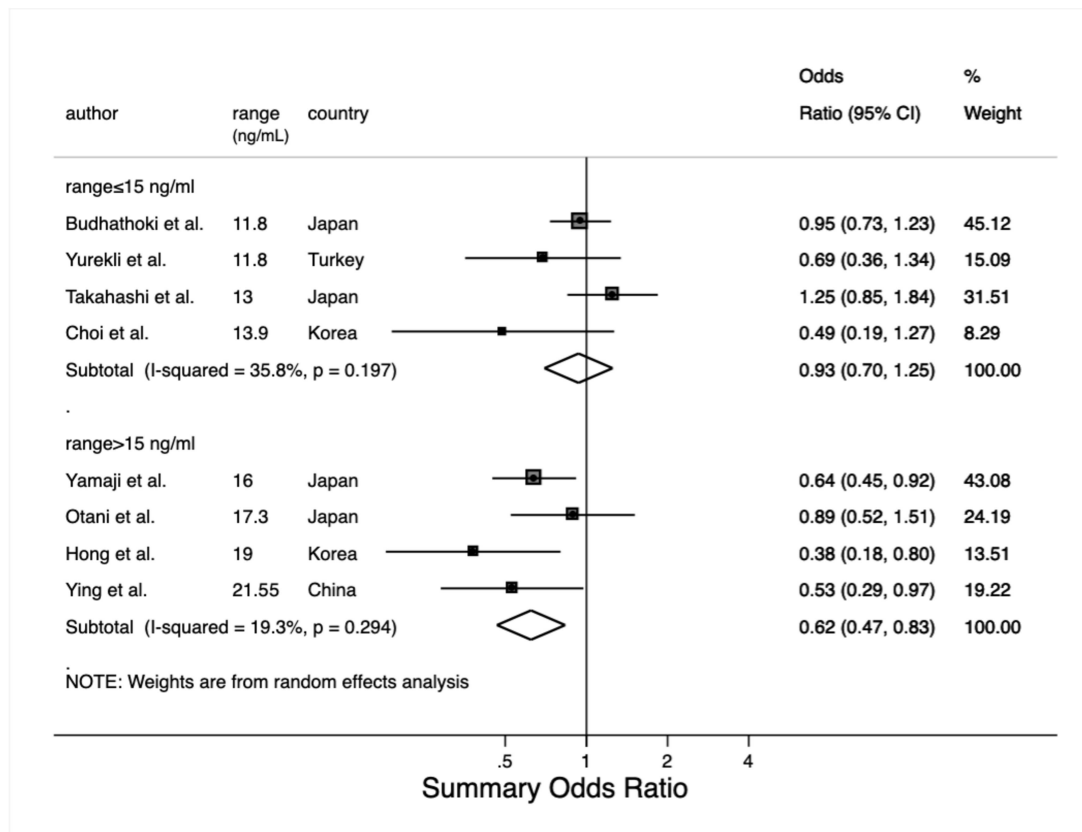


Figure S1E

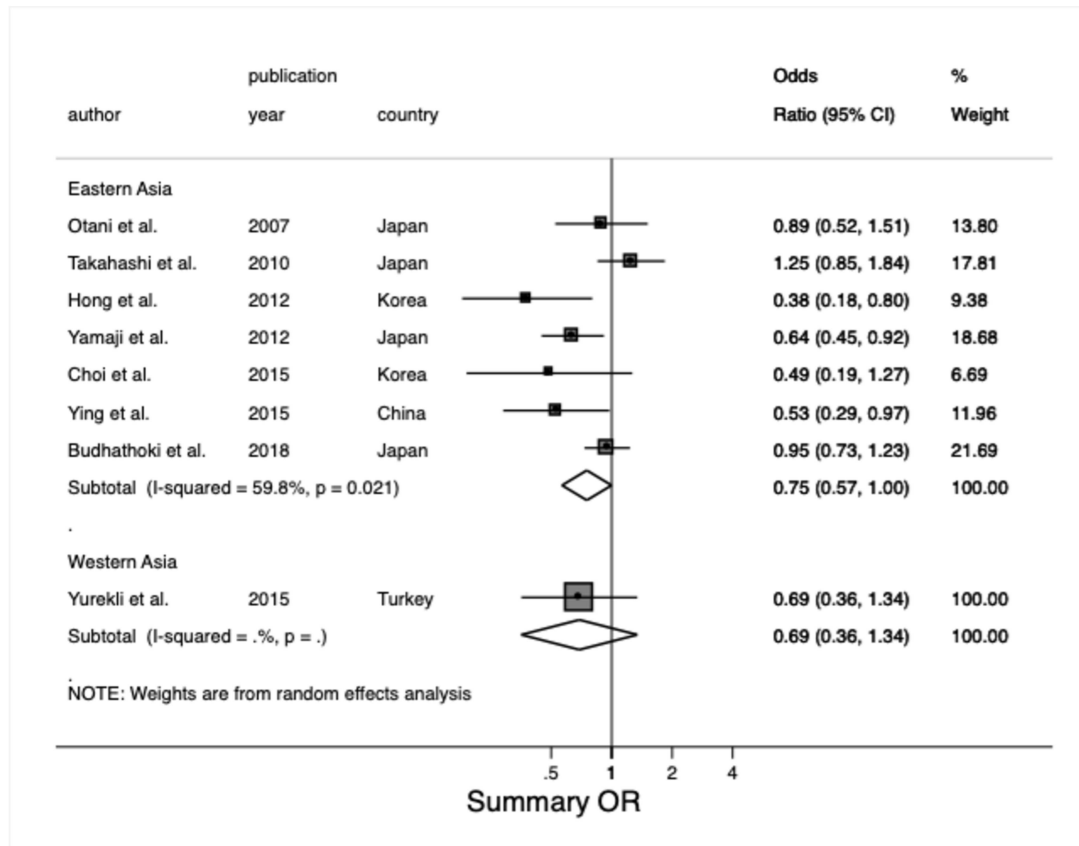


Figure S2. Funnel plot for all studies included in the meta-analysis and between blood circulating Vitamin D and the colorectal cancer risk in Asian countries

