

Association of Greenness Exposure with Asthma, Allergic rhinitis: A Systematic Review and Meta-analysis

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Table s1 Search strategy used in December 23, 2021

Database		Query	Items found
Web of Science 1,916	1	TS= (greenspace OR "green space" OR "natural environment" OR park OR forest OR greenness OR "neighborhood greenness" OR "residential greenness" OR "biophilic environments" OR vegetation OR "urban green space")	478,997
	2	TS= ("respiratory diseases" OR "respiratory illness" OR "respiratory distress syndrome" OR ARDS OR "Allergic rhinitis" OR Asthma OR Bronchitis OR "Chronic Obstructive Pulmonary Disease" OR COPD OR "Pulmonary heart disease" OR Tuberculosis OR "Lung Cancer")	582,319
	3	#1 AND #2	1,916
Pubmed 1,613	1	"Respiratory Distress Syndrome"[MeSH Terms] OR "Rhinitis, Allergic"[MeSH Terms] OR Asthma[MeSH Terms] OR Bronchitis[MeSH Terms] OR "Bronchitis, Chronic"[MeSH Terms] OR "Pulmonary Disease, Chronic Obstructive"[MeSH Terms] OR Tuberculosis[MeSH Terms]) OR "Lung Neoplasms"[MeSH Terms]	707,417
	2	"respiratory diseases"[Title/Abstract] OR "respiratory illness"[Title/Abstract] OR "respiratory distress syndrome"[Title/Abstract] OR ARDS[Title/Abstract] OR "Allergic rhinitis"[Title/Abstract] OR Asthma[Title/Abstract] OR Bronchitis[Title/Abstract] OR "Chronic Obstructive Pulmonary Disease"[Title/Abstract] OR COPD[Title/Abstract] OR "Pulmonary heart disease"[Title/Abstract] OR Tuberculosis[Title/Abstract] OR "Lung Cancer"[Title/Abstract]	695,224
	3	#1 OR #2	936,009
	4	Forests [MeSH Terms] OR (greenspace [Title/Abstract] OR "green space"[Title/Abstract] OR "natural environment"[Title/Abstract] OR park [Title/Abstract] OR forest [Title/Abstract] OR greenness [Title/Abstract] OR "neighborhood greenness"[Title/Abstract] OR "residential greenness"[Title/Abstract] OR "biophilic environments"[Title/Abstract] OR vegetation [Title/Abstract] OR "urban green space"[Title/Abstract])	119,191
	5	#3 AND #4	1,613

EMBASE 2,146	1	(greenspace or "green space" or "natural environment" or park or forest or greenness or "neighborhood greenness" or "residential greenness" or "biophilic environments" or "urban green space" or vegetation).ab,kw,ti.	118,782
	2	("respiratory diseases" or "respiratory illness" or "respiratory distress syndrome" or ARDS or "Allergic rhinitis" or Asthma or Bronchitis or "Chronic Obstructive Pulmonary Disease" or COPD or "Pulmonary heart disease" or Tuberculosis or "Lung Cancer").ab,kw,ti.	777,590
	3	#1 AND #2	2,146
Cochrane 456	1	(greenspace OR "green space" OR "natural environment" OR park OR forest OR greenness OR "neighborhood greenness" OR "residential greenness" OR "biophilic environments" OR "urban green space" OR "vegetation"):ti,ab,kw	15,978
	2	("respiratory diseases" OR "respiratory illness" OR "respiratory distress syndrome" OR ARDS OR "Allergic rhinitis" OR Asthma OR Bronchitis OR "Chronic Obstructive Pulmonary Disease" OR COPD OR "Pulmonary heart disease" OR Tuberculosis OR "Lung Cancer"):ti,ab,kw	96,021
	3	#1 AND #2	456
Chinese databases 748	1	greening OR "green space" OR "natural environment" (used corresponding Chinese)	
	2	"respiratory diseases" OR "respiratory distress syndrome" OR "allergic rhinitis" OR asthma OR tracheitis OR bronchitis OR "chronic obstructive pulmonary disease" OR "pulmonary heart disease" OR tuberculosis OR "lung cancer" (used corresponding Chinese)	
	3	#1 AND #2	

Table S2 Quality evaluation of cross-sectional studies and ecological studies by Combie Cross-sectional Study Assessment Tool.

Study	Scientific Design	Sound data collection strategy	Sample response rates were reported	Good representation of the sample to the total	Reasonable research objectives and methods	Reported test efficacy	Reasonable statistical methods	Total score	Quality level
Lovasi et al., 2008	1	1	-	1	1	1	1	7.0	A
Pilat et al., 2012	1	1	-	1	1	1	1	7.0	A
Fuertes et al., 2014a	1	1	-	1	1	1	1	7.0	A
Dadvand et al., 2015	1	1	1	1	1	1	1	7.0	A
Eldeirawi et al., 2019	0	1	1	1	1	1	1	6.0	A
Li et al., 2019	1	0	1	1	1	1	1	6.0	A
Squillacioti et al., 2019	1	1	1	0	1	1	1	6.0	A
Zeng et al., 2020	1	0.5	1	1	1	1	1	6.5	A
Dzhambov et al., 2020	1	1	1	1	1	1	1	7.0	A
Yu et al., 2021	1	0	1	1	1	1	1	6.0	A
Kim et al., 2021	1	0.5	-	1	1	0	1	5.5	B
Donovan et al., 2021	1	1	-	1	1	1	1	7.0	A
Kim et al.,	1	0	1	1	1	1	1	6.0	A

2020

Notes: "Yes" is 1 point, "No" is 0 point, and "unclear" is 0.5 point. If an indicator is not suitable for the judged study, it is indicated by "-" and scored 1. The total score of the scale is 7.0, with 6.0-7.0 points for quality A, 4.0-5.5 points for quality B, and less than 4.0 points for quality C.

Table S3 Quality evaluation of case-control studies by Newcastle-Ottawa Scale.

Study	Selection				Comparability		Exposure			Scores
	Adequate definition of cases	Representativeness of the cases	Selection of controls	Definition of controls	based design analysis	on and	Ascertainment of exposure	Same method of ascertainment for cases and controls	Non-response rate	
Andrusaityte et al., 2016	1	1	1	1	2		1	1	1	9
Hsieh et al., 2019	1	1	1	1	2		1	1	1	9
Kuiper et al., 2021	1	1	1	1	2		1	1	1	9

Notes: Each study can have up to 1 point per entry on "Selection" and "Exposure" and up to two points on "Comparability".

Table S4 Quality evaluation of cohort studies by Newcastle-Ottawa Scale.

Study	Selection				Comparability		Outcome			Scores
	Representation of the Exposure Queue	Selection of non-exposed queues	Determination of exposure	No subject had an outcome event prior to study entry	based design analysis	on and	Evaluation of outcome	Adequacy of follow-up visits	Completeness of follow-up visits	
Lovasi et al., 2013	1	1	1	1	2		1	1	1	9
Fuertes et al., 2014b	1	1	1	1	2		1	1		8
Fuertes et al., 2016	1	1	1	1	2		1	1		8

Brokamp et al., 2016	1	1	1	1	1	1	1	1	8
Sbihi et al., 2017	1	1	1	1	2	1	1	1	9
Tischer et al., 2017	1	1	1	1	2	1	1		8
Parmes et al., 2019	1	1	1	1	2	1	1		8
Gernes et al., 2019	1	1	1	1	2	1	1	1	9
Rufo et al., 2020	1	1	1	1	2	1	1	1	9
Lee et al., 2020	1	1	1	1	2	1	1	1	9

Notes: Each study can have up to 1 point per entry on "Selection" and "Exposure" and up to two points on "Comparability".