

Background:

- Blood supply safety has important implications for blood recipients
- Determining *Leishmania* carriage in blood supply of asymptomatic donors in *Leishmania* endemic areas is crucial for recipients' health and limiting transmission
- We aimed to map the literature on prevalence and detection assays for *Leishmania* detection in blood supplies around the world, which may extrapolate to other non-endemic countries including Canada

Methods:

- Seven electronic literature databases: Ovid Medline, EMBASE, Global Health, CINAHL Plus, CAB Abstracts, LILACS, and Cochrane Library were searched from database inception to Nov 1, 2019 with restriction to humans only
- A combination of the following search terms: "leishmania" with "blood"; "detection", "diagnosis", "sensitivity", "specificity"; and "smear", "microscopy", "PCR" were used without language restriction
- Titles, abstracts and full-text articles are systematically screened by 2 independent reviewers, any disagreements were resolved with a tertiary arbitrator
- Inclusion Criteria:** 1) *Leishmania* detection 2) Blood 3) Human Systematic reviews, diagnostic trials and smaller observational studies are included
- Data was summarized using qualitative and quantitative measures
- Meta-analysis was performed by comprehensive meta-analysis software using random effects model

Results:

- Three articles (from a total of 18 studies) were included in our analysis

Table 1. Prevalence of *Leishmania* by Serology in Asymptomatic Blood Donors

	Sub-analysis Factor	Prevalence (95%CI)
Overall		6.7% (5.0-8.8%)
Region	Asia (Bangladesh, Iran, Nepal)	1.2% (0.5-3.0%)
	Europe (France, Greece, Spain, Italy, Turkey)	4.7% (2.7-8.0%)
	South America (Brazil)	10.4% (7.3-14.5%)
Sex	Male	1.4% (1.1-1.7%)
	Female	4.6% (4-5.2%)
Species	<i>Leishmania donovani</i>	7.0% (2.0-12.0%)
	<i>Leishmania infantum</i>	7.0% (5.0-8.0%)

Table 2. Characteristics of Studies in this Systematic Review

Article	Study Design	Study Period	Setting	Sample Size	Sex	Age (years old)	<i>Leishmania</i> species
Asfaram 2017	Systematic Review and Meta-analysis	1997-2016	Brazil, France, Greece, Spain, Italy, Turkey, Bangladesh, Iran, Nepal.	14 243 (16 studies)	Male 69.9% Female 30.1%	16 – 68	<i>Leishmania braziliensis</i> , <i>Leishmania donovani</i> , <i>Leishmania infantum</i>
Asfaram 2017	Cross Sectional	July – Sept 2016	Iran	600 (1 study)	Male 99.3% Female 0.7%	20 – 61	<i>Leishmania infantum</i>
Aliaga 2019	Cross Sectional	June 2015 – May 2016	Spain	1260 (1 study)	Male 48.1% Female 51.9%	18 – 65	-

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Based on this systematic review:
Prevalence of *Leishmania* detected in asymptomatic blood donors was about 7%

Detection of *Leishmania* was higher in South America and female donors
Leishmania donovani and *Leishmania infantum* were the main associated species

Results Cont'd - Tables and Figures:

Figure 1. PRISMA Flowchart of Articles from Literature Search and Screening

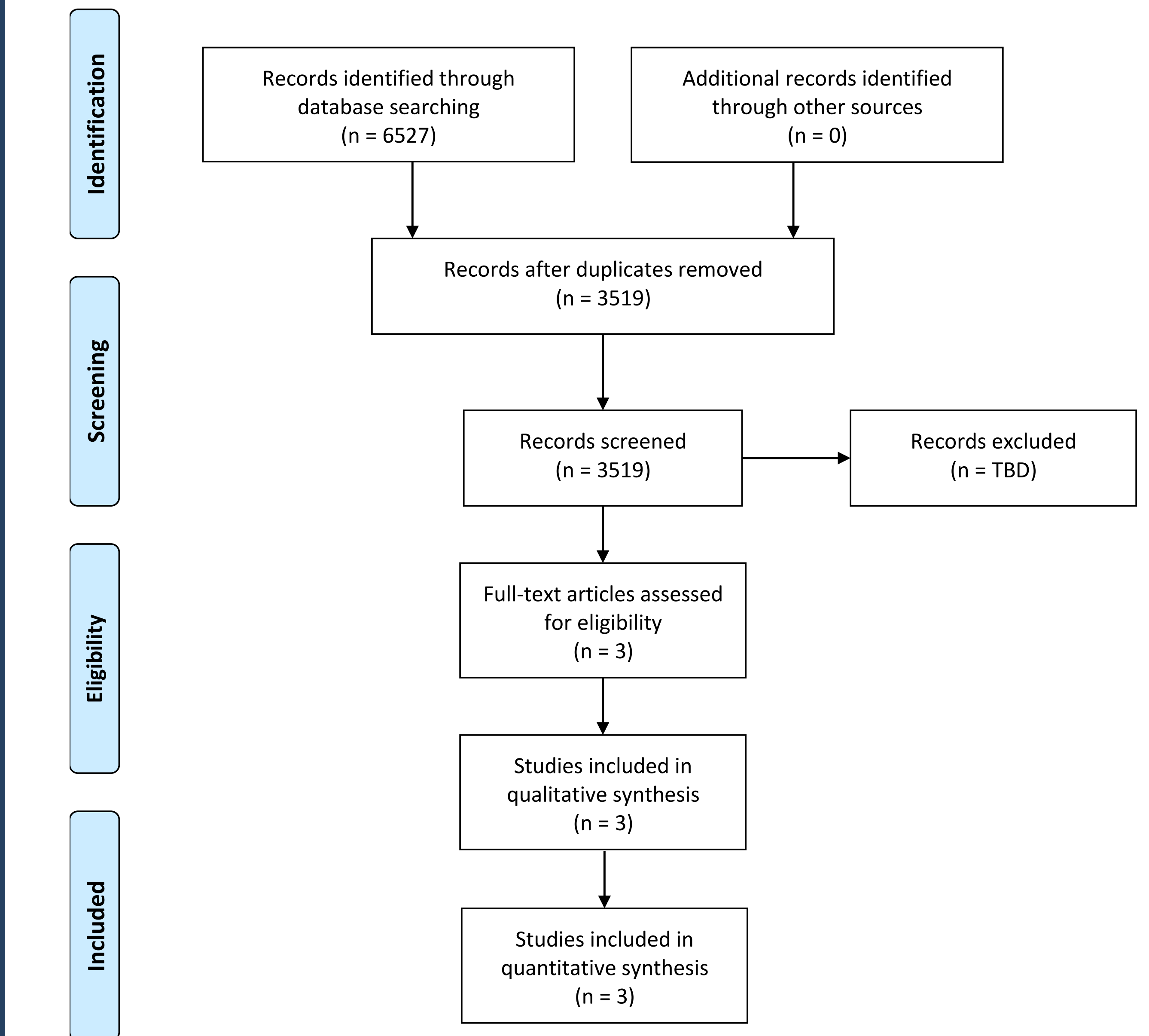
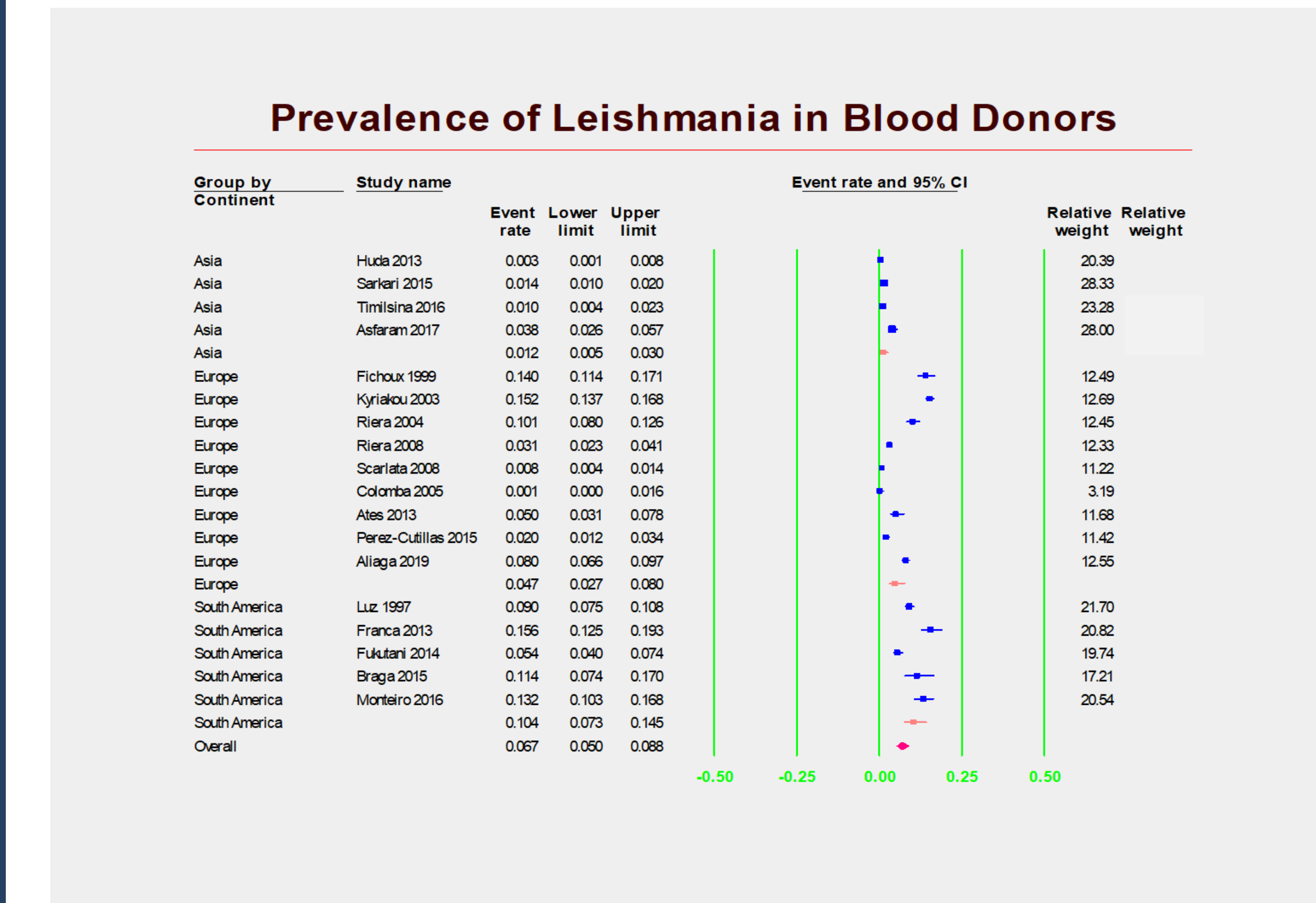


Figure 2. Meta-analysis of Prevalence of *Leishmania* in Blood Donors with Sub-analysis According to Region, Sex, and Species. Overall prevalence was 7%, with Brazil having the highest prevalence. Female blood donors also had a higher prevalence than males



Discussion:

- Overall prevalence of *Leishmania* in asymptomatic blood donors was 7%
- Highest prevalence was in South America – Brazil (10.4%) and lowest in Asia (1.2%)
- Leishmania donovani* and *Leishmania infantum* were the primary associated species with *Leishmania braziliensis* (Table 2) also present in the Brazilian population
- These data can inform guidelines and policy amendments in blood donor centres

References:

- Asfaram S *et al.*, Global status of visceral leishmanial infection among blood donors: A systematic review and met-analysis. *Transfusion and Apheresis Science* 2017 (56) 748-754
- Asfaram S *et al.*, Asymptomatic human blood donors carriers of *Leishmania infantum*: Potential reservoirs for visceral leishmaniasis in northwestern Iran. *Transfusion and Apheresis Science* 2017 (56) 474-479
- Aliaga L *et al.*, Asymptomatic *Leishmania* infection in blood donors from the Southern of Spain. *Infection* 2019 (47) 739-747