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## **Supplemental Material**

## Health Effects of Pesticide Exposure in Latin American and the Caribbean Populations: A Scoping Review

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Additional File- Excel Document

Table S1. Characteristics of Latin American and the Caribbean studies on pesticide exposure and health outcomes published between 2007 and 2021 by country (n=233).<sup>a</sup>

Characteristic	Argentina	Bolivia	Brazil	Chile	Colombia	Costa Rica	Dominican Republic	Ecuador	El Salvador	Guadeloupe	Jamaica	Mexico	Nicaragua	Paraguay	Peru	Venezuela
Total (%)	21 (8.9)	6 (2.6)	88 (37.4)	7 (3.0)	9 (3.8)	14 (6.0)	1 (0.4)	17 (7.2)	1 (0.4)	14 (6.0)	1 (0.4)	46 (19.6)	4 (1.7)	1 (0.4)	2 (0.8)	3 (1.3)
Study design																
Cohort	2	0	2	0	1	4	0	0	0	12	0	20	0	0	0	0
Cross sectional	18	6	70	7	8	8	1	17	1	0	0	22	3	1	2	3
Case-control	1	0	16	0	0	2	0	0	0	2	1	3	1	0	0	0
Year of publication																
2007-2009	2	1	7	0	1	3	0	3	0	0	0	7	0	0	1	0
2010-2012	3	0	10	1	0	1	0	2	0	1	0	9	1	0	0	0
2013-2015	5	1	16	0	2	3	0	2	1	6	0	8	1	0	0	3
2016-2018	5	2	24	4	4	3	1	2	0	1	1	13	1	0	0	0
2019-2021 <sup>b</sup>	6	2	31	2	2	4	0	8	0	6	0	9	1	1	1	0
Study population	-	=		_	_	•	-	•	-	-	-	-	-	•	•	
Farmworkers	8	1	52	6	6	4	1	2	1	1	0	18	2	0	1	2
Other workers (e.g., vector control program workers)	0	1	4	0	0	0	0	0	0	0	0	4	0	0	0	0
General population	4	2	20	0	2	3	0	2	0	2	0	1	2	0	1	1
Mother-child pairs	4	1	1	0	0	2	0	0	0	8	0	10	0	0	0	0
•		0	0	0	0	0	0	0	0	1	0	2	0	0	0	0
Pregnant women only	3 2	1	11	1	1	5	0	13	0	2	1	∠ 11	0	1	0	0
Children only Pesticide exposure assessment method <sup>c,d</sup>	2	1	11	'	ı	5	U	13	U	2	1	11	U	'	U	U
Indirect																
Questionnaire only	6	3	56	4	3	5	1	8	1	0	1	10	3	1	1	2
Other method	1	0	6	0	0	0	0	0	0	1	0	0	0	0	0	0
Direct	•	Ü	Ü	Ü	Ü	Ü	Ü	Ü	Ü		Ü	Ü	Ü	Ü	Ü	v
Cholinesterase activity	14	0	20	2	2	1	0	9	0	0	0	8	0	0	0	1
Pesticides or pesticide metabolites measured	0	3	9	1	4	8	0	1	0	13	0	29	1	0	1	0
in biological matrix Biological matrix used for pesticide																
exposure assessment <sup>e</sup>																
Urine	1	2	1	1	3	5	0	1	0	0	0	12	1	0	1	0
Blood	15	1	27	2	4	3	0	9	0	13	0	24	0	0	0	1
Hair	0	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0
Breastmilk	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Toenail	0	0	0	0	0	1	0	0	0	-	0	ŭ	ū	Ü	ŭ	· ·
Pesticides assessed <sup>f</sup>	Ü	· ·	Ü	Ü	Ü	•	Ü	Ü	Ü		Ü					
Insecticides in general (no class specified)	0	0	3	0	0	2	0	0	0	0	0	0	0	0	0	0
Organophosphates	13	2	17	7	5	6	0	10	0	1	0	17	1	0	1	1
Organophosphates and carbamates	5	0	5	2	2	1	0	5	0	0	0	3	0	0	0	1
Organochlorines	0	1	11	0	2	1	0	0	0	12	0	19	0	0	0	0
Pyrethroids	1	3	7	0	1	4	0	0	0	0	0	3	0	0	0	0
Neonicotinoids	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Herbicides	1	2	7	0	2	6	0	1	0	0	0	1	0	0	0	0
Fungicides	0	2	1	0	1	8	0	0	0	0	0	0	0	0	0	0
Larvicides	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Rodenticides	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

Natural pesticides	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Multiple pesticide classes	8	2	59	0	3	2	1	6	1	1	1	11	3	1	1	2
Main health outcomes <sup>g</sup>																
Genotoxicity	11	3	25	0	3	0	1	3	0	0	0	15	0	1	0	0
Neurobehavioral outcomes	1	1	13	6	1	8	0	9	0	5	1	9	0	0	0	0
Placenta outcomes and teratogenicity	5	0	4	0	0	0	0	0	0	1	0	3	0	0	0	0
Cancer	0	0	9	0	0	2	0	0	0	2	0	1	0	0	0	0
Thyroid function	0	1	4	0	1	0	0	1	0	2	0	5	0	0	0	1
Reproductive outcomes	2	0	4	0	1	0	0	0	0	1	0	4	0	0	1	3
Birth outcomes and child growth	5	1	1	0	0	1	0	0	0	3	0	2	0	0	0	0
Other effects <sup>h</sup>											0					
Kidney function	0	0	2	0	0	0	0	0	1	0	0	1	4	0	1	0
Respiratory and allergic outcomes	0	0	2	0	1	3	0	0	0	0	0	1	0	0	0	0
Liver injury	1	0	5	0	0	0	0	1	0	0	0	1	0	0	0	0
Hematological parameters and lipid profile	1	0	10	0	2	0	0	1	0	0	0	3	0	0	0	0
Acoustic damage	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	3	1	12	1	0	0	0	4	0	3	0	2	0	0	0	0

an across all countries >233 because one published study (Maluf et al., 2009) was conducted in three countries (Argentina, Brazil, and Mexico).

<sup>&</sup>lt;sup>b</sup>We only included studies published up until December 2021 in our review.

<sup>&</sup>lt;sup>c</sup>A total of 125 published studies employed direct exposure assessment methods, with some measuring both cholinesterase activity and pesticides/pesticide metabolites. Of these, 81 (65.9%) used data from the direct exposure assessment in exposure-outcome analyses (e.g., some studies measured urinary biomarkers of exposure and ascertained occupational status via questionnaire, but only reported exposure-outcome associations using occupational status).

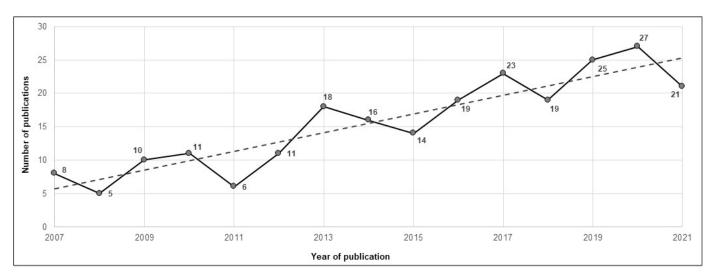
n across all countries > 233 because some published studies employed more than one exposure assessment method (e.g., measurement of cholinesterase activity in blood and urinary pesticide metabolities).

Only for published studies with direct pesticide exposure assessment, but nine studies measured pesticides in more than one biological matrix.

<sup>&#</sup>x27;n across all countries >233 because some published studies assessed multiple pesticide groups.

 $<sup>^{</sup>g}$ n across all countries >233 because some published studies assessed outcomes from more than one group.

Total studies that assessed other health effects >70 because some assessed multiple outcomes in this category (e.g., several published studies examined liver injury and hematological parameters).



**Figure S1.** Latin American and the Caribbean studies on pesticide exposure and health outcomes published between 2007 and 2021 by year of publication.