

Supplementary table 1: Search Strategies and Search Results (January 1st, 2000 – July 31st, 2023)

	Search term	Results
PubMed		
1	"housing qualit*"	461
2	"housing condition*"	3,366
3	"home environment"	6,167
4	"built environment"	10,712
5	"housing characteristics"	375
6	"housing"	62,635
7	"indoor"	43,649
8	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7	116,489
9	"questionnaire*"	955,638
10	"survey"	710,411
11	"data collection"	198,581
12	"self-reported"	137,037
13	"patient-reported"	60,099
14	"self-reports"	12,246
15	"reports"	2,912,832
16	#9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15	4,501,857
17	"asthma"	217,313
18	"asthma patient*"	7,409
19	"asthmatic*"	51,963
20	#17 OR #18 OR #19	221,632
21	#8 AND #16 AND #20	1,652
22	#8 AND #16 AND #20	1,517
23	#8 AND #16 AND #20	1,359
	TOTAL	1,359

EMBASE		
1	exp housing/ or exp housing quality/ or "housing qualit*".mp.	31,948
2	"housing condition*".mp.	3,987
3	"home environment".mp.	11,286
4	"built environment".mp.	6,127
5	"housing characteristics".mp.	437
6	exp indoor environment/ or "indoor".mp.	52,986
7	1 or 2 or 3 or 4 or 5 or 6	100,209
8	"questionnaire*".mp.	1,271,084
9	"survey".mp.	1,580,834
10	"data collection".mp.	150,303
11	exp self report/ or "self-reported".mp.	272,614
12	"patient-reported".mp.	112,669
13	"self-reports".mp.	14,416
14	"reports".mp.	794,515
15	8 or 9 or 10 or 11 or 12 or 13 or 14	3,584,410
16	"asthma".mp.	337,518
17	"asthma patient*".mp.	13,415
18	"asthmatic*".mp.	61,310
19	16 or 17 or 18	341,116
20	7 and 15 and 19	2,088
21	limit 20 to (full text and english language and yr="2000 -Current")	423
	TOTAL	423

Supplementary table 2: Basic characteristics of studies assessing domestic environmental exposures in relation to asthma outcomes using self-reported instruments.

	Study (Author, year)	Country	Type of study	Participants (Age group)	Sample size	Domestic environmental quality assessed	Outcome/s examined	Main findings
1.	Ahlroth Pind C et al.2017 (1)	Sweden	cross sectional study	adults (16-75 years)	26 577	Dampness	Adult asthma Asthma symptoms	- Dampness was independently related to current asthma (OR 1.21, 95% CI 1.06–1.37) and wheeze (OR 1.37, 95% CI 1.24–1.52)
2.	Northrigge J et al.2010 (2)	USA	cross sectional study	school children (5–12-year)	5,250	- House type and quality - Exposure to biological irritants Dampness - ETS - Indoor air quality appliances - Indoor combustion byproducts	Childhood asthma	- Children living in homes with reported water leaks (OR 1.54, 95% CI 1.15–2.08), cockroaches (OR 1.29, 95% CI 1.04–1.61) and rats (OR 1.34, 95% CI 1.01–1.79) were independently related to current asthma in children
3.	Findley S et al.2003 (3)	USA	cross sectional study	school children (7-8years)	1615	- Exposure to biological irritants - Presence of indoor heating - ETS - Indoor air quality appliances - Indoor r combustion byproducts	Childhood asthma	- Children living in homes where cockroaches (OR 1.3, 95% CI 1.0–1.7) or rodents (OR 1.6, 95% CI 1.2–2.2) were more likely to have current asthma
4.	Holst G J 2020 (4)	Denmark	cross sectional study	adults (>19 years)	392	- House type and quality - Exposure to biological irritants - Dampness - ETS - Overcrowding	Adult asthma	-Household moisture damage was associated with self-reported asthma (OR 3.52, 95% CI 1.01–12.7) - Mold odour was associated with wheezing (OR 6.05, 95% CI 1.19–30.7)
5.	Simoni M et al.2005 (5)	Italy	cross sectional study	children (mean age 7 years) adolescents (mean age 13 years)	20 016 children 13 266 adolesc ents	- Exposure to biological irritants - Dampness - ETS - Indoor combustion byproducts	Adult asthma Childhood asthma Asthma symptoms	- In children; both current and early exposure to mould/dampness was associated with wheeze (OR 1.98, 95% CI 1.47–2.66) and early exposure to mould/dampness was associated with asthma (OR 1.8, 95% CI 1.41–2.3) -In adolescents; early exposure to mould/dampness was associated with wheeze (OR 1.56, 95% CI 1.15–2.11) and asthma (OR 1.84, 95% CI 1.38–2.59)
6	Apichainan N 2022 (6)	Thailand	cross sectional study	primary school children	658	- House type and quality - Exposure to biological irritants	Asthma symptoms	-Wall dampness was associated with wheezing (OR 1.92, 95% CI 1.14–3.23).

				(Median age 8 years IQR2)		• Dampness • ETS • Indoor air quality appliances • Indoor combustion byproducts • Indoor volatile compounds		
7	Dong GH et al. 2008 ^a (7)	China	cross sectional study	Children (1-6 years)	3945	• House type and quality • Exposure to biological irritants • Dampness • ETS • Ventilation • Indoor combustion byproducts • Indoor volatile compounds	Childhood asthma Asthma symptoms	Pet keeping (OR 1.45, 95% CI 1.03–2.06), exposure to pest (OR 1.86, 95% CI 1.43–2.43), mould (OR 1.56, 95% CI 1.13–2.16), current ETS (OR 1.47, 95% CI 1.15–1.88), and home decoration in previous 2 years (OR 1.50, 95% CI 1.16–1.92) were associated with doctor-diagnosed asthma
8	Dong GH et al. 2008 ^b (8)	China	cross sectional study	Children (6–13 years)	10,784	• House type and quality • Exposure to biological irritants • Dampness • ETS • Ventilation • Indoor combustion byproducts • Indoor volatile compounds	Childhood asthma Asthma symptoms	-Pet keeping (OR 1.52, 95% CI 1.25–1.84), exposure to pest (OR 1.33, 95% CI 1.12–1.59), mould (OR 1.54, 95% CI 1.22–1.94), current ETS (OR 1.36, 95% CI 1.15–1.61), and home decoration in previous 2 years (OR 1.72, 95% CI 1.45–2.04) were associated with doctor- diagnosed asthma
9	Mommers M et al. 2005 (9)	German Netherland	nested case-control study	children (7–8-year)	1191	• Exposure to biological irritants • Dampness • ETS • Presence of indoor heating • Indoor combustion byproducts	Asthma symptoms	-Past exposure to ETS (OR 2.73, 95% CI 1.14–6.67), long-term exposure to dampness (OR 2.98, 95% CI 1.10–8.28) and long-term exposure to pets (OR 2.18, 95% CI 1.39–3.42) increased the risk of asthma symptoms Low socio-economic status also increased the risk of asthmatic symptoms (OR 3.32, 95% CI 1.88–5.93)
10	Duelien Skorge T et al. 2005 (10)	Norway	cross sectional study	adults (26-82 years)	3181	• Exposure to biological irritants • Dampness	Adult asthma Asthma symptoms	-Self-reported indoor exposure to mould was associated with wheezing (OR 2.3, 95% CI 1.46–3.47)
11	Phoe L L et al. 2004 (11)	Australia	cross sectional study	school children (8-11yrs)	627	• Exposure to biological irritants • ETS • Presence of indoor heating • Indoor combustion byproducts	Childhood asthma Asthma symptoms	- Use of fume emitting heaters during the child's first year of life was associated with current asthma (RR 2.08, 95% CI 1.31–3.31)

12	Rumchev K et al. 2004 (12)	Australia	case control study	children (6 months to 3 years)	88	- House type and quality - Exposure to biological irritants - Presence of indoor heating - ETS - Indoor air quality appliances - Indoor combustion byproducts - Indoor volatile compounds	Childhood asthma	-Recent painting in the house was reported for significantly more children with asthma than for children without asthma (37(22%) Vs 28(14%), $p<0.05$) -Presence of air conditioning was reported for significantly more children without asthma than children with asthma (54(52%) Vs 29(33%), $p<0.01$) -A significant association was found between VOC and recent painting, new carpets, new furniture and smoking indoors. ($p<0.05$)
13	Cabrera A et al. 2022 (13)	Ecuador	cross-sectional study	adults (>18 years)	2,476	- Exposure to biological irritants - Dampness - Indoor combustion byproducts	Asthma symptoms	-Presence of mould at home (OR 2.1, 95% CI 1.48–3.06; $p<0.001$), and cat at home (OR 1.06, 95% CI 1.06–2.13; $p<0.022$) were associated with presence of wheezing in the last 12 months
14	Agata Wypych-Ślusarska 2022 (14)	Southern Poland	cross-sectional study	children (6-15 years)	2932	- Exposure to biological irritants - Dampness - ETS - Presence of indoor heating - Indoor combustion byproducts	Childhood asthma	Mould/dampness was associated with wheeze in the past 12 months (OR 1.56, 95% CI 1.19–2.06) -Central heating proved to be a protective factor in asthma (OR 0.67, 95% CI 0.49–0.93) -Presence of pets had protective effect on the prevalence of asthma (OR 0.7, 95% CI 0.59–0.99)
15	Deng X.et al. 2021 (15)	New York State	cross sectional study	children (8-14 years)	83	- House type and quality - Exposure to biological irritants - Dampness - Presence of indoor heating - ETS - Indoor air quality appliances - Indoor combustion byproducts - Indoor volatile compounds - Overcrowding - Ventilation - Indoor cleaning frequency	Asthma symptoms	-Presence of pollen trigger was positively associated with asthma symptoms (PR 2.91, 95% CI 1.18–7.16) -Primary heating with hot water radiator was negatively associated with asthma symptoms. (PR 0.20, 95% CI 0.05–0.77)
16	Lu Y et al. 2018 (16)	Romania	cross sectional study	children (6-11 years)	280	- House type and quality - Exposure to biological irritants - Dampness - ETS - Presence of indoor heating - Indoor combustion byproducts	Asthma symptoms	-Exposure to ETS was strongly associated with asthma-like symptoms. (OR 5.13, 95% CI 1.84–14.28)

						Indoor volatile compounds		
17	Wang J et al. 2017 (17)	Sweden	Cross sectional study	adult asthma patients (>18 years)	639	- House type and quality - Exposure to biological irritants - Dampness - ETS - Indoor air quality appliances - Presence of indoor heating - Indoor combustion byproducts - Indoor volatile compounds - Ventilation - Overcrowding	Exacerbation of asthma	-Asthma medication was more commonly prescribed for those who kept dogs as pets (OR 2.52, 95% CI 1.07–5.97) and homes with mouldy odour (OR 6.47, 95% CI 1.48–28.3). -Asthma exacerbation was more frequent among those living in buildings constructed in 1961– (OR 1.99, 95% CI 1.17–3.40), rented apartments (OR 1.47, 95% CI 1.06–2.04) and in homes with natural ventilation (OR 1.45, 95% CI 1.01–2.09) and greater degree of window opening (OR 1.47, 95% CI 1.12–1.94).
18	Takaoka M. 2017 (18)	Japan	cross sectional study	school children (12-15years)	1048	- House type and quality - Exposure to biological irritants - Dampness - ETS - Indoor volatile compounds	Childhood asthma	-Floor dampness at home was associated with current asthma (OR 2.78, 95% CI 1.21–6.38)
19	Norback D et al. 2014 (19)	Sweden	Cross sectional	adults (>18 years)	7,554	- House type and quality - Exposure to biological irritants - Dampness - ETS - Presence of indoor heating - Ventilation	Adult asthma	-Doctor's diagnosed asthma was more common among in-dwellings with dampness (OR 1.71, 95% CI 1.05–2.78)
20	Thron J et al. 2001 (20)	Sweden	nested case control study	adults (20-50 years)	15 813	- Exposure to biological irritants - Dampness - ETS - Indoor combustion byproducts	Adult asthma	-Exposure to mould (OR 2.2, 95% CI 1.4–3.5), ETS (OR 2.4, 95% CI 1.4–4.1), presence of a wood stove (OR 1.7, 95% CI 1.2–2.5) were associated with asthma
21	Wang J et al. 2014 (21)	Sweden	cross sectional study	adults (≥18 years)	5775	- Exposure to biological irritants - Dampness - ETS - Indoor volatile compounds - Ventilation - Overcrowding	Adult asthma	-Building dampness was a risk factor for wheeze (OR 1.42, 95% CI 1.08–1.86) -Mouldy odour at home was a risk factor for doctor diagnosed asthma (OR 1.49, 95% CI 1.08–2.06) and current asthma (OR 1.52, 95% CI 1.03–2.24). -ETS was a risk factor for current asthma (OR 1.53, 95% CI 1.09–2.16).

22	Thacher J D et al. 2017 (22)	Sweden	cohort study	children	3798	Dampness	Childhood asthma	-Exposure to any mould or dampness indicator was associated with asthma up to 16 years of age (OR 1.31, 95% CI 1.08–1.59) -Exposure to any mould or dampness indicator was associated with persistent asthma (OR 1.73, 95% CI 1.20–2.50)
23	Wang J et al. 2019 (23)	Iceland, Norway, Sweden, Denmark Estonia	cohort study	adults (40±7.3 years)	11506	Dampness	Adult asthma	-Baseline dampness was associated with current asthma (OR 1.36, 95% CI 1.05–1.76) and doctor diagnosed asthma (OR 1.43, 95% CI 1.12–1.83) -Dampness/mould at home during follow-up was associated with wheeze (OR 1.38, 95% CI 1.17–1.64) and doctor diagnosed asthma (OR 1.32, 95% CI 1.06–1.65)
24	Saif et al. 2021 (24)	USA	Cross sectional study	children (0-18years)	163	- House type and quality - Exposure to biological irritants - Indoor temperature - ETS - Indoor air quality appliances - Dampness	Childhood asthma Asthma severity	-Pets in home was negatively associated with asthma severity (OR 0.07, 95% CI 0.01–0.58)
25	Wang J et al. 2022 (25)	Iceland Norway Sweden Denmark Estonia	cohort study	parents of offspring (<30 years)	17,881	- House type and quality - Dampness - Indoor volatile compounds	Childhood asthma	-Dampness/mould during the follow up period was associated with offspring's asthma after 10 years (OR 1.67, 95% CI 1.31–2.12)
26	Wang J et al. 2019 (26)	China	cross sectional study	parents (21–53 years)	40,279	- House type and quality - Dampness	Adult asthma	-Water damage (OR 1.82, 95% CI 1.38–2.41), presence of mould spots or damp stains (OR 2.49, 95% CI 1.88–3.31), mould odour (OR 1.90, 95% CI 1.36–2.65), were related to asthma -Living in older buildings (OR 1.76, 95% CI 1.23–2.53) was related to asthma
27	Meszaros D et al. 2014 (27)	Australia	cross sectional study	middle-aged adults.	5729	- Dampness - ETS - Presence of indoor heating - Indoor air quality appliances - Indoor combustion byproducts	Adult asthma	-Mould in the home was associated with current asthma (OR 1.26, 95% CI 1.06–1.50), and wheeze (OR 1.34, 95% CI 1.17–1.54) -ETS was associated with doctor-diagnosed asthma (OR 1.25, 95% CI 1.02–1.53), and wheeze (OR 1.69, 95% CI 1.41–2.03)
28	Rennie DC et al. 2020 (28)	Canada	cross sectional study	school-age children (6–17 years)	351	- Exposure to biological irritants - Dampness - ETS - Indoor air quality appliances - Presence of indoor heating - Indoor combustion byproducts	Asthma Phenotypes	-Dampness (OR 4.7, 95% CI 1.45–15.32) and presence of visible mould or mildew (OR 3.9, 95% CI 1.19–12.51) were associated with atopic asthma

						• Overcrowding		
29	Dai X et al. 2021 (29)	Australia	cohort study	middle-aged adults (43 -53 years)	3314	• House type and quality • Exposure to biological irritants • ETS • Air quality appliances • Presence of indoor heating • Indoor combustion byproducts • Ventilation	Adult asthma	-Gas cooking (OR 2.64, 95% CI 1.22–5.70), and wood heating/smoking (OR 2.71, 95% CI 1.21–6.05) were associated with persistent asthma
30	Jaakkola J J K et al. 2005 (30)	Finland	cross sectional study	Children (1-7years)	1,984	• Dampness	Childhood asthma	-Presence of mold odour in the home reported at baseline was an independent determinants of asthma incidence (adjusted IRR 2.44, 95% CI 1.07–5.60)
31	Lin Z et al. 2015 (31)	China	cross sectional study	preschool children (4.6 ± 0.9 years)	4618	• Dampness • ETS • Ventilation • Indoor cleaning frequency	Childhood asthma	-Current wheeze was positively associated with all different signs of dampness with the ORs ranging from 1.39 (95% CI 1.00–1.92) for water leakage to 1.90 (95% CI 1.33–2.71) for mouldy odour
32	Hu Y et al. 2014 (32)	China	cross sectional study	Children (4-6 years)	13,335	• Dampness	Childhood asthma Asthma symptoms	-Children with visible mould spots exposure had higher risk of asthma (adjusted OR 1.32, 95% CI 1.07–1.64) -Home dampness-related exposure is a strong risk factor for childhood asthma and asthma-related symptoms
33	Lee Y et al. 2003 (33)	Taiwan	cross sectional study	old school children (6- 15years)	35 036	• Exposure to biological irritants • Dampness • ETS • Indoor combustion byproducts	Childhood asthma	-Presence of visible cockroaches (OR 1.30, 95% CI 1.07–1.59), mould on walls at home (OR 1.20, 95% CI: 1.01–1.41), water damage (OR 1.33, 95% CI 1.02–1.70) were associated with asthma
34	Pirastu R 2009 (34)	Italy	Cross sectional study	primary school children (5–12 years)	4122	• Exposure to biological irritants • Dampness • ETS • Overcrowding • Indoor combustion byproducts	Childhood asthma Asthma symptoms	-Parental smoking was associated with current wheeze (OR 2.03, 95% CI 1.30–3.18) and current asthma (OR 1.96, 95% CI 1.00–3.84) -Exposure to mould or dampness only in the first year of child's life was associated with current wheeze (OR 1.96, 95% CI 1.34–2.88)
35	Gunnbjörnsdóttir M I et al. 2006 (35)	Iceland Norway Sweden Denmark Estonia	Cohort study	men and women (20–44 years)	16 190	• House type and quality • Dampness	Adult asthma Asthma symptoms	-Indoor dampness is significantly associated with wheeze (OR 1.38, 95% CI 1.24– 1.53) and asthma (OR 1.27, 95% CI 1.06–1.52)

36	Molnar D et al. 2021 (36)	Hungary	Cross sectional study	Children (6–12-years)	3836	- House type and quality - Exposure to biological irritants - Dampness - ETS - Presence of indoor heating - Indoor air quality appliances - Indoor combustion byproducts	Childhood asthma Asthma symptoms	-Indoor smoking (OR 1.65, 95% CI 1.24–2.18), visible mould, (OR 2.13, 95% CI 1.36–3.24) and keeping a dog (OR 1.49, 95% CI 1.13–1.82) were defined as risk factors for asthma
37	Lin S et al. 2008 (37)	USA	Cross sectional study	Children (1-17 years)	3008	- Exposure to biological irritants - Dampness - ETS - Presence of indoor heating - Indoor air quality appliances - Indoor combustion byproducts - Indoor volatile compounds	Childhood asthma	-Increased asthma prevalence was associated with; presence of smokers in the household (PR 1.33, 95% CI 1.17–1.5), use of a humidifier or vaporizer (PR 1.49, 95% CI 1.32–1.68), chemical odours inside the home (PR 1.85, 95% CI 1.53–2.3), presence of dampness (PR 1.31, 95% CI 1.17–1.5), cockroaches at home (PR 1.43, 95% CI 1.18–1.88) and birds as pets (PR 1.33, 95% CI 1.09–1.62)
38	Svendsen E R et al. 2018 (38)	USA	Cross sectional study	fourth and fifth grade students (10-11 years)	5210	- Exposure to biological irritants - Dampness - Presence of indoor heating - Indoor air quality appliances - Indoor combustion byproducts - Indoor volatile compounds	Childhood asthma Asthma severity	-Ant and spider pest problems within the past year, pet dogs, fireplace heat, central air conditioning, humidifier use and cooking with gas stove were positively associated with ever diagnosed asthma or current asthma (p<0.05) -Water damage, use of humidifier and gas stove with pilot lighting were also associated with decreased lung function. (p<0.05) -Exposure to pet dogs increase asthma severity (p<0.001) -Pesticide use in the past year was associated with asthma severity(p<0.001)
39	Tsai H et al. 2006 (39)	Taiwan	Cross sectional study	Fifth grade school children (11 - 12 years)	2218	- Exposure to biological irritants - Dampness - ETS - Indoor air quality appliances - Indoor combustion byproducts - Indoor volatile compounds - Overcrowding	Childhood asthma	-Dehumidifier use (OR 1.54, 95% CI 1.07–2.22), odoriferous chemical vapor (OR 2.35, 95% CI 1.45–3.82), having cockroaches at home (OR 2.16, 95% CI 1.18–3.93) were significantly associated with the proportion of physician-diagnosed asthma
40	Wang et al. 2014 (40)	China	Cross sectional study	Parents of kindergarten children	4530	- House type and quality - Exposure to biological irritants	Asthma phenotypes	-Living near a main road or highway (OR 2.44, 95% CI 1.48–4.03) and indoor water damage (OR 2.56, 95% CI 1.34–4.86) was associated with allergic asthma

				(1-8years)		• Dampness • Indoor combustion byproducts • Indoor volatile compounds • Ventilation • Cleaning frequency		
41	Jaakkola et al. 2022 (41)	Finland	Cross sectional study	Adults who had physician-diagnosed bronchial asthma (17–73 years)	1995	• Dampness	Level of asthma control	-Water damage (RR 1.29, 95% CI 1.01–1.65) and indoor dampness (RR 1.92, 95% CI 1.15–3.20) increased the risk of poor asthma control
42	Saijo J et al. 2021 (42)	Japan	Cohort study	Children (birth-3 years)	60529	• House type and quality • Exposure to biological irritants • Dampness • Presence of indoor heating • ETS • Indoor air quality appliances • Indoor combustion byproducts	Childhood asthma Asthma symptoms	-Mold growth (OR 1.13, 95% CI 1.06–1.22) and wood stove/fireplace (OR 1.23, 95% CI 1.03–1.46) were significantly associated with wheezing
43	Ellies et al. 2021 (43)	China	Cross sectional study	kindergarten and elementary school children (0-8years)	7366	• Exposure to biological irritants • Dampness • ETS • Indoor volatile compounds	Childhood asthma	-Dampness/humidity (OR 1.70, 95%CI 1.12–2.57) and parental smoking (OR 4.66, 95% CI 1.99–10.92) were associated with doctor-diagnosed asthma
44	Tham KW et al. 2007 (44)	Singapore	Cross sectional study	young children (1.5 - 6 years)	4759	• House type and quality • Exposure to biological irritants • Dampness • ETS	Childhood asthma	-No associations found between physician-diagnosed asthma and dampness or mould

ACT: Asthma Control Test

CI: Confidence Interval

Dampness: water damage/mould growth

ETS: Environmental Tobacco Smoke

Exposure to biological irritants: exposure to pets, pest, and house dust mite

House type and quality: type of dwelling(apartment/detached/semidetached), building information, construction year, general home condition

Indoor cleaning frequency: frequency of home cleaning, bedroom cleaning and putting beddings to sunshine.

Indoor Air quality appliances: Use of air conditioner/air purifier/air humidifier/dehumidifier

Indoor combustion byproducts: presence of wood/gas stove, incense smoke, and heating with solid fuel

Indoor volatile compounds: use of indoor cleaners, pesticides, air fresheners and recent indoor painting

Indoor temperature: indoor temperature reported in Fahrenheit.

IRR: Incidence Rate Ratio

OR: Odds Ratio

Overcrowding: number of people living in household

Presence of indoor heating: source of heating and type of heating

PR: Prevalence Ratio

RR: Risk Ratio

Ventilation: use of ventilation device, window opening frequency and duration

VOC: Volatile Organic Compounds

Supplementary table 3: Domestic environmental exposures assessed by self-reported instruments.

Self-reported instrument (Author, year)	Indoor exposures											
	Air quality appliances	Environmental tobacco smoke	Indoor combustion byproducts	Indoor volatile compounds	Exposure to biological irritants	Ventilation	Presence of indoor heating	Indoor temperature	Dampness	Indoor cleaning frequency	House type and quality	Overcrowding
1	Ahlroth Pind C et al.2017 (34)								X			
2	Northridge J et al.2010 (35)	X	X	X		X			X		X	
3	Findley S et al.2003 (36)	X	X	X		X	X					
4	Holst G J 2020 (16)		X			X			X		X	X
5	Simoni M et al.2005 (37)		X	X		X			X			
6	Apichainan N 2022 (38)	X	X	X	X	X			X		X	
7	Dong GH et al.2008 ^a (39)		X	X	X	X	X		X		X	
8	Dong GH et al.2008 ^b (40)		X	X	X	X	X		X		X	
9	Mommers M et al. (41)		X	X		X	X		X			
10	Duelien Skorge T et al.2005 (17)					X			X			
11	Phoe L L et al. 2004 (42)		X	X		X	X					
12	Rumchev K et al. 2004 (43)	X	X	X	X	X	X				X	
13	Cabrera A et al. 2022 (44)			X		X			X			
14	Agata Wypych-Ślusarska 2022 (45)		X	X		X	X		X			
15	Deng X.et al. 2021 (46)	X	X	X	X	X	X		X	X	X	X
16	Lu Y et al. 2018 (47)		X	X	X	X	X		X		X	
17	Wang J et al. 2017 (48)	X	X	X	X	X	X		X		X	X
18	Takaoka M. 2017 (49)		X		X	X			X		X	
19	Norback D et al. 2014 (50)		X			X	X		X		X	
20	Thron J et al. 2001 (51)		X	X		X			X			
21	Wang J et al. 2014 (52)		X		X	X	X		X			X
22	Thacher J D et al. 2017 (53)								X			
23	Wang J et al.2019 (54)								X			
24	Saif et al. 2021 (55)	X	X			X		X	X		X	
25	Wang J et al. 2022 (56)				X				X		X	
26	Wang J et al. 2019 (57)								X		X	
27	Meszáros D et al. 2014 (58)	X	X	X			X		X			
28	Rennie DC et al. 2020 (59)	X	X	X		X	X		X			X
29	Dai X et al. 2021(60)	X	X	X			X	X	X		X	
30	Jaakkola J J K et al. 2005 (61)								X			
31	Lin Z et al. 2015 (62)		X			X			X	X		
32	Hu Y et al. 2014 (63)								X			
33	Lee Y et al. 2003 (64)		X	X		X			X			
34	Pirastu R 2009 (65)		X	X		X			X			X
35	Gunnbjörnsdóttir M I et al. 2006 (66)								X		X	
36	Molnar D et al. 2021 (67)	X	X	X		X	X		X		X	
37	Lin S et al. 2008 (68)	X	X	X	X	X	X		X			
38	Svensden E R et al. 2018 (69)	X		X	X	X	X		X			
39	Tsai H et al. 2006 (70)	X	X	X	X	X			X			X
40	Wang et al. 2014 (71)			X	X	X	X		X	X	X	
41	Jaakkola et al. 2022 (72)								X			
42	Saijo J et al. 2021 (73)	X	X	X		X	X		X		X	
43	Ellies et al. 2021 (74)		X		X	X			X			
44	Tham KW et al. 2007 (26)		X			X			X		X	

Air quality appliances: Use of air conditioner/air purifier/air humidifier/dehumidifier

Indoor combustion byproducts: presence of wood/gas stove, incense smoke, and heating with solid fuel

Indoor volatile compounds: use of indoor cleaners, pesticides, air fresheners and recent indoor painting

Exposure to biological irritants: exposure to pets, pest, and house dust mite

Ventilation: use of ventilation device, window opening frequency and duration

Presence of indoor heating: source of heating and type of heating

Indoor temperature: indoor temperature reported in Fahrenheit

Dampness: water damage/mould growth

Indoor cleaning frequency: frequency of home cleaning, bedroom cleaning and putting beddings to sunshine.

House type and quality: type of dwelling (apartment/detached/semidetached), building information, construction year, general home condition.

Overcrowding: number of people living in household

Supplementary table 4: Characteristics of self-reported instruments assessing domestic environmental exposures.

	Instrument (Author, year)	Method of evaluating domestic environment	Method of development	Method of validation	Method of obtaining self-reported response	Response rate	Recall period
1	Ahlooth Pind C et al.2017 (1)	A scoring system	Questions adapted from a previous study.	Questions used had been previously validated and reported to have a significant agreement between observed and self-reported data	Questionnaire posted via participant's address	65% (for women) 53% (for men)	12 months
2	Northrigge J et al.2010 (2)	Self-reports to yes/no-questions	Questions adapted from a previous study.	Questionnaire was pilot tested among native speakers prior to the study to ensure clarity and accuracy.	Questionnaire posted via participant's address	77%	2 weeks
3	Findley S et al.2003 (3)	Self-reports to yes/no-questions	Not reported	Not reported	Completed by parents sent home and returned via children	82%	one month
4	Holst G J 2020 (4)	Self-reports to yes/no-questions	Not reported	Not reported	Completed by participants at the research centre	80%	not specified
5	Simoni M et al.2005 (5)	Self-reports to yes/no-questions	Questions adapted from a previous study.	Not reported	Completed by parents and adolescents. sent home and returned via children	89% (for children) 83% (for adolescents)	throughout lifetime of child/adolescent
6	Apichainan N 2022 (6)	Self-reports to yes/no-questions	By translating ISAAC questionnaire	Not reported	Completed by parents sent home and returned via children	Not reported	12 months
7	Dong GH et al.2008 ^a (7)	Self-reports to yes/no-questions and MCQs	Questions adapted from a previous study.	Not reported	Completed by parents sent home and returned via children	86.8%	2 years
8	Dong GH et al.2008 ^b (8)	Self-reports to yes/no-questions and MCQs	Questions adapted from a previous study.	Not reported	Completed by parents sent home and returned via children	Not reported	2 years
9	Mommers M et al. (9)	Self-reports to yes/no-questions and MCQs	Questions adapted from ISAAC questionnaire	Not reported	Completed by parents sent home and returned via children	76.2%	12 months
10	Duelien Skorge T et al.2005 (10)	Self-reports to yes/no-questions	Used same questions in the European Community Respiratory Health Survey	Not reported	Mailed questionnaire with a paid reply envelop	88.6%	12 months
11	Phoe L L et al. 2004 (11)	Self-reports MCQs	Not reported	Not reported	Completed by parents sent home and returned via children	51.3%	12 months
12	Rumchev K et al. 2004 (12)	Self-reports to yes/no-questions and MCQs coupled with home inspections and measure of indoor temperature, humidity and selected volatile organic compounds at home	Questions adapted from a previous study.	Not reported	Completed by parents sent home and returned via children.	80%	Not specified

13	Cabrera A et al. 2022 (13)	Self-reports to yes/no-questions and MCQs	Used Global Asthma Network questionnaire	Not reported	Completed by parents. Sent home and returned via children	82.5%	12 months
14	Agata Wypych-Ślusarska 2022 (14)	Self-reports to yes/no-questions and MCQs	Questions adapted from ISAAC questionnaire	Not reported	Completed by parents. Sent home and returned via children	59.5%	12 months
15	Deng X.et al. 2021 (15)	Self-reports to yes/no-questions and MCQs Provided scales to judge air quality and noise	Questions adapted from ISAAC questionnaire	Not reported	Completed by parents. Sent home and returned via children	Not reported	12 months
16	Lu Y et al. 2018 (16)	Self-reports to yes/no-questions and MCQs	Questions adapted from ISAAC questionnaire and Health Effects of School Environment study questionnaire	Not reported	Completed by parents. Sent home and returned via children	Not reported	12 months
17	Wang J et al. 2017 (17)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Questionnaire posted via participant's address	46%	12 months
18	Takaoka M. 2017 (18)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Completed by parents. Sent home and returned via children	99%	12 months
19	Norback D et al. 2014 (19)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Questionnaire posted via participant's address	73%	12 months
20	Thron J et al. 2001 (20)	Self-reports to yes/no-questions	Not reported	Not reported	Questionnaire posted via participant's address	84%	Not specified
21	Wang J et al. 2014 (21)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Questionnaire posted via participant's address	49%	12 months
22	Thacher J D et al. 2017 (22)	Self-reports to yes/no-questions and a scoring system	Not reported	Not reported	Completed by parents.	Not reported	Not specified
23	Wang J et al.2019 (23)	Self-reports to yes/no-questions	Not reported	Not reported	Questionnaire posted via participant's address	71%	12 months
24	Saif et al. 2021 (24)	Self-reports to MCQs	Questions adapted from previous studies.	Not reported	iPad was given to the participants to answer the questionnaire	69.9%	12 months
25	Wang J et al. 2022 (25)	Self-reports to yes/no-questions	Not reported	Not reported	Questionnaire posted via participant's address	Not reported	12 months
26	Wang J et al. 2019 (26)	Self-reports to MCQs and a scoring system	Not reported	Not reported	Completed by parents. Sent home and returned via children attending day care	75%	12 months
27	Meszaros D et al. 2014 (27)	Self-reports to yes/no-questions	Questions adapted from previous studies.	Not reported	Questionnaire posted via participant's address	78.4%	12 months
28	Rennie DC et al. 2020 (28)	Self-reports to yes/no-questions	Not reported	Not reported	Completed by parents. Sent home and returned via children	57.7%	12 months
29	Dai X et al. 2021 (29)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Questionnaire posted via participant's address	42% (for sixth decade questionnaire)	12 months

						42% (for sixth decade questionnaire)	
30	Jaakkola J J K et al. 2005 (30)	Self-reports to MCQs	Not reported	Not reported	Completed by parents.	77%	12 months
31	Lin Z et al. 2015 (31)	Self-reports to yes/no-questions and a scoring system	Questions adapted from previous studies.	Not reported	Completed by parents. Sent home and returned via children	81.7%	12 months
32	Hu Y et al. 2014 (32)	Self-reports to MCQs	Questions adapted from previous studies.	Not reported	Completed by parents when they attend school meetings. Sent home and returned via children	85.3%	12 months
33	Lee Y et al. 2003 (33)	Self-reports to MCQs	Questions developed based on previous literature	Not reported	Completed by parents. Sent home and returned via children	92.8%	Not specified
34	Pirastu R 2009 (34)	Self-reports to yes/no-questions and MCQs	Questions adapted from ISAAC questionnaire	Not reported	Completed by parents. Sent home and returned via children	84.4%	Not specified
35	Gunnbjörnsdóttir M I et al. 2006 (35)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Questionnaire posted via participant's address	74.2%	12 months
36	Molnar D et al. 2021 (36)	Self-reports to yes/no-questions	Not reported	Not reported	Completed by parents at parents meeting	56.5%	Not specified
37	Lin S et al. 2008 (37)	Self-reports to yes/no-questions	Not reported	Not reported	Questionnaire posted via participant's address	44%	Not specified
38	Svendsen E R et al. 2018 (38)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Completed by parents	Not reported	12 months
39	Tsai H et al. 2006 (39)	Self-reports to yes/no-questions and MCQs	Questions adapted from a previous study.	Not reported	Completed by both children and their parents	96.9%	Not specified
40	Wang et al. 2014 (40)	Self-reports to yes/no-questions, MCQs and a scoring system	Questions adapted from a previous study	Not reported	Completed by parents. Sent home and returned via children	74.5%	3 months
41	Jaakkola et al. 2022 (41)	Self-reports to yes/no-questions and MCQs	Not reported	Not reported	Not reported	40.4%	1-3 years
42	Saijo J et al. 2021 (42)	Self-reports to MCQs	Not reported	Not reported	Completed by parents	Not reported	1.5 years
43	Ellies et al. 2021 (43)	Self-reports to yes/no-questions	Questions adapted from a previous study.	Not reported	Completed by parents	78%	During pregnancy and child's first year of life
44	Tham KW et al. 2007 (44)	Self-reports to yes/no-questions	Used ISAAC written questionnaire	Not reported	Completed by parents. Sent home and returned via children	70%	Not specified

MCQs - Multiple Choice Questions

ISAAC- International Study of Asthma and Allergies in Childhood

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