

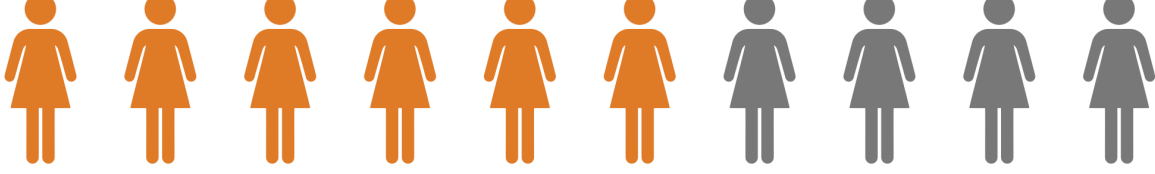
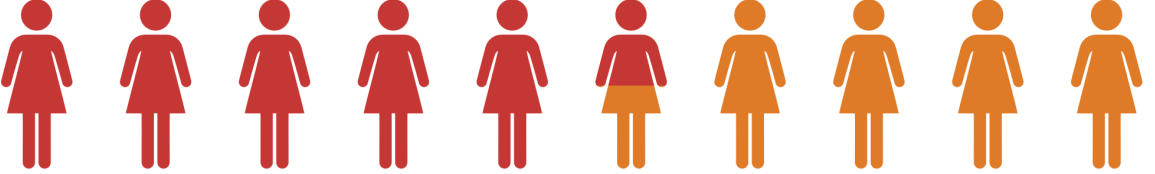
Systematic Review of the Global Literature on Uncomplicated Recurrent Urinary Tract Infections: Underscoring Major Heterogeneity

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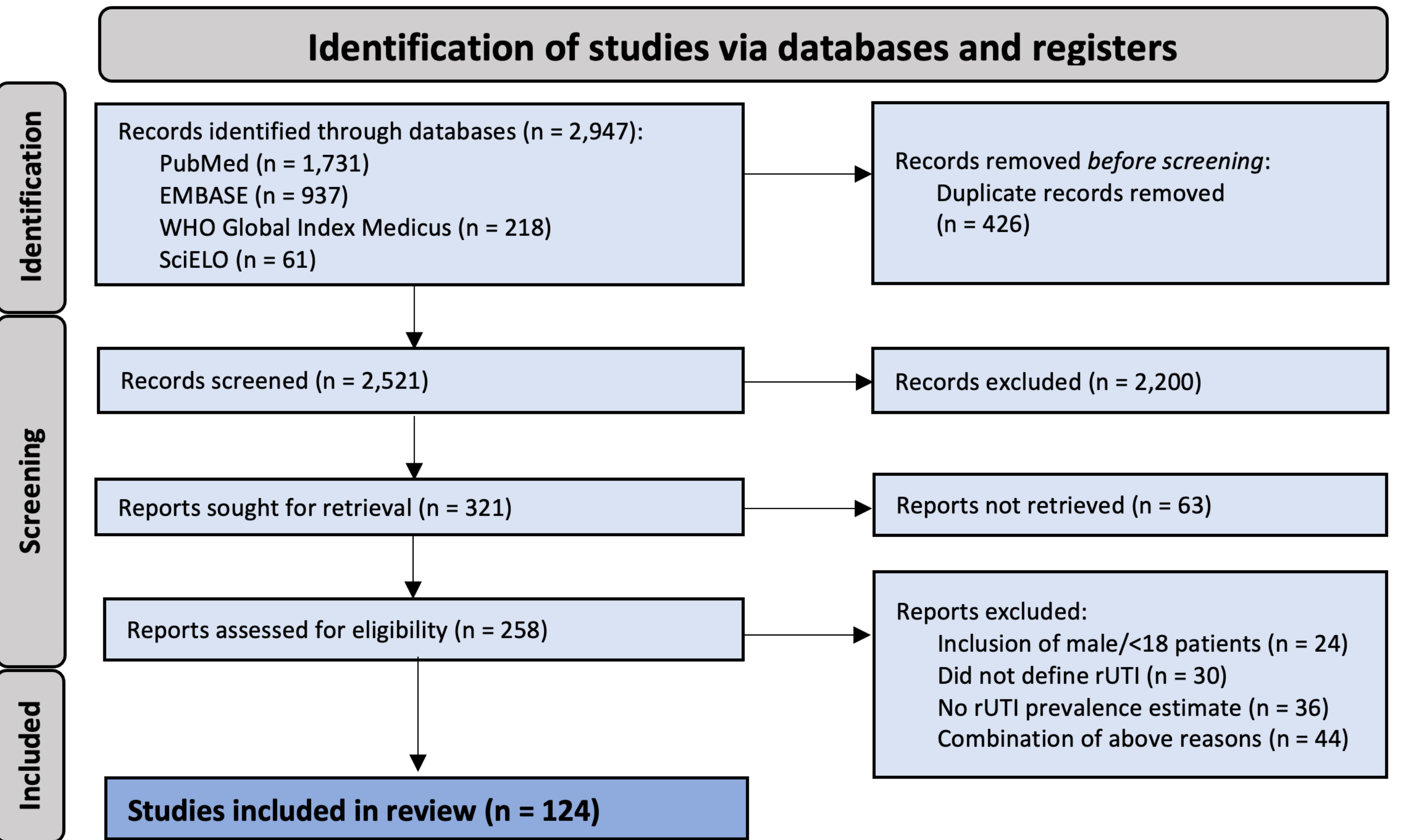
BACKGROUND

- Urinary tract infections (UTI) are the **most common adult bacterial infection in the world** affecting over 150 million women worldwide each year.¹
 - Up to 60% of women will experience a UTI at least once in their lifetime.¹
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 - Treatments cost over \$2.5 billion annually in the US.²
- UTIs have a high rate of recurrence (rUTI) – from 19-36% in premenopausal women and up to 55% recurrence rates in postmenopausal women.³
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 - RUTIs can cause decreased quality of life, sepsis, death, and antibiotic resistances.¹
 - Despite frequent recurrences, rUTI research is limited.**⁴

Aim: Examine global literature on uncomplicated rUTIs and assess the differences in quality and availability of data based on geographic region

METHODS

- Databases: PubMed, Embase, WHO Global Index Medicus, SciELO
- Years: 2000-2023
- Inclusions: >18 females with uncomplicated rUTI
- Exclusions: did not define rUTI, did not cite/report rUTI prevalence estimate
- Data extracted:
 - Study basics: year, region/country, type of study, definition of rUTI (+citation), rUTI prevalence citation
 - Study specifics: population demographics, sample size, facility type, level of facility, sampling, response rate



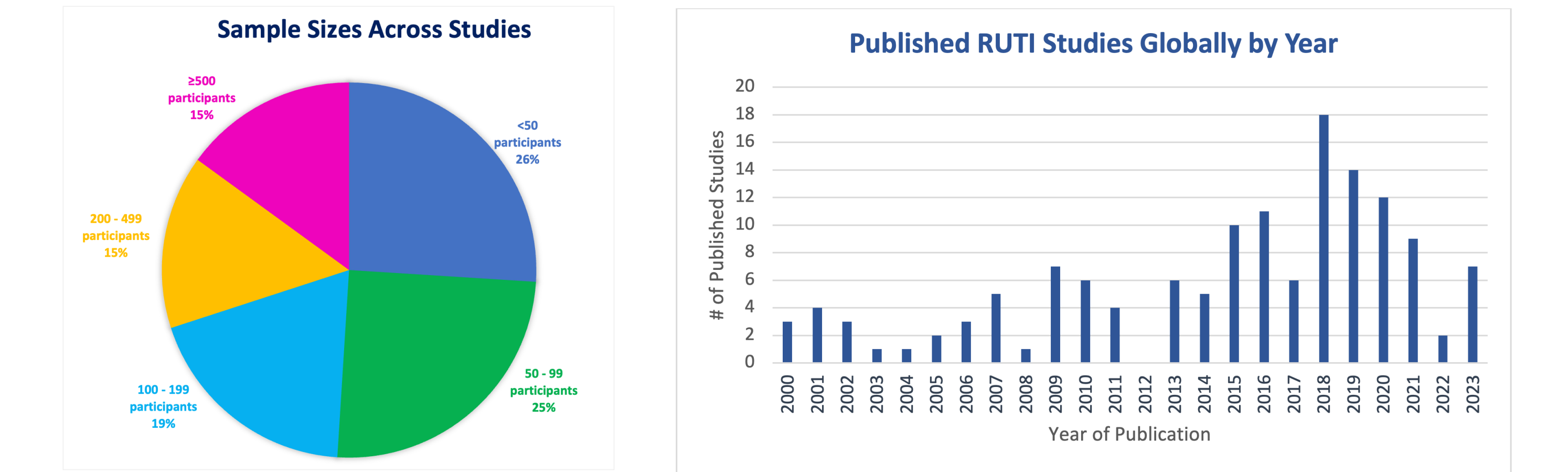
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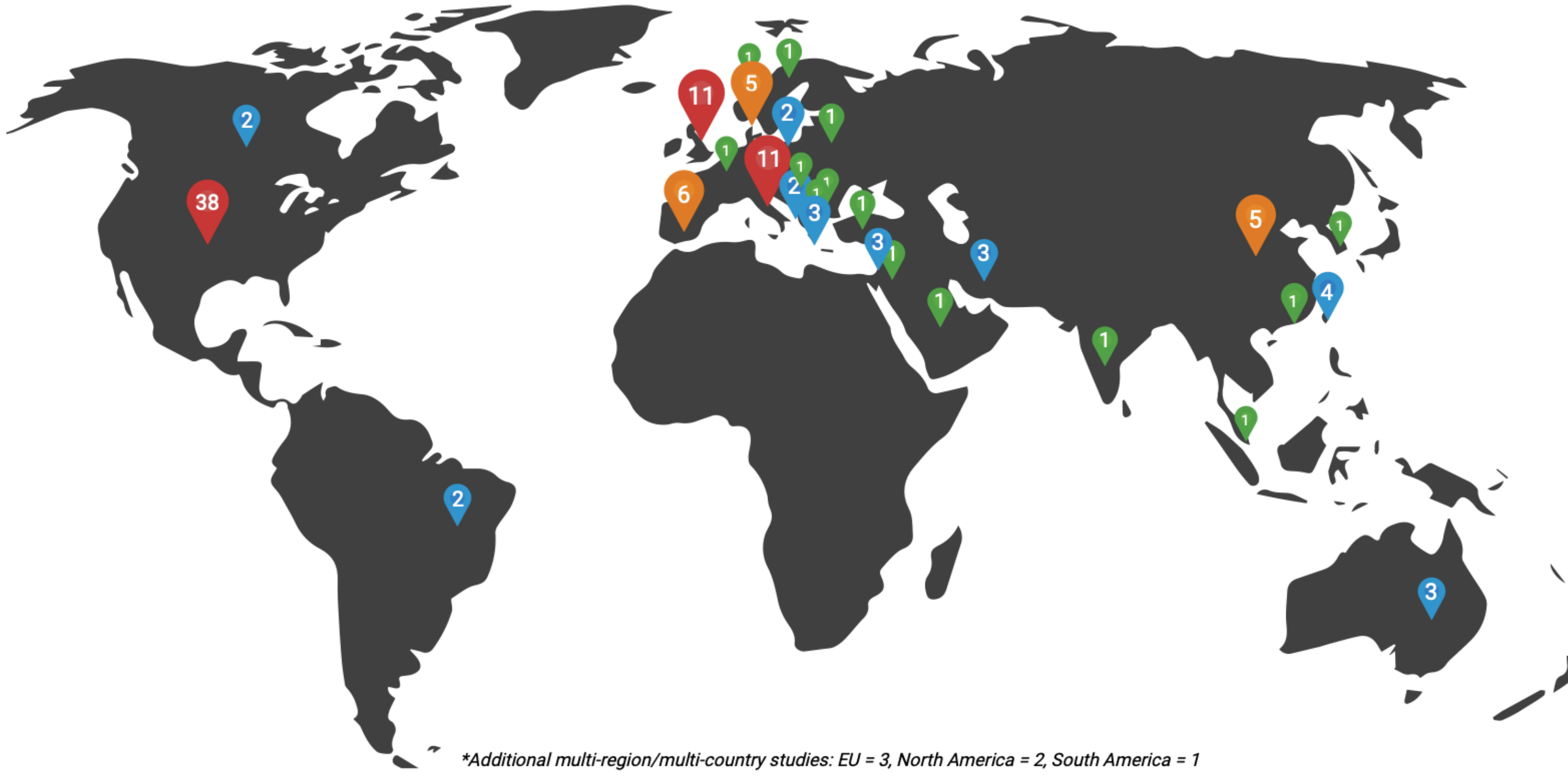
RESULTS

Study Distributions and Statistics

- N = 124** 31 countries: 41% Europe, 34% North America
- US studies more likely to be a specific age range (61%) than Italy (27%) and UK (18%)
- Only 9% of studies used regionally or national representative populations
 - 91% of studies used a convenience sample**



- Most frequent rUTI definition: 2 symptomatic UTIs/6m or 3/1y**
 - most frequent in all countries with >1 study except Greece and Netherlands
 - 74% of North American studies
 - 55% of European studies
- 56% overall cited rUTI definition, 40% of studies included urine culture (US = 39%, highest: Taiwan (100%), Spain (83%), Israel (66%)
- Majority **public institution** studies: US (65%), Italy (64%)
- Majority **multi-center** studies: UK (70%), Netherlands (60%), Spain (60%)



CONCLUSIONS

- 124 rUTI publications from 31 countries met study criteria → **Studies on rUTI are globally of small scale**
 - Large majority from North America and Europe** → no studies from Africa, limited in South America & Australia
 - Only 38 studies with 200+ participants**
 - Only 11 studies using regionally/nationally representative study populations**
- Definitions used for rUTI are heterogeneous, **majority did not include urine culture** → **Difficult comparison between studies**
- Regardless of study location, most studies cited prevalence estimates for rUTI derived from US based populations → **more studies are needed to ascertain the true prevalence of rUTI outside of North America**

Results Continued

RUTI study characteristics across regions									
	OVERALL	North America	Central & South America	Europe	Middle East	East Asia & Pacific	South & Southeast Asia	Oceania	Multi-region
Total studies	124	42	3	51	8	12	1	3	4
TYPE OF STUDY									
Prospective	65	20	1	29	3	10	1	1	
Retrospective	35	13	1	14	4	2		1	
Cross sectional analysis	5	3		1	1				
Review	11	4	1	1				1	4
Other	8	2		6					
TYPE OF CENTER*									
Multi-center	29	4		18	4	2	1		
Private	9	4	1	1	1	2			
Public	52	24	1	18	2	6		1	
Both	1	1							
Unknown	16	3		9	1	2		1	
LEVEL OF CENTER*									
Primary	17	4	1	10	2				
Secondary	8	1		4	2	1			
Tertiary	51	24	1	15	3	7		1	
Quaternary	2	1		1					
Multiple/Other	3	2		1					
Unknown	24	3		15	1	3	1	1	
STUDY POPULATION									
All ages	74	19	3	36	1	9		3	3
Premenopausal	26	10		11	3	1	1		
Postmenopausal	24	13		4	4	2			1
DEFINITION OF RUTI									
2 UTI/6m or 3 UTI/1y	77	31	2	28	6	6	1	1	2
2 UTI/6m	2	1	1						
3 UTI/1y	18	1		12		4		1	
2 UTI/1y	7	3		3		1			
Other	20	6		8	2	1		1	2
URINE CULTURE CONFIRMATION									
Yes	50	17		19	5	7			2
No	74	25	3	32	3	5	1	3	2
DEFINITION OF RUTI CITED									
Yes	69	21	3	30	3	8		2	2
No	55	21		21	5	4	1	1	2
ACKNOWLEDGED BIAS									
Yes	100	39	2	37	5	9	1	3	4
No	24	3	1	14	3	3			
*Studies that did not involve direct patient care or patient medical records were excluded from this analysis									

- Bias acknowledgement:** highest in US (95%), >50% in all countries >5 studies
 - Methodology = 54%** (subjective, qualitative approaches, no control group, lack of blinding, incompletely defined parameters)
 - Population = 44%** (small sample size, heterogeneous/ non-representative study populations)
 - Missing data and uncontrolled confounders = 10%**
 - Retrospective bias = 13%**
 - Response rate bias = 13%**
- rUTI prevalence citations: 13 articles with 5+ citations
 - US (n=10), UK (n=1), Finland (n=1), Netherlands (n=1)
 - Years 1975 – 2016