PAN AMERICAN JOURNAL OF PUBLIC HEALTH 100 YEARS

Special report

Current status of the knowledge on the epidemiology of tungiasis in the Americas

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Suggested citation Saboyá-Díaz MI, Nicholls RS, Castellanos LG, Feldmeier H. Current status of the knowledge on the epidemiology of tungiasis in the Americas. Rev Panam Salud Publica. 2022;46:e124. https://doi.org/10.26633/RPSP.2022.124

ABSTRACT

Objectives. To present the state-of-the-knowledge on the epidemiology of tungiasis in the Region of the Americas.

Methods. A search of publications on the epidemiology of tungiasis in the Americas was performed in PubMed and LILACS databases from January 2007 to June 2021. In addition, a manual literature search on articles on the epidemiology of tungiasis was performed.

Results. A total of 83 articles were analyzed which contained relevant information on tungiasis cases and their geographical distribution, prevalence and risk factors, life cycle, sites where transmission takes place, and zoonotic aspects. The on-host and off-host life cycles have been researched in detail. In certain contexts, the whole life cycle is completed indoors enabling transmission around the whole year. Cases were reported from 10 countries; 71% of them were from Brazil. In the general population, the prevalence varied between 1.0% and 82.6% according to the settings. Age-specific prevalence indicated that children and the elderly bear the highest disease burden. Risk factor studies indicate that tungiasis is associated with severe poverty.

Conclusions. In the Americas, there are important gaps in information and knowledge of tungiasis. Understanding the burden, epidemiology, distribution, magnitude, related risk factors, and reservoirs, among others, is needed to develop and implement integrated control measures tailored to the context and patterns of transmission in the affected communities.

Keywords Tungiasis; skin diseases; epidemiology; Americas

Tungiasis is a parasitic disease of the skin caused by the female sand flea *Tunga penetrans*, which is the only multicellular parasite originated and spread in the Americas and transferred to sub-Saharan Africa in the 19th century (1). Tungiasis is considered a neglected tropical disease and is caused by the penetration of the female flea into the skin (usually on the feet), causing an intense inflammatory response leading to itching and pain. In endemic areas, the disease occurs with acute weakening and chronic morbidity that can even progress to deformation and mutilation (2).

There is convincing evidence that tungiasis was present and common in the Americas in pre-Hispanic times (3). The disease is still common in several countries in Central and South America and the Caribbean, although the precise spatial distribution is not known (4). Tungiasis thrives where living conditions are precarious, including in shantytowns, rural communities in the hinterland, as well as, in villages along the coast of the Atlantic Ocean (4). Tungiasis is one of the neglected tropical diseases included in the *Road Map for neglected tropical diseases 2021-2030* of the World Health Organization (WHO) for which integrated interventions should be implemented to reduce the burden (5). Data on prevalence, risk factors, and zoonotic aspects of tungiasis in the Americas are scarce and have never been analyzed systematically. The objective of this study is to present the

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state-of-the-knowledge on the epidemiology of tungiasis in the Region of the Americas.

METHODS

A search of studies reporting data on tungiasis cases and their geographical distribution, prevalence and risk factors, life cycle, sites where transmission takes place, and zoonotic aspects was performed restricted to countries in the Region of the Americas. The search was conducted in PubMed and LILACS databases for studies published from January 2007 to June 2021. One of the authors (HF) had performed an identical literature search in December 2006 and had read and analyzed all publications on tungiasis in the Americas published before 2006.

First, it was checked whether entries existed for at least one of the many local terms and designations reported or in use for tungiasis in the Americas: *aagrani, aju, atten, bicho del pie, bicho de pé, bicho do porco, catebuco, chego, chegoe, chik, chica, chicque, chigger, chigoe flea, ckicke, jatecuba, jigger, jiggers, kuti, nigua, nihua, niua, pico, pigue, piki, pique, piqui, puce-chique, puce de sable, pulga de areia*, sand flea, sandflea disease, *seccec, sicca, sico, sike, tchike, tom, tschike, tungay, tungiase, tungose, tü, wenca, xique.*

Second, a search was performed using the keyword [tungiasis] OR [any of the local designations identified in step one] for studies of the Americas. This approach was used since a preliminary search using epidemiology-related keywords, such as life cycle, transmission, disease occurrence, prevalence, incidence, risk factor AND tungiasis did not retrieve any relevant publication. No language restrictions were applied for the search in PubMed. The search in LILACS was limited to Spanish and Portuguese.

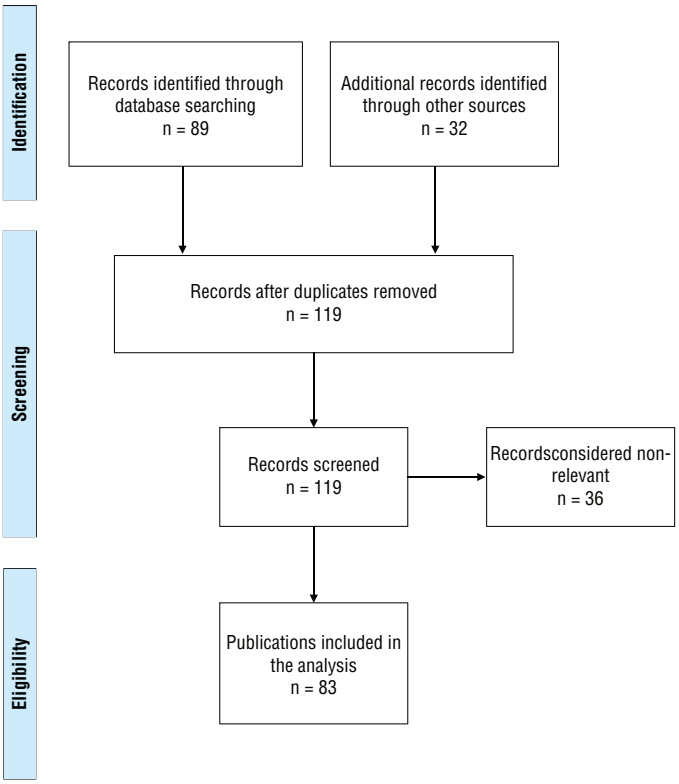
In addition, we searched the grey literature by seeking doctorate theses and other types of research not published in scientific journals by contacting scientists known to have worked on tungiasis in the Americas. For this search, no time restrictions were applied. Finally, reference lists of articles published between 2007 and 2021 were hand-searched for publications with relevant information according to the objective of this study. Here, too, no time restrictions were applied.

Since analytical studies were scarce, case series and case reports, and descriptive studies on the life cycle, transmission, and zoonotic aspects of tungiasis, were also included. The abstracts of publications from the Americas were reviewed for relevance by one of the authors (HF). An article was considered relevant for analysis if in the abstract and keywords one of the following terms were mentioned: life cycle, transmission, disease occurrence, prevalence, incidence, seasonal variation, risk factor, zoonosis, or animal reservoir. Since the great majority of the published studies contained qualitative rather than quantitative data, a narrative style was used to summarize the current knowledge on the epidemiology of tungiasis in the Americas.

RESULTS

The initial search identified a total of 119 publications. After an initial screening, 36 were considered not relevant for the objective of the study, and 83 were included for analysis (Figure 1). Six publications were studies performed before 2000, 40 between 2000 and 2010, and 37 between 2011 and 2021.

FIGURE 1. Flow diagram of the search and screening of publications on the epidemiology of tungiasis in the Americas



Parasite, life cycle, and transmission

Almost all the existing data on the life cycle of *T. penetrans* has been generated in the Region of Americas. *T. penetrans* parasitizes at least 26 species of domestic, sylvatic, and synanthropic animals (1) (Table 1). The remarkably broad host-specificity of *T. penetrans* is reflected by animals as different as anteaters and armadillos, on one side of the host spectrum, and monkeys and jaguars on the other side (6). In contrast, *T. trimamillata* and *T. hexalobulata* parasitize only a limited number of animal species and the spatial occurrence of these Tunga species is restricted (7).

In the on-host cycle, non-fertilized sand flea females penetrate the epidermis of their host, where they hypertrophy by a factor of 2 000 within a week. Through its last abdominal segments, the flea remains in contact with the environment to breathe, defecate, copulate, and expel eggs. After expelling about 100 eggs, it dies in situ within four to six weeks (8). The on-host development is well understood, and a staging system was developed, named the Fortaleza classification (8). Stages I-III of the Fortaleza classification reflect the presence of a viable parasite, stage IV indicates a dying/decaying parasite and stage V is a residual lesion (8).

The off-host cycle is similar to other *siphonaptera*, requiring a dry environment and soil shielded from direct sunlight (9). Under ideal circumstances, the off-host phase of *T. penetrans* is completed within 20 days (9,10). In dwellings without a solid floor, the whole life cycle can be completed indoors: eggs expelled during sleep may fall directly down to the floor, or when shaking the bedding or turning a mat or mattress. Eggs

TABLE 1. Domestic, sylvatic and synanthropic animal species known to be infected with *T. penetrans* in the Americas

Order	Species	English/local designation
Artiodactyla	*Bos taurus*	Cattle
	Sus scrofa domesticus	Pig
	Sus seroja	Wild boar
	Copra hircus	Wild goat
	Ovis aries	Sheep
	Pecari tajacu	Collared pecari
	Lama glama	Llama
	Vicugna vicugna	Vicuña
	Potamochoerus porcus	Red river hog
Carnivora	*Canis familiaris*	Dog
	Felis catus	Cat
	Panthera onca	Jaguar
Perissodactyla	*Tapirus terrestres*	South American tapir
	Equus cabalus	Horse
Pilosa	*Tamandua tetradactyla*	Southern tamandua
	Myrmecophaga tridactyla	Giant anteater
Primates	*Alouatta guariba clamitans*	Brown howler monkey
Rodentia	*Cuniculus paca*	Lowland paca
	Dasyprocta punctata	Central American agouti
	Mus musculus	House mouse
	Rattus rattus	Black rat
	Rattus norvegicus	Brown rat
	Cavia porcellus	Guinea pig
	Cavia aperea	Brazilian guinea pig
	Myoprocta acouchy	Red acouchi
	Hystrix species	Porcupine

Source: prepared by authors, based on data from references 1 and 78.

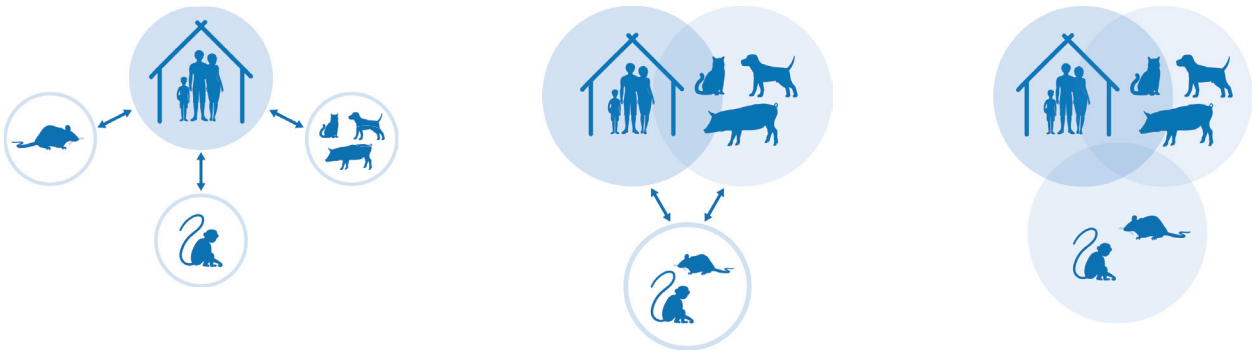
are transferred to crevices and holes when the floor is swept with a broom. The larvae feed on the organic material present in cracks and holes (9). Adult females attach to and penetrate the skin when a person places their feet or other parts of the body on the contaminated floor (11). In resource-poor settings, school classrooms without a solid floor may also constitute breeding and transmission sites (4).

In a tropical environment, four life cycles exist: human, domestic, synanthropic, and sylvatic animal (4) (Figure 2). These cycles may overlap, partially or totally, depending on the context. In the human and domestic cycles, the transmission usually occurs peridomiciliary, but under favorable circumstances, it will also be intradomiciliary. In Brazil, for instance, intradomiciliary transmission was shown to occur in resource-poor urban settings where the floors of the houses consisted of sand (9,12). By placing flea traps on the floors in a resource-poor town in Rio de Janeiro State, Brazil, adult *T. penetrans* fleas were caught in 35 out of 100 traps placed overnight indicating that intradomiciliary transmission was common (13). In traditional Amerindian communities in the Amazon lowlands, transmission seems to predominantly occur intradomiciliary (11,14) (Table 2). When the transmission is mainly indoors, incident cases will appear the whole year round (2,14).

Exactly where transmission occurs can be assessed by placing laboratory-raised Wistar rats in cages on the ground and monitoring the animals for infection (15). In a study in a resource-poor rural community in Ceará State, Northeast Brazil, transmission took place at the far end of the compound where waste was deposited and rodents were common (15).

Under certain circumstances, the transmission of adult females from person to person may occur when a health care provider comes into close contact with a patient who has free-running sand fleas on the skin such as during examination and treatment (16,17).

FIGURE 2. Life cycles of *T. penetrans* existing in a tropical environment



A. Human, domestic, synanthropic, and sylvatic animal cycles coexist

B. Human and domestic animal cycles overlap

C. Human, domestic, synanthropic, and sylvatic animal cycles overlap

Source: adapted under http://creativecommons.org/licenses/by/4.0/ from Feldmeier H, Heukelbach J, Ugbomoiko US, Sentongo E, Mbabazi P, von Samson-Himmelstjerna G, et al. Tungiasis: a neglected disease with many challenges for global public health. PLoS Negl Trop Dis [Internet]. 2014 Oct 30;8(10):e3133–e3133. doi: https://doi.org/10.1371/journal.pntd.0003133

TABLE 2. Evidence for intradomiciliary transmission

Area/Setting	Frequency of off-host stages in soil samples collected	
	Intradomiciliary[a]	Peridomiciliary
Resource-poor urban community, Fortaleza, Ceará state; Brazil	22.6%	0%
Yanomami community, Roraima state; Brazil	32.0% [a]	0%
Xavante community, Mato Grosso state; Brazil	57.1%	0%

[a]Samples collected below bedsteads or hammocks or from resting places of dogs contained significantly more often *T. penetrans* larvae and pupae than samples collected from other sites of the floor.
Source: prepared by authors, based on data from 9 and 12.

Disease occurrence and spatial distribution

No systematic studies on the spatial distribution of tungiasis in the Americas were identified. Therefore, case reports and case series of travelers returning from a circumscribed area, migrants originating from an endemic area, and tungiasis in people who never left a certain geographic area in their home country, were analyzed to provide hints on the spatial distribution of tungiasis.

Between 2003 and 2021 a total of 135 cases were reported for which the geographical origin of tungiasis was known. Ninety-six out of the 135 cases (71%) were reported from Brazil (18–33). In Brazil, cases were reported from Amazonas and Roraima States in the North of the country to Rio Grande do Sul State in the extreme South. Cases were also reported, in decreasing order of frequency, from Venezuela (34–38), Ecuador (39–42), Argentina (43–45), Peru (46,47), Mexico (48,49), Paraguay (50), Barbados (32), Colombia (51,52), and Bolivia (53). In a study of international travelers who stayed one to three weeks at beaches near Fortaleza, Northeast Brazil, 3.2% of the travelers acquired tungiasis (26).

Recently, a geostatistical approach was used to map the spatial distribution of tungiasis based on an ecological niche model (54). The authors identified Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guyana, Guatemala, Haiti, Mexico, Paraguay, Peru, Trinidad and Tobago, and Venezuela as countries in which tungiasis may occur or probably occurs.

Prevalence

Population-based studies were performed in Argentina (55), Brazil (13,56–65), Haiti (66,67), Trinidad and Tobago (68,69), and Venezuela (70). Prevalence ranged between 1.0% in the general population in a rural town in Amazonas State, Brazil (65) and 82.6% in a rural community in Rio Grande do Sul State, Brazil (56). However, except for six studies performed in Brazil (13,57–60,63), it remained unclear how the study population was selected, whether the sample examined was representative, and whether the study was performed in the dry or rainy season. In studies in which the age-specific prevalence was reported, children constantly showed the highest prevalence (13,56–58,60,62). It is important to note that a high prevalence at the community level was associated with a high intensity of infection and severe morbidity (58,71–73).

A constant finding was an S-shaped age-specific prevalence curve with a peak in children 5 to 12 years and a second peak in people older than 60 years (13,56,57,59,60,62,68,70). Typically, women were less frequently infected than men, irrespective of age (57-64, 69). These findings suggest that children and the elderly are the most vulnerable population groups and bear the highest disease burden.

How intense transmission can be in a resource-poor setting is demonstrated by a study in a *favela* in Fortaleza, Northeast Brazil. All individuals who re-entered the community after being out of the endemic area for some time became infected within three weeks (74). In this setting, an average of 15 new fleas penetrated each individual per week.

Seasonal variation

Three community-based studies performed in semi-arid Northeast Brazil indicate a characteristic variation of prevalence and incidence according to seasons of the year (60,64,75). There was a significant inverse correlation between precipitation and the prevalence of tungiasis (60). Prevalence started to increase as soon as the rainy season ended and peaked at the end of the dry season whereafter it decreased. During the dry season, the prevalence can be three times as high as in the rainy season.

Risk factors

Very few studies attempted to identify risk factors for the presence of tungiasis and the severity of the disease (Table 3). Only two studies were adequately designed to allow the calculation of odds ratios after multiple regression analysis (62,76). Poor construction of the house, presence of animals on the compound, low level of education, and not using shoes regularly were the exposure variables with the highest odds ratio. Poor housing characteristics and the absence of a solid floor turned out to be independent risk factors for the presence of tungiasis and severe disease (76). Studies performed in rural Argentina and rural Venezuela, and in Santa Catarina State, Brazil described low economic status, presence of garbage on the compound, and lack of a solid floor as risk factors (55,61,62,64,70). However, these studies were not conceived as analytical studies and therefore do not allow a conclusion. There is circumstantial evidence that tungiasis is not only causally related to poverty but that it also perpetuates poverty (77).

Zoonotic aspects of tungiasis

Recently, the zoonotic aspects of tungiasis in the Americas have been reviewed in detail (78). In Brazil alone, 11 species of domestic, sylvatic synanthropic animals are known to be hosts for *T. penetrans* (78). Presumably, in the Amazon rainforest, many other species serve as hosts for *T. penetrans* (1).

In urban areas, dogs kept as pet animals were found to be the most frequently infected animal species with a prevalence of up to 87% (78). Infected cats were identified as animal reservoirs in rural and urban resource-poor communities, with prevalence ranging between 8.3% and 45.6% (78). Pigs were the most frequently infected livestock animal with a prevalence between 16.6% and 78% (78). In a resource-poor urban community in Fortaleza, Northeast Brazil, 41.2% of *Rattus rattus* were found to be infected (74).

To which extent the different animal species contribute to human infection seems to depend on the setting and

TABLE 3. Risk factors for the presence of tungiasis

Country	Setting	Type of study	Number of participants	Risk factors observed	Remarks	Reference
Argentina	Resource-poor community in Corrientes Province	Observational study	182	Presence of dogs on the compound		(55)
Brazil	Rural towns in Santa Catarina state	Observational study	917	Low educational level		(61)
Brazil	Resource-poor rural community, Ceará state	Analytical study	620	Poor housing characteristics (OR 4.7); lack of education (OR 4.1); presence of animals on compound (OR 1.9)	Poor housing characteristics and absence of a solid floor were independent risk factors for presence of tungiasis **and** a high intensity of infection; wearing closed shoes had no protective effect	(76)
Brazil	Resource-poor urban community, Natal, Rio Grande do Norte State	Analytical study	310	Low educational level (OR 4.1); not using shoes regularly (OR 13.7)	A low educational level and regularly walking barefoot were independent risk factors	(62)
Brazil	Resource-poor urban community in Fortaleza	Observational study	142	Extremely poor housing [a]		(63)
Venezuela	Cañifle community, Sucre municipality, Sucre State	Observational study	131	Presence of dogs and garbage on compound; lack of solid floor; low educational level		(70)

[a] Construction made from recycled dump material, absence of a solid floor.
Source: prepared by authors, based on data from referenced studies.

sociocultural practices. A study in a rural community in Ceará State, Northeast Brazil, showed that of six mammal species suitable as hosts for *T. penetrans*, only cats and dogs were infected (79). There was a positive correlation between the intensity of the infection in animals and that in humans. Living in a household with an infected dog or cat increased the odds of the presence of tungiasis in household members by 1.9 (95% CI 1.1-3.4) (79).

DISCUSSION

Over the last two decades research performed in the Americas has substantially increased the knowledge of the epidemiology of tungiasis. Although data on the dynamics of transmission of tungiasis found in our study is limited to a few countries in the Americas, with most of the studies carried out in Brazil, the data highlight that the on-host and the off-host life cycle of *T. penetrans* are completed indoors in resource-poor settings. This causes cases to appear the whole year round, meaning that interventions need to be tailored to this type of transmission and sustained to reduce morbidity and prevent disabilities. However, it is also noticed that in some populations, transmission is seasonal. Understanding transmission patterns and dynamics in each context is fundamental to determining the type of interventions to reduce and hopefully interrupt transmission.

The number and diversity of animal species parasitized by *T. penetrans* and the remarkably broad host-specificity of sand flea in the Americas impose challenges to implementing control interventions for tungiasis in populations living already in vulnerable conditions. Integrated interventions must be based on a One Health approach and demand intersectoral work to reduce the burden of disease (80). Communities affected by tungiasis are commonly affected by other neglected tropical diseases, so integrated packages of interventions will benefit them and contribute to reducing their suffering caused by multiple diseases.

The extent of the geographical distribution of tungiasis in countries of the Region of the Americas is unknown. It is noticeable that the list of countries with reports of tungiasis in foreign travelers returning from endemic areas mirrored the list of countries where tungiasis may occur based on an ecological niche study (54). This might suggest that at least 13 countries in the Americas (Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guyana, Guatemala, Haiti, Mexico, Paraguay, Peru, Trinidad and Tobago, and Venezuela) should implement tungiasis surveillance systems to determine the distribution and magnitude of tungiasis and implement interventions accordingly.

Tungiasis in travelers returning from countries in the Americas seems to be often reported especially during holidays. Reports of tungiasis in foreign travelers returning from an endemic area support the findings from the ecological niche model. A study from Fortaleza, a tourist hot spot in Northeast Brazil, showed that 3.2% of foreign travelers who spent holidays in communities located at a beach in Ceará State acquired tungiasis (26). The risk to acquire tungiasis during holidays was four times as high as that for cutaneous *larva migrans* (26). Hence, tungiasis should be considered a health risk for travelers to endemic areas.

Community-based studies done in Brazil, Venezuela and Haiti showed that prevalence in the general population varied between 1.0% and 82.6%. A similar broad range of prevalence is known from tungiasis-endemic areas in sub-Saharan Africa (4,81,82). The highly diverging prevalence may be attributed to the socio-economic characteristics of the communities, differences in the accuracy of the diagnostic methods applied, and the time of year the study was performed. Studies from Northeast Brazil, a region with a semi-arid climate, showed that prevalence in the dry season is 1.5 to 3-fold higher than in the rainy season (59,60). A rapid assessment method has been developed and validated which allows the examination of several hundred individuals in a single day (83). If performed together with digital mapping technologies, disease occurrence and spatial distribution of tungiasis in a country can be reliably determined (2).

It is remarkable the finding of the S-shaped age-specific prevalence curve affecting children 5 to 12 years and the elderly of 60 years and over, and even more the finding of tungiasis affecting children ≤1 in Amerindian communities. This is surprising since children <1 year are usually carried on the hip or the back of their mother and should not have contact with the soil. Age-specific prevalence positively correlates with the intensity of tungiasis as measured by the number of embedded sand fleas (76). This allows the conclusion that children and the elderly are the most vulnerable part of the population and bear the highest disease burden. The S-shaped curve might indicate that in endemic areas with repeated re-infections a protective immunity against penetrating sand fleas does not develop, but in-depth studies on this aspect are needed for better characterization.

Tungiasis is a disease associated with poor living conditions, especially factors facilitating the transmission and reinfection as demonstrated in five of the six studies attempting to identify risk factors. However, only two studies from Brazil did allow to determine odds ratios (75). These studies showed that tungiasis transmission is maintained in communities with houses built from recycled material and without solid floors where families usually have a very low income diminishing their capacities to improve household conditions. This explains why within a country or region marginalized population groups bear the highest disease burden.

The findings of infection of jaguars and anteaters with *T. penetrans* in Brazil and Argentina (84–86), respectively, are indicative of ongoing transmission in natural environments and so of the risk of infection for tourists and residents entering those areas. Tungiasis in sylvatic environments is challenging for transmission interruption actions but information on preventive measures to avoid contact between the sand flea and the skin of humans is key in these areas.

Although this study did not meet the criteria for a systematic review, the authors followed a similar methodology to search for and analyze publications to better understand the current state of the knowledge on tungiasis epidemiology in the Region. This limitation may have affected the robustness of the findings, but it is clear the lack of knowledge of this neglected tropical disease in the Americas and the urgent need to support countries to implement surveillance of the disease and characterize the transmission in different contexts to tailor integrated interventions.

Our study showed that there are knowledge gaps on the distribution and magnitude of tungiasis in the Americas that prevent countries from implementing integrated actions to reduce morbidity. To close these gaps, combined efforts are urgently needed to understand important aspects such as:

- Identification of settings where tungiasis currently occurs including assessment of the burden of disease, knowledge of the age-specific and season-specific prevalence, and identification of the risk factors;
- Identification of most vulnerable population groups for severe disease and the predisposing risk factors;
- Identification of animal species that act as reservoirs/sources of infection in different settings;
- Development of entomological methods to better understand the transmission of *T. penetrans* in different settings; and
- Assessment of the socio-economic impact of tungiasis on the affected communities.

Understanding the transmission of tungiasis in the context of the affected communities will allow countries to develop One Health strategies to accelerate efforts toward reducing the burden of tungiasis as established in global and regional plans for neglected tropical diseases (5,87).

Conclusions

Research on *T. penetrans* and tungiasis performed in the Americas in the last two decades has substantially contributed to the current knowledge on the parasite and the disease. Nonetheless, there are important gaps in knowledge on the distribution and magnitude of the disease. Epidemiological surveillance of tungiasis in the Region of the Americas is urgently needed to identify the affected populations and the risk factors associated with its transmission in different settings. Implementation of affordable, integrated, and culturally accepted interventions to prevent tungiasis and reduce transmission in endemic communities is needed to reach the goals established in global and regional initiatives to eliminate neglected tropical diseases within which tungiasis is included.

Author contributions. MISD, HF conceived and designed the study; HF performed the study; HF, MISD organized and analyzed data; HF, MISD wrote the paper; MISD, HF, RSN, LGC reviewed and edited the paper; all authors reviewed and approved the final version.

Conflict of interest. None declared.

Funding. This work was developed by the Regional Program for Neglected Infectious Diseases of the Pan American Health Organization. The institutional funders supporting the work of the PAHO had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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Manuscript submitted on 13 December 2021. Revised version accepted for publication on 5 May 2022.

Estado actual del conocimiento sobre las características epidemiológicas de la tungiasis en la Región de las Américas

RESUMEN

Objetivos. Presentar el estado del conocimiento sobre las características epidemiológicas de la tungiasis en la Región de las Américas.
Métodos. Se hizo una búsqueda de publicaciones sobre las características epidemiológicas de la tungiasis en la Región en las bases de datos PubMed y LILACS en el período comprendido entre enero del 2007 y junio del 2021. Además, se realizó una búsqueda bibliográfica manual de artículos sobre las características epidemiológicas de la tungiasis.
Resultados. Se analizaron en total 83 artículos que contenían información pertinente sobre casos de tungiasis y su distribución geográfica, prevalencia y factores de riesgo, ciclo de vida, lugares donde se produce la transmisión y aspectos zoonóticos. Se investigaron en detalle los ciclos de vida dentro y fuera del huésped. En ciertos contextos, la totalidad del ciclo de vida se completa en espacios cerrados, lo que permite la transmisión durante todo el año. Se notificaron casos en 10 países, con 71% de los casos notificados en Brasil. En la población general, la prevalencia varió entre 1,0% y 82,6% según el entorno. La prevalencia específica por edad indica que la población infantil y las personas mayores tienen la mayor carga de morbilidad. Los estudios relativos a los factores de riesgo indican que la tungiasis está relacionada con la pobreza extrema.
Conclusiones. En la Región, hay lagunas importantes en la información y el conocimiento sobre la tungiasis. Es necesario comprender la carga, las características epidemiológicas, la distribución, la magnitud, los factores de riesgo relacionados y los reservorios, entre otros factores, para elaborar y aplicar medidas de control integradas adaptadas al contexto y los patrones de transmisión en las comunidades afectadas.

Palabras clave Tungiasis; enfermedades de la piel; epidemiología; Américas.

Situação atual do conhecimento sobre a epidemiologia da tungíase nas Américas

RESUMO

Objetivos. Apresentar o estado do conhecimento sobre a epidemiologia da tungíase na Região das Américas.
Métodos. Realizou-se uma pesquisa de estudos publicados de janeiro de 2007 a junho de 2021 sobre a epidemiologia da tungíase nas Américas nas bases de dados PubMed e LILACS, bem como uma pesquisa bibliográfica manual de artigos sobre a epidemiologia da tungíase.
Resultados. Analisou-se um total de 83 artigos com informações de interesse sobre casos de tungíase e sua distribuição geográfica, prevalência e fatores de risco, ciclo vital, locais de transmissão e aspectos zoonóticos. Os ciclos vitais dentro e fora do hospedeiro foram pesquisados em detalhes. Em determinados contextos, todo o ciclo vital ocorre em ambientes fechados, o que possibilita a transmissão durante todo o ano. Relataram-se casos de 10 países; 71% deles no Brasil. Na população em geral, a prevalência variou de 1,0% a 82,6%, de acordo com o local. A prevalência específica por idade mostrou que a maior carga de doença ocorre em crianças e pessoas idosas. Estudos dos fatores de risco indicam que a tungíase está associada à extrema pobreza.
Conclusões. Nas Américas, existem importantes lacunas de informação e conhecimento sobre a tungíase. É necessário compreender fatores como carga, epidemiologia, distribuição, magnitude, fatores de risco relacionados e reservatórios, entre outros, para desenvolver e implementar medidas integradas de controle adequadas ao contexto e aos padrões de transmissão nas comunidades afetadas.

Palavras-chave Tungíase; dermatopatias; epidemiologia; América.