Additional file 4: Study characteristics, exposure assessment data sources and methodological choices of the 46 independent studies using a top-down approach

Author(s)	Year	Risk factor	Country(ies)/ region included	Exposure assessment source	Effect estimate	When ERF is used how was it defined?	Source of the ERF	Counterfactual value	Computation of attributable burden
Adam et al	2012	Active smoking	Hungary	Literature, registry, National Statistics	RR	Linear	Meta-analysis and large scale cohort studies	7 % reduction	PAF
		Environmental tobacco smoke	Sweden	Registry	RR	Linear	Meta-analysis	95 % decrease in the prevalence of ETS exposure in the hospitality sector, 70 % in the workplace and 5.9 % in households	
Agardh et al	2011	Low socioeconomic position	Sweden	Registry	RR	Linear	meta-analysis	Category with the lowest risk	PAF
Begou et al	2020	Road traffic noise	Greece	Census data	RR	Log-linear	Meta-analysis	Category with the lowest risk	PAF
Bello et al	2003	Alcohol	Spain	Registry	RR	NR	Single study	NR	PAF
Borges et al	2009	Smoking	Portugal	Survey	RR	Linear	Single study	Category with the lowest risk	PAF
Cortez-Pinto et al	2010	Alcohol	Portugal	Survey	RR	Linear	Single study	Category with the lowest risk	PAF
Driscoll et al	2005	Occupational carcinogen	Global	Registry	RR	Linear	Literature review	Category with the lowest risk	PAF
Effertz et al	2013	Substance Use Disorder	Germany	Survey	RR	Linear	Multiple studies	NA	PAF
Gouveia et al	2004	Hypercholesterolemia	Portugal	National statistics, WHO	RR	Exponential	Single study	Category with the lowest risk	PAF
Guillois-Becel et al	2007	Air pollution	France, Nantes city	Registry	RR	Exponential	Single study	Reduction 3,5 ug/m3	PAF (other)
Holnicki et al	2017	Air pollution	Poland	Metereological stations + model	RR and UR (unit risk)	non-linear	Multiple studies	Category with the lowest risk	PAF
Jarosinska et al	2014	Second-hand smoking	Poland	Survey	OR	Linear	Multiple studies	Category with the lowest risk	PAF
Kassomenos et al	2013	Air pollution	Greece	Registry and literature	RR	Linear	Meta-analyses	Category with the lowest risk	PAF (effect factor)
Keall et al	2011	Modifiable housing conditions	Global	Literature	RR	Linear	Literature review	NR	PAF
Knol et al	2005	Air pollution	The Netherlands	Modelling	RR	Non-linear	Multiple studies	NR	PAF
		Noise		Modelling	RR	Non-linear	Multiple studies		

Author(s)	Year	Risk factor	Country(ies)/ region included	Exposure assessment source	Effect estimate	When ERF is used how was it defined?	Source of the ERF	Counterfactual value	Computation of attributable burden
		Radiation		Literature	RR	Linear	Multiple studies		
		UV		Literature	NA	NA	NA		
		Indoor dampness		Registry	RR	Non-linear	Multiple studies		
Lai et al	2004	Alcohol	Estonia	Cohort study			Multiple studies		PAF
		Smoking		Registry			Multiple studies		
		High BMI		Cohort study			Single study		
		Risky sexual behaviour		Literature	RR	NR	Single study	Different scenarios	
		Drug use		Literature			Single study		
		Low fruit and vegetable intake		Cohort study			Single study		
		Physical inactivity		Cohort study			Single study		
Lehtomäki et al	2018	Air pollution	Finland	Meteorological stations + model	RR	Exponential	Single study	Category with the lowest risk	PAF
Lelieveld et al	2019	Air pollution	Europe	Meteorological stations + model	Hazard ratio functions	Non-linear	Own calculation	NR	PAF
Lock et al	2005	Dietary risk	Global	Survey	RR	Non-Linear	Own calculation	600 g person -1 day	PAF
Marmet et al	2014	Alcohol use	Switzerland	Survey	RR	Gamma function	GBD	Category with the lowest risk	PAF
Martín-Ramiro et al	2014	High BMI	Spain	Survey	RR	Linear	Meta-analysis	Category with the lowest risk	PAF
Möller et al	2012	Smoking	UK	Literature	RR	Linear	Meta-analysis		PAF
		High BMI		Literature	RR	Linear	Meta-analysis		
		Low fruit and vegetable intake		Literature	RR	Linear	Meta-analysis	Different scenarios	
		Alcohol use		Literature	RR	Linear	Meta-analysis		
		Physical inactivity		Literature	RR	Linear	Meta-analysis		
Öberg et al	2010	Second-hand smoking	Global	Survey, registry	RR	Linear	Meta-analysis	Category with the lowest risk	PAF
Öberg et al	2011	Second-hand smoking	Global	Survey/literature/modelling	RR/OR	Linear	Meta-analysis	NR	PAF
Oberoi et al	2019	Arsenic	Global	Literature	RR	Combination of functions	Multiple studies	Category with the lowest risk	PAF
Orru et al	2011	Air pollution	Estonia	Cohort study	RR	Linear	Meta-analysis	0 (no $PM_{2.5}$) PM_{10} increase by 10 $\mu g/m^3$	PAF

Author(s)	Year	Risk factor	Country(ies)/ region included	Exposure assessment source	Effect estimate	When ERF is used how was it defined?	Source of the ERF	Counterfactual value	Computation of attributable burden
Papadimitriou et al	2017	Smoking Alcohol use High BMI Type 2 diabetes Physical inactivity Use of hormone replacement therapy Oral contraceptives	Europe, USA	Cohort study	HR	Cox model	Own calculation	Category with the lowest expected population risk	PAF
Paunovic et al	2014	Road traffic noise	Belgrade, Serbia	Cohort study	OR	Exponential	Own calculation	Category with the lowest risk	PAF
Pomerleau et al	2006	Dietary risk	EU-15 and EU-10	Survey	RR	Linear	Meta-analysis	400 g person -1 day -1 600 g person -1 day -1	PAF
Rehm et al	2007	Alcohol	Switzerland	Survey	RR	Linear	Multiple studies	Category with the lowest risk	PAF
Rehm et al (53)	2012	Alcohol	Europe Union countries, plus Iceland, Norway, and Switzerland, plus Russia as an external comparison	Survey	RR	Exponential	Multiple studies	Different interventions	PAF
Rovira et al	2020	Air pollution	Catalonia, Spain	Registry	RR	NR	NR	Category with the lowest risk	PAF
Savolahti et al	2019	Air pollution	Finland	Modelling	RR	Log-linear	Own estimation	Category with the lowest risk	PAF
Schwingshackl et al	2019	Dietary risk	Europe	Meta-analysis	RR	Non-linear	Own estimation	Different optimal levels	PAF
Shield et al	2013	Alcohol	Italy	Survey	RR	Linear	Multiple studies	Category with the lowest risk	PAF (alcohol-attributable fraction)
Shield et al	2015	Alcohol	Russia	Literature	RR	Linear	Meta-analysis	Category with the lowest risk	PAF
Siddiqi et al (59)	2015	Smokeless tobacco	Global	Survey	RR	Linear	Systematic reviews and meta-analyses	Category with the lowest risk	PAF
Sifaki-Pistolla et al	2017	Smoking	Crete, Greece	Registry	RR	NR	NR	NA	PAF
Šipetić et al	2013	Alcohol use Smoking	Serbia without Kosovo and	Survey	RR	Linear	Multiple studies	Category with the lowest risk	PAF

Author(s)	Year	Risk factor	Country(ies)/ region included	Exposure assessment source	Effect estimate	When ERF is used how was it defined?	Source of the ERF	Counterfactual value	Computation of attributable burden
		Physical inactivity Dietary risk High BMI High blood cholesterol Hypertension	Metohia						
Tobollik et al	2019	Road traffic noise Aircraft noise Railway noise	Germany	Literature	RR	Linear Exponential Exponential	Systematic review	53 dB Lden	PAF
Tod et al	2018	Alcohol	Scotland	Survey	RR	Non-linear	Multiple studies	Category with the lowest risk	PAF
Tod et al	2019	Smoking Alcohol use High BMI Low fruit and vegetable intake Physical inactivity High blood cholesterol Hypertension	Scotland	Survey	HR	Cox model	Single study	Minimum health risk to a population	PAF
Tsilidis et al	2016	Smoking High BMI Physical inactivity Alcohol use Type 2 diabetes	Denmark, Greece, The Netherlands, Spain, Sweden, Germany, Norway and UK	Survey	RR and HR	Cox model	Own calculation	NR	PAF
Valent et al	2004	Outdoor air pollution Indoor air pollution Inadequate water and sanitation Lead	51 countries WHO European region	Literature	RR	Linear	Single study	PM_{10} concentration: 10g/m^3 and 20g/m^3 No households used solid fuel 100% have no transmission of diarrhoeal disease Blood lead concentration in preindustrial people 0·16 g/L	PAF (Impact fraction)
Van Kreijl et al	2006	Dietary risk	The Netherlands	Multiple studies	RR	Linear	Multiple studies	Category with the lowest risk and different interventions	PAF

Author(s)	Year	Risk factor	Country(ies)/ region included	Exposure assessment source	Effect estimate	When ERF is used how was it defined?	Source of the ERF	Counterfactual value	Computation of attributable burden
Vienneau et al	2015	Spatially resolved noise	Switzerland	Modelling	RR	Exponential	Multiple studies	Category with the lowest risk	PAF
		Air pollution		Modelling		Exponential	Multiple studies	Category with the lowest risk	

RR: relative risk; OR: odds ratio; ERF: exposure-response function; PAF: population attributable fraction; NA: not applicable; NR: not reported

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