Additional file 2: Table S1-S3.

Table S1.

Number of confirmed cases of human toxocariasis by clinical form and country/geographic region

Country	Clinical forms of human toxocariasis *				
	VLM	OLM	NLM	CT	Total Number
China [1-4]		46	1		47
Japan [5]	12	105	8		125
Korea [6-9]	8	106	1		115
Iran [10-12]	1	9			10
India [4,13-18]	14	42	2		58
Malaysia [19,20]	1	1			2
Lebanon [21-25]	3	2	17		22
Israel [26-30]	5	1			6
Turkey [25,31-38]	5	3	2	1	11
United States of America [39-44]	9	181	8	1	199
Mexico [25,45-47]		8	6	12	26
Brazil [4,48-58]	76	14	6		96
Argentina [59-61]	16	15		124	155
Chile [62-65]	10	1			11
Canada [66,67]	1	1			2
France [4,25,68-85]	18	70	8	80	176
Austria [4,25]		38	2		40
Belgium [4,25,86,87]	2	22	3		27
United Kingdom [4,25,88-90]	1	57	3	46	106
Germany [4,25,91]		4	6		10
Italy [4,25,92-95]	4	3	2	9	18
Russia [25]		27			27

Australia [25]		5		5
Cambodia [25]		1		1
Sri Lanka [25]		1		1
Sakha Republic [4]			20	20
South Korea [4]			1	1
Caucasia [25]		20		20
Croatia [25]		7		7
Czech [25]		6		6
Denmark [25]		5		5
Greece [4,25]		3	1	4
Hungary [25]		3		3
Northern Ireland [25]		2		2
Poland [4,25]		2	1	3
Poska [25]		1		1
Portugal [25,98]		2		2
Romania [25]		1		1
Serbia [25]		1		1
Slovakia [25]		1		1
Spain [4,25,96,97]	61	1		62
Sweden [25]		1		1
Switzerland [25,99]		2		1
Varaždin, Croatia [25]		1		1
Poland [4,25,100]		2	1	3
Africa [4,25,101]		1	1	2

*An empty space indicates that no data was available on that form of human toxocariasis in the literature.

Table S2:

Seroepidemiological characteristics and risks of human toxocariasis

Seroepidemiological features of human toxocariasis	
Attributes	**Key points**
Disease of global importance	Although human toxocariasis is not a notifiable disease, it is one of the most frequently encountered helminth infections, and thus is of a major public health impact [4,102,103]. *T. canis* is one of the most prevalent and ubiquitous zoonotic parasite species occurring from the sub-Arctic to the tropics [25,104-107].
Neglected infection of poverty	The higher levels of endemicity have been reported in developing countries, including La Reunion (93%), Marshall Islands (86.8%), Nepal (81%), Indonesia (63.2%), Malaysia (58%), Swaziland (44.6%), Brazil (36%), Nigeria (30%), and China (12.25%) [108-113]. The disease has also been reported in some developed countries, including the USA (13.9%), Japan (30%), Canada (1.7%), New Zealand (0.7%), Australia (7.5%), Poland (15%), Denmark (2.4%), and Ireland (31%) [25,114-118]. In endemic areas, including the United States, *Toxocara* spp. infection is more prevalent in individuals living in poverty, and is one of the important zoonotic infections during childhood [119,120].
More prevalent in rural areas	Seroprevalence is highest in rural areas, ranging from 35% to 42%, falling to 15% to 20% in semirural zones, and down to 2% to 5% in urban areas. These features are presumably attributed to risk factors that increase the opportunities for transmission, such as contact with dogs or cats (untreated and uncontrolled definitive hosts), low immunity, poor hygiene, lower education levels, and poverty [121,122].
Racial preferential exposure	According to the US National Health and Nutrition Examination Survey (NHANES) results, the seroprevalence for toxocariasis was higher in non-Hispanic blacks (21.2%) than in non-Hispanic whites (12%) and Mexican Americans (10.7%), reflecting differential exposure rates linked to ethnic residential clustering and segregation [115,123].
Clustering within households	*Toxocara* seropositivity can be prevalent in certain clusters within households. The household clusters with the highest prevalence were those who had lower socioeconomic status and were less likely to have cats as pets [124].

Risk factors for human toxocariasis	
Variables	**Key points**
Exposure-related factors	These include cultural, socioeconomic, environmental, and geographic factors [4,25].
Susceptibility-related factors	These include genetic predisposition, age, gender, nutrition, coinfection, and host immunity (innate or acquired immunity) [25,103,125].
Behavior of human and definitive hosts	The behaviors and lifestyle of humans can increase the possibility of exposure to *Toxocara* eggs [25]. Primarily, international migration, urbanization, animal movement can increase the interactions between humans and definitive hosts, leading to the disease becoming an ever-changing public health concern [103].
Companion animals	Companion animals can be potential health hazards of *T. canis* infection. Embryonated *T. canis* eggs have been recovered from the coats of dogs. Hence, leaving pets untreated can result in heavy contamination of the environment with *T. canis* eggs, thus increasing the risk of human infection [126].
Wild animals	Wild animals (e.g. foxes) have increasingly encroached on urban settlements, have been considered as a potential contributor to increasing environmental contamination, especially in Europe [127].

Table S3.

Prevalence of *Toxocara* spp. in definitive hosts by country and animal host species.

Country	**Prevalence in different animal host species**				
	Dogs	Cats	Stray dogs or cats	Foxes	Soil contamination or other animals
China [128-130]	45.2% (*n*=438; 2007)	17.78% (*n*=360; 2013-2014)	30% (*n*=40; 2012) in stray dogs; 5.1% (*n*=39; 2012) in stray cats	NA	NA
Japan [131-135]	0.2% (*n*=573; 2015)	0.1% (*n*=555; 2011-2012)	25% (*n*=212; 2006-2011) in stray dogs	NA	NA
Korea [136]	0.0 (*n*=245; 2004)	NA	NA	NA	NA
Iran [137-139]	NA	NA	45% (*n*=140; 2012) in stray cats; 29 % (*n*=90; 2011-2012) in stray dogs	NA	10% (*n*=340; 2011-2012) in public parks; 1.68% (*n*=772; 2016) in contaminated vegetables;
India [140-142]	24.3 % dogs (*n*=558; 2014)	NA	31.29 % (*n*=278; 2010-2011) in stray dogs; 59.3% (*n*=27; 2005-2009) in stray cats	NA	4.75% (*n*=105) in public parks
Malaysia [143,144]	NA	NA	9.9% in cats, and 11.9% in dogs (*n*=152; 2013-2014)	NA	95.7% (*n*=300) in playgrounds
Thailand [145-147]	6.6% (*n*=500; 2014)	9.7% (*n*=300; 2014)	22.5% (*n*=200; 1998) in stray dogs	NA	5.71% (*n*=175; 2004) in public areas.
Turkey [148-151]	13.9% (*n*=115; 2006)	62.5% (*n*=6; 2006)		NA	15.05%, (*n*=259;2005-2006) in public parks; 21.56% (*n*=51;2008) in the dog' s hair
Greece [152]	NA	NA	24% (*n*=135; 2017) in stray cats	NA	NA
Brazil [153-158]	0.7% (*n*=3,099; 2005-2014)	2.2% (*n*=502; 2005-2014)	NA	NA	59.4%(*n*=2,520; 2004-2005) in public areas; 58.5 % (*n*=157; 2015) in chicken;29.0% (*n*=1,642; 2013) in sheep; 11.1% (*n*=45; 2006-2007) in wild dogs
USA [159,160]	6.9% (*n*=231;2009)	33% (*n*=263; 2001)	NA	NA	NA
Tunisia [161]	NA	NA	NA	NA	16% (*n*=31; 2008-2011) in jackals
Denmark [162,163]	NA	84.8% (*n*=189; 2014)	NA	60.9% (*n*=384; 2009-2012)	13.1% (*n*=99; 2009-2012) in raccoon dogs
Australia [164-166]	1.2% (*n*=1400; 2008)	3.2% (*n*=1063; 2008)	NA	14.9% (*n*= 147; 2013)	0.5% (*n*=180) in public parks
Slovenia [167]	NA	NA	NA	38.3% (*n*=428; 2002-2005)	NA
Ireland [168]	NA	NA	NA	20% (*n*=91; 2013)	NA
Mexico [169-173]	6.2% (*n*=130; 2003)	42.5% (*n*=520; 2003)	15.1% (*n*=378; 2008) in stray	0.8% (*n*=249; 2003-2004)	NA

			dogs		
Kyrgyzstan [174]	NA	NA	NA	30% (*n*=151; 2006-2007)	NA
Italy [175-178]	6.6% (*n*=502; 2011-2012)	25.2% (*n*=515; 2012-2013)	33.1% (*n*=139; 2013) in stray cats	9.1% (*n*=129; 2004-2006)	43.8 % (*n*=121; 2010) in wildcats
Switzerland [179]	NA	NA	NA	44.3% (*n*=228;1998-2002)	NA
Great Britain [180,181]	2% (2012)	NA	25% (2012) in stray dogs	61.6% (*n*=588;1999-2000)	NA
Southern Belarus [182]	NA	NA	NA	25.5% (*n*=1,307;1981-2001)	NA
Spain [183]	NA	NA	NA	0.0 (*n*=201; 23.5%;1995)	NA
France [178]	NA	6.25% (*n*=96; 2012-2013)	NA	NA	NA
Germany [178]	NA	7.2% (*n*=55; 2012-2013)	NA	NA	NA

*Prevalence percentage is followed by the number of examined animals and the year of the study.

Abbreviation: NA, not applicable.

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