UK Health Security Agency

Oropouche virus

A rapid evidence gap map

Contents

Main messages

The purpose of this rapid evidence gap map (EGM) (search date: 5 June 2025) was to identify and categorise the available evidence on Oropouche virus to inform research prioritisation as part of the *Bunyaviricetes* Collaborative Open Research Consortia (CORC) led by the UK Health Security Agency (UKHSA) on behalf of the World Health Organization (WHO).

In total, 269 original research studies were included in this EGM (available at Evidence gap map: Oropouche virus) and categorised by area of research, study design, and geographic region.

Epidemiology and surveillance in humans of Oropouche virus was the area of research for which the most evidence was identified (152 out of 269 studies, which mainly reported on 'surveillance in humans' or 'natural history and clinical manifestations', with more limited evidence identified on 'modes of transmission'), followed by virology and pathogenesis (92 studies, which mainly reported on 'viral genomics', with more limited evidence identified for other categories, such as 'host immune responses', 'virus tropism', and 'viral replicative mechanisms'), vector and ecology (57 studies), diagnostics (25 studies), medical countermeasures (14 studies), and public health and social measures (one study). Some studies reported on more than one area of research. Of the 269 studies, 233 reported data and findings from South America (205 studies) or Central America and the Caribbean (28 studies), reflecting the geographical epidemiology of Oropouche virus. In addition, 32 studies reported data and findings from Europe, 28 from North America, and 3 from Asia and Oceania (some studies reported on multiple geographic areas). No studies from Africa were identified.

In terms of study design, 122 studies were observational (mainly cross-sectional and descriptive studies), 74 were laboratory studies, 20 were zoonotic field studies, and 11 were modelling studies. The remaining 42 were studies with multiple designs (for example, a paper that reported on findings from a cross-sectional study together with findings from a laboratory study or zoonotic field study).

In summary, most of the evidence identified on Oropouche virus was based on cross-sectional and descriptive studies reporting on epidemiology and surveillance in humans, followed by laboratory studies on viral genomics.

Evidence gaps were identified for medical countermeasures for Oropouche virus (particularly experimental studies in humans), correlates of immune protection in the host, and public health and social measures to control the virus.

Background

Oropouche virus (*Orthobunyavirus oropoucheense*) is a member of the Simbu subgroup of the *Orthobunyavirus* genus in the viral family *Peribunyaviridae* (1). It is an arthropod-borne virus, and the biting midge *Culicoides paraensis* is considered to be the main vector for transmission to humans.

Up to late 2023, most known outbreaks of Oropouche virus were located in or near to the Amazon basin region, mainly in Brazil and Peru as well as in neighbouring countries including Bolivia, Colombia and Ecuador (2). In 2024, outbreaks of Oropouche virus were reported for the first time in Cuba (3), a country with a very different ecosystem to the Amazon basin, which may warrant research into additional factors involved in Oropouche virus transmission. In January 2025, the Pan American Health Organization (PAHO), published a research agenda for Oropouche virus which highlights several research priorities (4).

The *Peribunyaviridae* family is one of 24 pathogen families included in UKHSA's priority pathogen tool for guiding research and development funding in England (5), and Oropouche virus is listed as a notable pathogen in this family. As part of wider efforts to increase pandemic preparedness, UKHSA is leading CORC on behalf of the WHO, including one for viruses in the *Bunyaviricetes* class and another specifically for the *Arenaviridae* family (6). An objective for each CORC is to produce a research and development roadmap describing priorities for outbreak preparedness. In this context, the aim of this work was to produce a rapid EGM of the available evidence on Oropouche virus to identify areas of research where evidence already exists and where there are evidence gaps to inform research prioritisation for the *Bunyaviricetes* CORC.

Purpose

The purpose of this work was to produce a rapid EGM to identify and categorise the available evidence on Oropouche virus by area of research, study design and geographic region.

The review question as defined in the protocol was:

- what evidence is available on Oropouche virus?

Methods

Review process

A rapid EGM was produced, following streamlined systematic methods to accelerate the review process (7). Full details on the methodology are provided in Annexe A, with the database search strategies in Annexe B. A protocol was produced a priori and is available on request.

Database searches were undertaken by an information scientist to identify primary studies published (or available as preprints). Searches were performed on 6 February 2025 (Ovid Medline ALL, Ovid Embase, Ovid Global Health and Web of Science) and 7 February 2025 (medRxiv, bioRxiv, and LILACS PLUS). No date limits were used for the searches.

A grey literature search of 7 sources was conducted by an information scientist on 12 and 13 February 2025 (see Annexe A for the list of sources that were searched).

All database and grey literature searches were updated on 5 June 2025 to identify additional studies that were published, or indexed, after the original search was conducted.

Screening of search results (databases and grey literature) was done using EPPI-Reviewer web version (8). Title and abstract screening was completed in duplicate by 2 reviewers for 20% of the records. The remainder were screened by one reviewer. The machine learning assisted screening system in EPPI-Reviewer was used to screen the original database search results in order of likely relevance. For full text screening, 5% of the records included on title and abstract were screened in duplicate by 2 reviewers in a pilot phase. The remainder were screened on full text by one reviewer and checked by a second.

Members from the *Bunyaviricetes* CORC were consulted to identify additional papers that had not been identified during the searches.

Reference lists of relevant systematic reviews and EGMs identified during the searches (including consultation with CORC members) were checked by one reviewer to identify additional primary studies meeting the inclusion criteria. Data extraction was done using EPPI-Reviewer web version (8). Data extraction was limited to the data needed for the map, using pre-specified codes to categorise the area of research, study design, and geographic region for each study. Coding was done in duplicate by 2 reviewers for 10% of the included studies, with the remainder conducted by one reviewer and checked by a second.

Visual synthesis was performed using EPPI-Mapper (9) to create an interactive EGM using the coding extracted to visualise the evidence identified on Oropouche virus by area of research, study design, and geographic region.

Critical appraisal of the included studies was not conducted.

Eligibility criteria

The inclusion and exclusion criteria are provided in Annexe A (Table A.1).

All primary studies (including human and animal studies) that reported on Oropouche virus were eligible for inclusion. This included all primary study designs, including observational studies, studies in laboratory settings and modelling studies. Guidelines, opinion pieces and reviews (systematic or narrative) were excluded. There were no limitations on settings, countries or language. Primary studies published in peer-reviewed journals, as preprints, or as grey literature were all considered for inclusion (except for conference abstracts, theses, and books or book chapters, which were excluded).

Evidence gap map framework

The framework for the EGM was developed at the protocol stage, with input from a range of topic experts (including in review methods, virology and entomology).

It was agreed to display the studies by area of research in columns (main category and sub-categories), study design in rows (main category and sub-categories) and geographic region in the third dimension (colour). The categories and sub-categories for each dimension are presented below.

The main categories and sub-categories used to map the areas of research were:

- epidemiology and surveillance in humans:
  - natural history and clinical manifestations
  - modes of transmission
  - surveillance in humans
  - other [note 1]

- vector and ecology:
  - vector competence
  - surveillance in arthropod vectors
  - surveillance in animal reservoirs
  - climate and environmental factors

- virology and pathogenesis:
  - host immune responses
  - viral genomics
  - virus tropism
  - viral replicative mechanisms
  - other [note 1]

- diagnostics:
  - serological diagnostics
  - molecular diagnostics
  - clinical diagnostics
  - viral sequencing
  - assay standards
  - other [note 1]

- medical countermeasures:
  - antivirals
  - neutralising antibodies
  - vaccines

- public health and social measures:
  - vector control strategies
  - personal protective equipment (PPE) and infection prevention control (IPC)
  - information, health education and behavioural interventions
  - other [note 1]

Note 1: The subcategory ‘other’ was added for some areas of research after the initial mapping was completed to categorise studies that did not fit into the existing subcategories.

The main categories and sub-categories used to map the study design were:

- experimental studies in humans:
  - randomised controlled trials
  - non-randomised controlled trials
  - other trials

- observational studies in humans:
  - longitudinal studies
  - cross-sectional studies
  - other analytical studies
  - outbreak investigations
  - case reports and case series
  - other descriptive studies

- laboratory studies:
  - animal studies
  - entomological studies
  - in vitro studies
  - genome sequencing studies
  - other laboratory studies

- zoonotic field studies
- modelling studies
- studies with multiple designs (for example, a paper that reported on an observational study in humans and a laboratory study or zoonotic field study)

The categories for the geographic regions (limited to 6 categories for the third dimension) were:

- Africa
- Asia and Oceania
- Central America and the Caribbean
- Europe
- North America
- South America

Evidence

Search results

The initial database searches (conducted on 6 and 7 February 2025) returned 3,557 records. After removal of duplicates using Deduklick (10) and EPPI-Reviewer (8), 2,320 records were screened on title and abstract. Of these, 464 full text articles were sought for retrieval, of which 452 were assessed for eligibility (12 could not be retrieved), and 204 were included.

The initial grey literature searches (conducted on 12 and 13 February 2025) returned 275 records. After de-duplication using Endnote and EPPI-Reviewer, 218 records were screened on title and abstract. Of these, 65 full text articles were assessed for eligibility and 26 were included.

A further 4 unique studies were identified by searching reference lists of relevant systematic reviews (11 to 17). All 4 studies met the inclusion criteria and were included in the review.

Four papers were identified by consultation with members of the *Bunyaviricetes* CORC in May 2025, which were all excluded at title and abstract screening (18 to 21). Three of the papers had been identified by the database searches, and the other was excluded based on our eligibility criteria (due to wrong concept).

The database search update (conducted on 5 June 2025) returned 239 records. After de-duplication (including against the initial database search results), 106 records were screened on title and abstract. Of these, 66 records were screened on full text and 32 were included in the review. Peer-reviewed versions of 3 preprints that had been identified in the initial database search were identified in the database search update. These were excluded as duplicates and not counted as new studies in the search update; instead, the preprints from the initial search were replaced with the peer-reviewed articles.

The grey literature searches update (conducted on 5 June 2025) returned 11 records. After removal of duplicates, 6 records were screened on title and abstract. All 6 full text articles were assessed for eligibility, none of which met the inclusion criteria for the review.

A total of 305 records were identified in a scoping review and EGM developed by PAHO on Oropouche virus, of which 3 unique studies met the inclusion criteria for our review (22). Of these 305 records, 297 were excluded on title and abstract screening and five on full-text screening with the majority excluded due to wrong study design, wrong concept or wrong publication type. This is because the eligibility criteria of the work conducted by PAHO was wider than our eligibility criteria (for instance, systematic review, editorial or commentary were included in the PAHO map but not in ours).

In total, 269 studies were included and mapped into the EGM. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) diagrams for the initial search and search update are provided in Annexe A.

The list of the 332 records excluded on full text (248 from the initial database search, 39 from the initial grey literature searches, 34 from the database search update, and 11 from the grey literature search update) can be found in Annexe C.

Evidence identified

The study designs of the 269 included studies were:

- 122 observational studies in humans (3, 23 to 143)
- 74 laboratory studies (144 to 217)
- 42 studies with multiple designs (218 to 259)
- 20 zoonotic field studies (260 to 279)
- 11 modelling studies (280 to 290)

No experimental studies in humans were identified.

For publication type, 227 of the 269 included studies were published in peer-reviewed journals, 27 were grey literature reports, and 15 were preprints.

In terms of area of research, of the 269 included studies (some studies reported on more than one area of research):

- 152 reported on epidemiology and surveillance in humans (3, 23 to 51, 53, 54, 56 to 117, 119 to 143, 150, 163, 176, 177, 218, 219, 221 to 223, 225 to 234, 236, 242, 244, 245, 248 to 250, 253, 255, 257 to 259, 282, 286)
- 92 on virology and pathogenesis (25, 26, 28, 30, 33, 36,39 to 41, 52, 53, 55, 59, 60, 71, 75, 78, 92, 95, 96, 111, 127, 129, 131, 144, 145, 147 to 154, 156, 158 to 163, 165, 168 to 170, 173, 176 to 178, 191 to 193, 197 to 202, 206 to 211, 213, 215, 218, 219, 221, 223, 226, 228, 230, 231, 233, 234, 239, 243, 244, 246, 251, 252, 255 to 259, 266, 273, 274, 283, 290)
- 57 on vector and ecology (49, 164 to 166, 172, 175, 184, 187 to 189, 204, 219, 221 to 223, 225, 227 to 233, 236, 242, 244 to 246, 248 to 250, 253, 260 to 279, 284, 285, 287, 288, 290)
- 25 on diagnostics (54, 155, 167, 171, 179 to 183, 185, 186, 190, 194 to 196, 203, 212, 214, 217, 220, 235, 241, 258, 281, 282)
- 14 on medical countermeasures (146, 157, 174, 205, 216, 224, 237, 238, 240, 241, 247, 254, 280, 289)
- one on public health and social measures (118)

For geographic region, of the 269 included studies (some studies reported on more than one geographic region):

- 205 were from South America (23 to 25, 27, 28, 30, 31,33, 34, 37 to 43, 45 to 47, 49 to 54, 56 to 59, 61, 65, 68 to 72, 74 to 76, 78, 79, 81, 82, 85 to 89, 92, 94 to 111, 113 to 134, 136 to 144, 147 to 152, 154 to 158, 160 to 165, 167 to 170, 172 to 174, 177 to 183, 186, 188, 189, 192 to 194, 198 to 203, 210, 213, 216 to 218, 220, 222 to 233, 236 to 246, 248 to 250, 253 to 255, 257 to 269, 271, 273 to 276, 278, 279, 281, 283 to 285, 287 to 290)
- 32 from Europe (29, 35, 36, 44, 55, 64 to 66, 73, 77, 80, 83, 84, 91, 101, 104, 105, 110, 112, 135, 145, 153, 163, 187, 190, 206 to 209, 212, 241, 247)
- 28 from North America (26, 93, 101, 104, 105, 110, 143, 159, 166, 171, 175, 176, 184, 185, 191, 195 to 197, 204, 205, 211, 214, 235, 251, 252, 256, 282, 286)
- 28 from Central America and the Caribbean (3, 32, 48, 60, 62 to 65, 67, 90, 99, 101, 104, 105, 108, 110, 142, 143, 163, 219, 221, 231, 234, 270, 272, 277, 285, 288)
- 3 from Asia and Oceania (146, 215, 280)

No studies from Africa were identified.

The 269 included studies were mapped into an interactive EGM, created using EPPI-Mapper (9). In the map, available at Evidence gap map: Oropouche virus, the studies are visually displayed by area of research (columns) and study design (rows) (see screenshot of the map in Figure 1). In this ‘bubble’ view, the size of the bubble represents the number of studies mapped to each category and the colour of the bubble represents the geographic region for each study. Studies reporting on more than one area of research or geographic region have been mapped more than once.

Figure 1. Screenshot of the EGM representing the number of studies identified for each area of research, by study design and geographic region [note 2]

Note 2: Bubble size represents the number of studies identified for each geographic region by range rather than being directly proportional: in Figure 1, the smallest bubble size represents up to 10 studies, and the largest bubble represents 95 studies.

For the precise number of studies in each bubble, refer to the interactive version of the EGM, available at [Evidence gap map: Oropouche virus]().

Evidence on epidemiology and surveillance in humans

One hundred and fifty-two studies were identified that reported on Oropouche virus epidemiology and surveillance in humans (see Figure 2), some of which reported on multiple areas and have been mapped into more than one category. Of the 152 studies:

- 125 reported on 'surveillance in humans' (3, 23, 24, 27, 31 to 34, 37, 38, 40, 45, 47, 49 to 51, 53, 56 to 70, 72, 74, 76, 78, 79, 81, 82, 84 to 90, 92 to 116, 119 to 132, 134, 136 to 143, 150, 163, 177, 218, 219, 221 to 223, 225 to 234, 236, 242, 244, 245, 248 to 250, 253, 255, 257 to 259)
- 70 on 'natural history and clinical manifestations' (23 to 26, 28 to 30, 32 to 37, 39 to 46, 48, 53, 54, 67, 70, 71, 73, 75, 77, 78, 80, 83, 84, 87, 89 to 96, 103, 111, 112, 114, 117, 123, 127, 131 to 133, 135, 137, 139, 218, 219, 222, 226, 228, 230, 234, 236, 244, 248, 249, 253, 257, 282)
- 7 on 'modes of transmission' (all on vertical transmission) (42, 43, 46, 71, 103, 117, 176)
- one was categorised as 'other', which reported on the potential spread of Oropouche virus by air travel (286)

For study design:

- 119 of the 152 studies were observational studies, of which:
  - 9 longitudinal studies (57, 58, 61, 85, 126, 131, 137 to 139)
  - 46 cross-sectional studies (23, 25, 27, 30, 31, 33, 34, 37, 38, 40, 45, 49, 50, 53, 56, 59, 60, 68, 70, 74, 76, 81, 82, 84, 86, 89, 92, 94, 95, 97, 112, 113, 115, 116, 120 to 125, 127 to 130, 132, 134)
  - 3 other analytical studies (88, 90, 96)
  - 24 case reports or case series (26, 28, 29, 35, 36, 39, 41 to 44, 46, 48, 54, 71, 73, 75, 77, 80, 83, 91, 93, 117, 133, 135)
  - 37 other descriptive studies (3, 24, 32, 47, 51, 62 to 67, 69, 72, 78, 79, 87, 98 to 111, 114, 119, 136, 140 to 143)

- 27 were studies with multiple designs (218, 219, 221 to 223, 225 to 234, 236, 242, 244, 245, 248 to 250, 253, 255, 257 to 259)

- 4 were laboratory studies, of which
  - 3 genome sequencing studies (150, 163, 177)
  - one in vitro study (176)
- 2 were modelling studies (282, 286)

For geographic region:

- 123 of the 152 studies were from South America (23 to 25, 27, 28, 30, 31, 33, 34, 37 to 43, 45 to 47, 49 to 51, 53, 54, 56 to 59, 61, 65, 68 to 72, 74 to 76, 78, 79, 81, 82, 85 to 89, 92, 94 to 111, 113 to 117, 119 to 134, 136 to 143, 150, 163, 177, 218, 222, 223, 225 to 233, 236, 242, 244, 245, 248 to 250, 253, 255, 257 to 259)
- 23 from Central America and the Caribbean (3, 32, 48, 60, 62 to 65, 67, 90, 99, 101, 104, 105, 108, 110, 142, 143, 163, 219, 221, 231, 234)
- 20 from Europe (29, 35, 36, 44, 64 to 66, 73, 77, 80, 83, 84, 91, 101, 104, 105, 110, 112, 135, 163)
- 10 from North America (26, 93, 101, 104, 105, 110, 143, 176, 282, 286)

Some studies reported on multiple geographic areas and have been mapped into more than one category. No studies from Africa or Asia and Oceania were identified.

Figure 2. Screenshot of the EGM representing the number of studies identified for epidemiology and surveillance in humans, by study design and geographic region [note 2]

Note 2: Bubble size represents the number of studies identified for each geographic region by range rather than being directly proportional: in Figure 2, the smallest bubble size represents up to 10 studies, and the largest bubbles represent 82 studies (‘observational studies in human’ and ‘surveillance in humans’) followed by 38 studies (‘observational studies in humans’ and ‘natural history and clinical manifestations’). For the precise number of studies in each bubble, refer to the interactive version of the EGM, available at Evidence gap map: Oropouche virus.

Evidence on virology and pathogenesis

Ninety-two studies were identified that reported on Oropouche virus virology and pathogenesis (see Figure 3), some of which reported on multiple areas and have been mapped into more than one category. Of the 92 studies:

- 62 reported on 'viral genomics' (25, 26, 28, 30, 33, 36, 39 to 41, 53, 55, 59, 60, 71, 75, 78, 92, 95, 96, 111, 127, 129, 131, 145, 148 to 150, 152, 160, 163, 170, 173, 177, 178, 197, 198, 202, 207, 208, 210, 211, 213, 215, 218, 221, 223, 226, 228, 230, 231, 233, 234, 244, 246, 255, 257 to 259, 266, 273, 274, 290)
- 11 on 'host immune responses' (41, 52, 161, 165, 168, 191, 192, 239, 251, 252, 255)
- 10 on 'viral replicative mechanisms' (144, 153, 154, 158, 162, 169, 201, 206, 256, 283)
- 9 on 'virus tropism' (147, 151, 159, 176, 191, 192, 199, 200, 209)
- 5 on other topics (156, 162, 193, 219, 243)

For study design:

- 42 of the 92 studies were laboratory studies, of which:
  - 20 genome sequencing studies (145, 148 to 150, 152, 160, 163, 170, 173, 177, 178, 197, 198, 202, 207, 208, 210, 211, 213, 215)
  - 15 in vitro studies (144, 147, 153, 154, 156, 158, 159, 162, 168, 169, 176, 192, 201, 206, 209)
  - 6 animal studies (151, 161, 191, 193, 199, 200)
  - one entomological study (165)

- 24 were observational studies in humans, of which
  - one longitudinal study (131)
  - 11 cross to sectional studies (25, 30, 33, 40, 53, 59, 60, 92, 95, 127, 129)
  - 2 other analytical studies (52, 96)
  - 8 case reports or case series (26, 28, 36, 39, 41, 55, 71, 75)
  - 2 other descriptive studies (78, 111)

- 21 were studies with multiple designs (218, 219, 221, 223, 226, 228, 230, 231, 233, 234, 239, 243, 244, 246, 251, 252, 255 to 259)

- 3 were zoonotic field studies (266, 273, 274)

- 2 were modelling studies (283, 290)

For geographic region:

- 71 of the 92 studies were from South America (25, 28, 30, 33, 39 to 41, 52, 53, 59, 71, 75, 78, 92, 95, 96, 111, 127, 129, 131, 144, 147 to 152, 154, 156, 158, 160 to 163, 165, 168 to 170, 173, 177, 178, 192, 193, 198 to 202, 210, 213, 218, 223, 226, 228, 230, 231, 233, 239, 243, 244, 246, 255, 257 to 259, 266, 273, 274, 283, 290)
- 9 from North America (26, 159, 176, 191, 197, 211, 251, 252, 256)
- 9 from Europe (36, 55, 145, 153, 163, 206 to 209)
- 6 from Central America and the Caribbean (60, 163, 219, 221, 231, 234)
- one from Asia and Oceania (215)

Some studies reported on multiple geographic areas and have been mapped into more than one category. No studies from Africa were identified.

Figure 3. Screenshot of the EGM representing the number of studies identified for virology and pathogenesis, by study design and geographic region [note 2]

Note 2: Bubble size represents the number of studies identified for each geographic region by range rather than being directly proportional: in Figure 3, the smallest bubble size represents up to 10 studies, and the largest bubble represents 19 studies. For the precise number of studies in each bubble, refer to the interactive version of the EGM, available at Evidence gap map: Oropouche virus.

Evidence on vector and ecology

Fifty-seven studies were identified that reported on Oropouche virus vector and ecology (see Figure 4), some of which reported on multiple areas and have been mapped into more than one category. Of the 57 studies:

- 25 reported on 'surveillance in animal reservoirs' (219, 225, 227, 229, 232, 236, 245, 246, 248 to 250, 260 to 265, 267, 269 to 272, 274, 275, 279)
- 22 on 'surveillance in arthropod vectors' (219, 221 to 223, 227, 229, 230, 232, 236, 242, 245, 248, 249, 253, 263, 266, 268, 270, 273, 276 to 278)
- 12 on 'climate and environmental factors' (49, 227, 228, 231, 233, 244, 268, 284, 285, 287, 288, 290)
- 10 on 'vector competence' (164 to 166, 172, 175, 184, 187 to 189, 204)

For study design:

- 21 of the 57 studies were studies with multiple designs (219, 221 to 223, 225, 227 to 233, 236, 242, 244 to 246, 248 to 250, 253)
- 20 were zoonotic field studies (260 to 279)
- 10 were laboratory studies, of which:
  - 5 animal studies (164, 172, 188, 189, 204)
  - 5 entomological studies (165, 166, 175, 184, 187)
- 5 were modelling studies (284, 285, 287, 288, 290)
- one was an observational study in humans (cross to sectional study (49))

For geographic region:

- 47 of the 57 studies were from South America (49, 164, 165, 172, 188, 189, 222, 223, 225, 227 to 233, 236, 242, 244 to 246, 248 to 250, 253, 260 to 269, 271, 273 to 276, 278, 279, 284, 285, 287, 288, 290)
- 8 from Central America and the Caribbean (219, 221, 231, 270, 272, 277, 285, 288)
- 4 from North America (166, 175, 184, 204)
- one from Europe (187)

Some studies reported on multiple geographic areas and have been mapped into more than one category. No studies from Africa or Asia and Oceania were identified.

Figure 4. Screenshot of the EGM representing the number of studies identified for vector and ecology, by study design and geographic region [note 2]

Note 2: Bubble size represents the number of studies identified for each geographic region by range rather than being directly proportional: in Figure 4, the smallest bubble size represents up to 10 studies, and the largest bubble represents 12 studies. For the precise number of studies in each bubble, refer to the interactive version of the EGM, available at Evidence gap map: Oropouche virus.

It is important to note that as the review question for this EGM was specifically focussed on the available evidence on Oropouche virus, studies that reported on vectors were only included if they were directly related to Oropouche virus; for instance, studies on entomological surveillance that did not test vectors for Oropouche virus were excluded. In addition, terms for

vectors were not included in the search strategy. Therefore, there may be findings from other studies that could be relevant to understanding Oropouche virus vector and ecology that have not been included in the EGM.

Evidence on diagnostics

Twenty-five studies were identified that reported on Oropouche virus diagnostics (see Figure 5), some of which reported on multiple areas and have been mapped into more than one category. Of the 25 studies:

- 12 reported on 'molecular diagnostics' (167, 171, 179 to 182, 190, 194, 203, 212, 258)
- 4 on 'viral sequencing' (180, 183, 186, 214)
- 4 on 'serological diagnostics' (54, 185, 220, 241)
- 2 on 'clinical diagnostics' (281, 282)
- one on 'assay standards' (203)
- 4 on other types of diagnostics (155, 195, 196, 235)

For study design:

- 18 of the 25 studies were laboratory studies, of which:
  - 7 in vitro studies (155, 181, 190, 195, 196, 212)
  - 4 genome sequencing studies (180, 183, 186, 214)
  - 7 other laboratory studies (167, 171, 179, 182, 185, 194, 203)
- 4 were studies with multiple designs (220, 235, 241, 258)
- 2 were modelling studies (281, 282)
- one was an observational study in humans (case series (54))

For geographic region:

- 16 of the 25 studies were from South America (54, 155, 167, 179 to 183, 186, 194, 203, 220, 241, 258, 281)
- 7 from North America (171, 185, 195, 196, 214, 235, 282)
- 3 from Europe (190, 212, 241)

Some studies were from multiple geographic areas and have been mapped into more than one category. No studies from Africa, Asia and Oceania, or Central America and the Caribbean were identified.

Figure 5. Screenshot of the EGM representing the number of studies identified for diagnostics, by study design and geographic region [note 2]

Note 2: Bubble size represents the number of studies identified for each geographic region by range rather than being directly proportional: in Figure 5 all bubbles are the same size, representing up to 10 studies. For the precise number of studies in each bubble, refer to the interactive version of the EGM, available at Evidence gap map: Oropouche virus.

Evidence on medical countermeasures

Fourteen studies were identified that reported on Oropouche virus medical countermeasures (see Figure 6). Of the 14 studies:

- 10 reported on 'antivirals' (157, 174, 224, 237, 238, 240, 247, 254, 280)
- 4 on 'vaccines' (146, 205, 241, 289)
- one on 'neutralising antibodies' (241)

For study design:

- 7 of the 14 studies were studies with multiple designs (224, 237, 238, 240, 241, 247, 254)
- 5 were laboratory studies, of which:
  - 3 in vitro studies (157, 174)
  - one animal study (205)
  - one genome sequencing study (146)
- 2 were modelling studies (280, 289)

No studies in humans (experimental or observational studies) were identified.

For geographic region:

- 10 of the 14 studies were from South America (157, 174, 224, 237, 238, 240, 241, 254, 289)
- 2 from Asia and Oceania (146, 280)
- 2 from Europe (241, 247)
- one from North America (205)

Some studies were from multiple geographic areas and have been mapped into more than one category. No studies from Africa or Central America and the Caribbean were identified.

Figure 6. Screenshot of the EGM representing the number of studies identified for medical countermeasures, by study design and geographic region [note 2]

Note 2: Bubble size represents the number of studies identified for each geographic region by range rather than being directly proportional: in Figure 6 all bubbles are the same size and represent up to 10 studies. For the precise number of studies in each bubble, refer to the interactive version of the EGM, available at Evidence gap map: Oropouche virus.

Evidence on public health and social measures

One study was identified on public health and social measures, which was categorised as ‘other’ (118) (see Figure 7). This was a cross-sectional survey of knowledge, attitudes and practices among medical students in South America.

No studies were identified for vector control strategies, personal protective equipment and infection prevention control, or information, health education and behavioural interventions.

It is important to note that as the review question for this EGM was specifically focussed on the available evidence on Oropouche virus, studies that reported on vector control strategies were only included if they were directly related to Oropouche virus. In addition, terms for vector control were not included in the search strategy. Therefore, there may be findings from other studies that may be relevant to understanding vector control strategies that have not been included in the EGM.

Figure 7. Screenshot of the EGM representing the number of studies identified for public health and social measures, by study design and geographic region [note 2]

Note 2: in Figure 7 the bubble represents one study; see interactive version of the EGM, available at Evidence gap map: Oropouche virus.

Limitations

This rapid EGM was conducted at pace and followed streamlined methodologies: only 20% of the records screened on title and abstract were screened in duplicate, and full text screening and data extraction (coding the studies for the EGM) were done by one reviewer and checked by a second (as per our usual rapid review methodology, see Annexe A).

Papers that were not available in English were translated using Google translate. Although there may have been some inaccuracies in the translation, it is unlikely that this had a major impact on screening or coding of the studies for the EGM.

As this was an EGM, critical appraisal of the included studies and a narrative synthesis of study findings were not conducted.

Conclusions

In total, 269 studies were identified and included in this rapid EGM of the available evidence on Oropouche virus. Studies were categorised by area of research, study design, and geographic region. Some studies reported on multiple areas of research or more than one geographic region and were therefore mapped into more than one category.

Epidemiology and surveillance in humans of Oropouche virus was the area of research for which the most evidence was identified (152 out of 269 studies), especially 'surveillance in humans' (125 studies) and 'natural history and clinical manifestations' (70 studies). Only 7 studies reported on 'modes of transmission', all on vertical transmission. Most of these studies included data from South America (123 out of 152 studies), with more limited evidence on Central America and the Caribbean (23 studies), Europe (20 studies), and North America (10 studies). No studies from Africa, Asia, or Oceania were identified. There were only 9 longitudinal studies, with the remainder being mainly cross-sectional or descriptive.

Virology and pathogenesis of Oropouche virus was the area of research with the second highest number of studies identified (92 out of 269 studies). Of these, most of the evidence identified (62 studies) was on 'viral genomics', with more limited evidence identified for 'host immune responses' (11 studies), 'viral replicative mechanisms' (10 studies), and 'virus tropism' (9 studies). The geographic area for which more evidence was identified was South America (71 out of 92 studies), and no studies with data from Africa were identified. The studies were mainly conducted in laboratory settings (42 out of 92 studies) although 24 were observational studies in humans.

Evidence on Oropouche virus vector and ecology was reported in 57 of the included studies, including 'surveillance in animal reservoirs' (25 studies), 'surveillance in arthropod vectors' (22 studies), 'climate and environmental factors' (12 studies), and 'vector competence' (10 studies). The geographic area for which the most evidence was identified was South America (47 out of 57 studies); no studies with data from Africa, Asia, or Oceania, were identified. However, it should be noted that additional studies that may have been relevant to understanding Oropouche virus vector and ecology but did not specifically report on Oropouche virus have not been included in the EGM.

Twenty-five studies were identified that reported on Oropouche virus diagnostics, including 'molecular diagnostics' (12 studies), 'viral sequencing' (4 studies), 'serological diagnostics' (4 studies), 'clinical diagnostics' (2 studies), 'assay standards' (one study), and other types of diagnostics (4 studies). Sixteen of the 25 studies were from South America, and no studies from Africa, Asia, Oceania, Central America, or the Caribbean were identified. Of the 25 studies, 18 were laboratory studies, and there was only one observational study in humans, which was a case series.

Fourteen studies were identified for medical countermeasures, of which 10 reported on ‘antivirals’, 4 reported on ‘vaccines’ (one animal study, one genome sequencing study, one modelling study, and one study with multiple designs), and one reported on ‘neutralising antibodies’. No experimental or observational studies of medical countermeasures conducted in humans were identified. Of the 14 studies, 10 were from South America, and no studies with data from Africa, Central America, or the Caribbean were identified.

Only one study was identified on public health and social measures against Oropouche virus, a cross-sectional survey which reported on knowledge and attitudes among medical students in South America. No studies were identified for ‘vector control strategies’, ‘personal protective equipment and infection prevention control’, or ‘information, health education and behavioural interventions’.

Of the 269 studies, 233 reported data and findings from South America, Central America, or the Caribbean, reflecting the geographical epidemiology of Oropouche virus. There were only 3 studies from Asia and Oceania, of which 2 were laboratory studies and one was a modelling study: 2 on medical countermeasures and one on virology and pathogenesis. No studies with data from Africa were identified.

In terms of study design, 122 of the 269 studies were observational studies in humans (mainly cross-sectional or descriptive studies) but no experimental studies in humans were identified. There were 74 studies conducted in laboratory settings, of which 42 reported on virology and pathogenesis.

In summary, most of the evidence identified on Oropouche virus was based on cross-sectional and descriptive studies reporting on epidemiology and surveillance in humans, followed by laboratory studies on virology and pathogenesis. Less evidence was identified for the other areas of research. Notably, evidence gaps were identified for public health and social measures, host immune correlates of protection, and human studies of medical countermeasures.

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283. Leal CS and others. 'In silico physicochemical characterization of fusion proteins from emerging Amazonian Arboviruses' Life 2023: volume 13, issue 8
284. Lorenz C and others. 'Impact of environmental factors on neglected emerging arboviral diseases' PLoS Neglected Tropical Diseases 2017: volume 11, issue 9, page e0005959
285. Poongavanan J and others. 'Spatiotemporal disease suitability prediction for Oropouche virus and the role of vectors across the Americas' medRxiv 2025
286. Portillo MT and others. 'Potential for international spread of Oropouche virus via commercial air travel' Journal of Travel Medicine 2024: volume 31, issue 8, pages taae128
287. Romero-Alvarez D and others. 'Vegetation loss and the 2016 Oropouche fever outbreak in Peru' Memorias do Instituto Oswaldo Cruz 2017: volume 112, issue 4, pages 292 to 298
288. Romero-Alvarez D and others. 'Transmission risk of Oropouche fever across the Americas' Infectious Diseases of Poverty 2023: volume 12, issue 47
289. Silva LB and others. 'A computational approach for MHC-restricted multi-epitope vaccine design targeting Oropouche virus structural proteins' Acta Tropica 2025: volume 263, page 107575
290. Tegally H and others. 'Dynamics and ecology of a multi-stage expansion of Oropouche virus in Brazil' medRxiv 2024

Annexe A. Methods

This report followed streamlined systematic methods to address the review question ‘what evidence is available on Oropouche virus?’

A rapid EGM was conducted to identify primary studies published on Oropouche virus via 4 sources (see the ‘Sources searched’ section for further details):

- database searches from inception to 4 or 5 June 2025 depending on the database (initial search dates: 6 and 7 February 2025, search update date: 5 June 2025
- grey literature (initial search dates: 12 and 13 February 2025, search update date: 5 June 2025)
- reference lists of relevant systematic reviews and EGMs
- consultation with topic experts from the *Bunyaviricetes* CORC

Our rapid review approach followed streamlined systematic methodologies (7). For instance, full text screening and data extraction were performed by one reviewer and checked by another instead of being conducted in duplicate.

Protocol

A protocol was produced before the literature search began, specifying the review question and the inclusion and exclusion criteria. The protocol is available on request.
Modifications made to the protocol after the review started are reported below, where relevant.

Inclusion and exclusion criteria

Article eligibility criteria are summarised in Table A.1.

Table A.1. Inclusion and exclusion criteria

	Included	Excluded
Population	Human and animal studies	
Concept	Any primary studies related to Oropouche virus, including (but not limited to): • epidemiology and surveillance in humans • vector and ecology • virology and pathogenesis • diagnostics	

	Included	Excluded
	• medical countermeasures • public health and social measures	
Context	No limitations on settings or countries	
Language	No limitations	
Date of publication	From database inception to 4 or 5 June 2025	
Study design	All primary study designs, including observational and studies in laboratory settings Modelling studies	Guidelines Opinion pieces Systematic or narrative review
Publication type	Peer-reviewed articles Preprints Grey literature (such as reports published by public health agencies and non-governmental organisations, but excluding conference abstracts, theses and books)	Conference abstracts Theses Books and book chapters

Sources searched

1. Databases used for the literature search (initial searches conducted on 6 and 7 February 2025; search update conducted on 5 June 2025): Ovid Medline All (1946 to 4 June 2025), Ovid Embase (1974 to 4 June 2025), Ovid Global Health (1910 to 4 June 2025), Web of Science Citation Index (1970 to 5 June 2025), medRxiv (2019 to 5 June 2025), bioRxiv (2013 to 5 June 2025), LILACS PLUS (1986 to 5 June 2025)
2. Grey literature searching for non-indexed publications (initial searches conducted on 12 and 13 February 2025; search update conducted on 5 June 2025): Pan American Health Organization (PAHO) Institutional Repository for Information Sharing (IRIS), Caribbean Public Health Agency (CARPHA) evidence portal, Redalyc, and websites from the WHO, Centers for Disease Control and Prevention (CDC), PAHO and European Centre for Disease Prevention and Control (ECDC).

To identify additional papers not retrieved by the literature searches, reference lists of relevant systematic reviews were examined (11 to 17) as well as the list of included studies from an interactive map of Oropouche virus published by PAHO (22). In addition, the list of studies

included in the EGM and inclusion criteria was shared with members of the *Bunyaviricetes* CORC (comprising approximately 40 members) on 16 May 2025.

Search strategies

The initial database searches were conducted for papers published between database inception and 5 or 6 February 2025 (search dates: 6 and 7 February 2025, respectively) and updated on 5 June 2025 Search strategies were drafted by an information scientist and peer-reviewed by a second information scientist (see Annexe B for the search strategies used).

Grey literature searches were initially conducted by an information scientist on 12 and 13 February 2025 and updated on 5 June 2025, using the search phrase “Oropouche or OROV”.

On 14 July 2024, all included studies were checked for any retractions, and 8 preprints were examined to establish if they had subsequently been published as a peer reviewed paper.

Screening

Results from the database searches were downloaded into Endnote, then duplicates were removed using Deduklick (10) (an automated AI deduplication tool). Results from the grey literature searches were deduplicated using Endnote. Final results were imported into EPPI-Reviewer web version (8), where further deduplication was conducted before screening.

Title and abstract screening of records identified was completed in duplicate by 2 reviewers for 20% of the studies, with disagreements resolved by discussion. The remainder were screened by one reviewer in EPPI-Reviewer web version (8). The priority screening system was used to screen the original database search results, which uses machine learning to prioritise the order of references by their likelihood of inclusion based on prior screening decisions (all studies were screened by a human reviewer).

In an initial pilot phase, 5% of the studies included on title and abstract were screened on full text in duplicate by 2 reviewers. The remainder were screened on full text by one reviewer and checked by a second using EPPI-Reviewer web version (8). Disagreements were resolved by discussion, with a third reviewer involved if consensus could not be reached.

To enable screening of papers not available in English, Google translate was used to translate papers into English.

Screening of the reference lists of relevant systematic reviews was done by one reviewer.

The PRISMA diagrams showing the flow of records for the initial search and the search update are provided in Figure A.1 and Figure A.2, respectively.

Data extraction

As this was a rapid EGM, only information required for coding the studies (area of research, study design, and geographic region) was extracted directly into EPPI-Reviewer.

In an initial pilot phase, 10% of the included studies were coded in duplicate by 2 reviewers with disagreements resolved by discussion. The remainder was conducted by one reviewer and checked by a second.

To enable data extraction from papers not available in English, Google Translate was used to translate papers into English.

Critical appraisal

For this rapid EGM, it was agreed when drafting the protocol that critical appraisal would not be performed as the main aim of this work was to identify and categorise the evidence identified.

Synthesis

Visual synthesis was performed by generating an interactive EGM using EPPI-Mapper (9), using the coding extracted to represent the evidence identified on Oropouche virus by area of research and by study design, with a third dimension to represent the geographic region where the study was conducted.

For area of research, there were 2 levels of coding (parent and child codes):

- epidemiology and surveillance in humans:
  - natural history and clinical manifestations
  - modes of transmission
  - surveillance in humans
  - other [note 1]

- vector and ecology [note 2]:
  - vector competence
  - surveillance in arthropod vectors
  - surveillance in animal reservoirs
  - climate and environmental factors

- virology and pathogenesis:
  - host immune responses
  - viral genomics
  - virus tropism

  - viral replicative mechanisms
  - other [note 1]

- diagnostics:
  - serological diagnostics
  - molecular diagnostics
  - clinical diagnostics
  - viral sequencing
  - assay standards
  - other [note 1]

- medical countermeasures:
  - antivirals
  - neutralising antibodies
  - vaccines

- public health and social measures
  - vector control strategies [note 2]
  - personal protective equipment and infection prevention control
  - information, health education and behavioural interventions
  - other [note 1]

Note 1: The subcategory ‘other’ was added for some areas of research after the initial mapping was completed to categorise studies that did not fit into the existing subcategories.

Note 2: As the review question for this EGM was specifically focussed on the available evidence on Oropouche virus, studies that reported on vectors were only included if they were directly related to Oropouche virus; for instance, studies on entomological surveillance that did not test vectors for Oropouche virus were excluded. In addition, terms for vectors were not included in the search strategy.

For study design, 2 levels of coding were used (parent and child codes):

- experimental studies in humans:
  - randomised controlled trials
  - non-randomised controlled trials
  - other trials

- observational studies in humans:
  - longitudinal studies
  - cross-sectional studies
  - other analytical studies
  - outbreak investigations
  - case reports and case series
  - other descriptive studies

- laboratory studies:
  - animal studies
  - entomological studies
  - in vitro studies
  - genome sequencing studies
  - other laboratory studies
- zoonotic field studies
- modelling studies
- studies with multiple designs (for example, a paper that reported on an observational study in humans and a laboratory study or zoonotic field study)

For the third dimension of geographic region, the following codes were used:

- Africa
- Asia and Oceania
- Central America and the Caribbean
- Europe
- North America
- South America

Narrative synthesis of the evidence identified was not performed, although a description of the evidence identified (including number of studies identified and breakdown by area of research, study design, and geographic region) was provided.

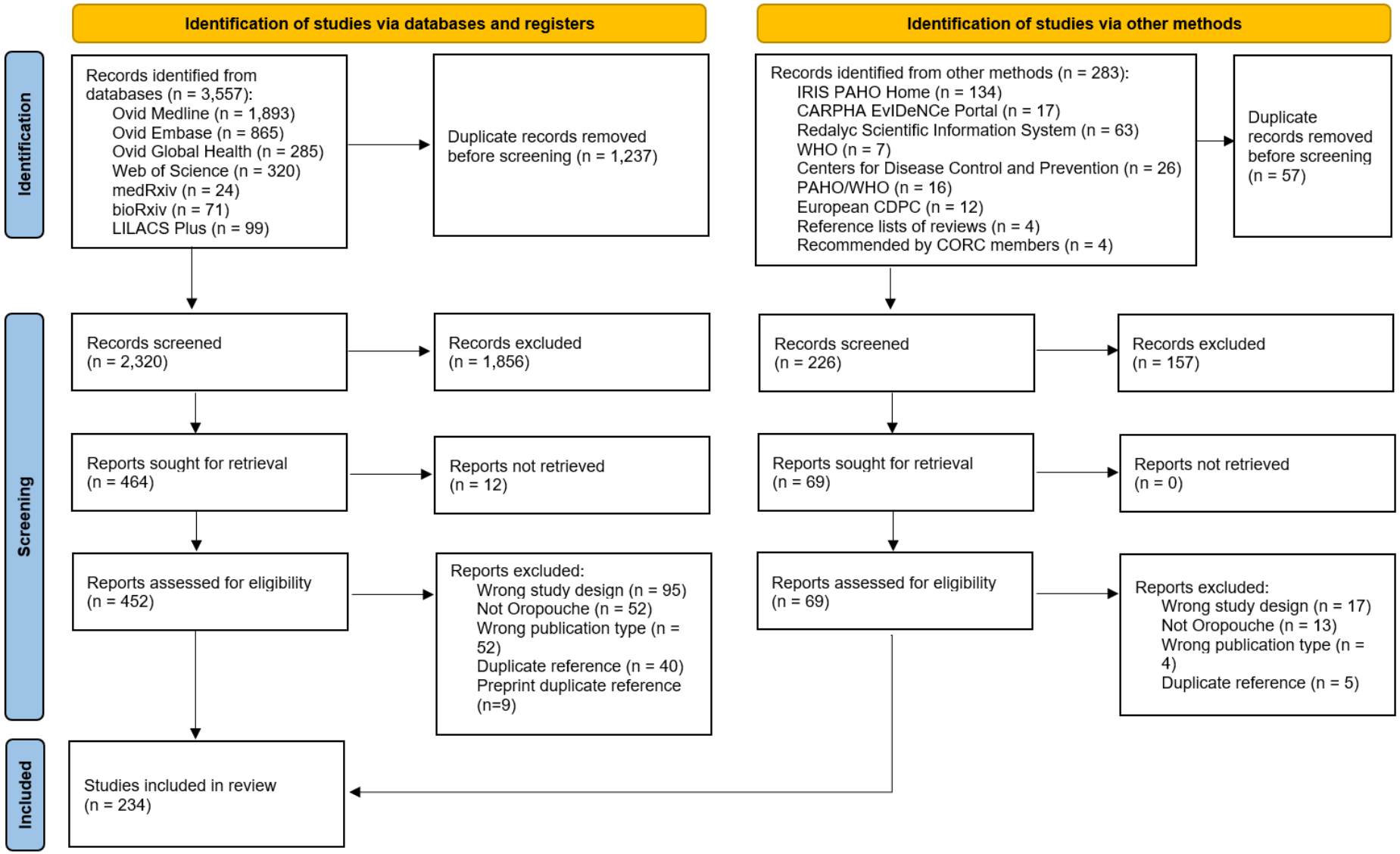
Modifications made to the protocol

The subcategory ‘viral replicative mechanisms’ under virology and pathogenesis was added once the screening was completed. This is because 9 studies had been identified on viral replicative mechanisms and originally mapped in the ‘other’ subcategory. Following discussion among the review team and with topic experts, it was agreed to add this additional subcategory in order to group these studies together in a more meaningful way. The sub-category ‘other’ was also added for some areas of research to categories studies that did not fit into the existing categories.

In addition, the original subcategory ‘cohort studies’ was changed to ‘longitudinal studies’ after screening was completed because no cohort studies were identified. However, some studies were identified that collected repeated samples from a subgroup of study participants or from a particular area over a period of time, which were categorised as longitudinal studies.

The subcategory ‘natural history’ was renamed to ‘natural history and clinical manifestations’ to provide clarity about the type of studies included in this subcategory. Similarly, the subcategory ‘clinical diagnostics’ was also added to highlight the lack of research in this area.

Figure A.1. PRISMA diagram for the initial searches, conducted on 6 and 7 February 2025 (database searches) and 12 and 13 February 2025 (grey literature searches)



Text equivalent of PRISMA diagram showing the flow of studies through this review for the initial search

From searches of databases and registers, n=3,557 records were identified:

- Ovid Medline n=1,893
- Ovid Embase n=865
- Ovid Global Health n=285
- Web of Science n=320
- medRxiv n=24
- bioRxiv n=71
- LILACS PLUS n=99

From these, 1,237 duplicate records were removed before screening.

After removal of duplicates, n=2,320 records were screened on title and abstract, of which n=1,856 were excluded, leaving n=464 papers sought for retrieval.

452 papers were assessed for eligibility on full text (n=12 reports not retrieved). Of these, 247 were excluded:

- wrong study design n=95
- not Oropouche n=52
- wrong publication type n=52
- duplicate reference n=40
- duplicate preprint reference n=9

283 additional records were identified through additional sources:

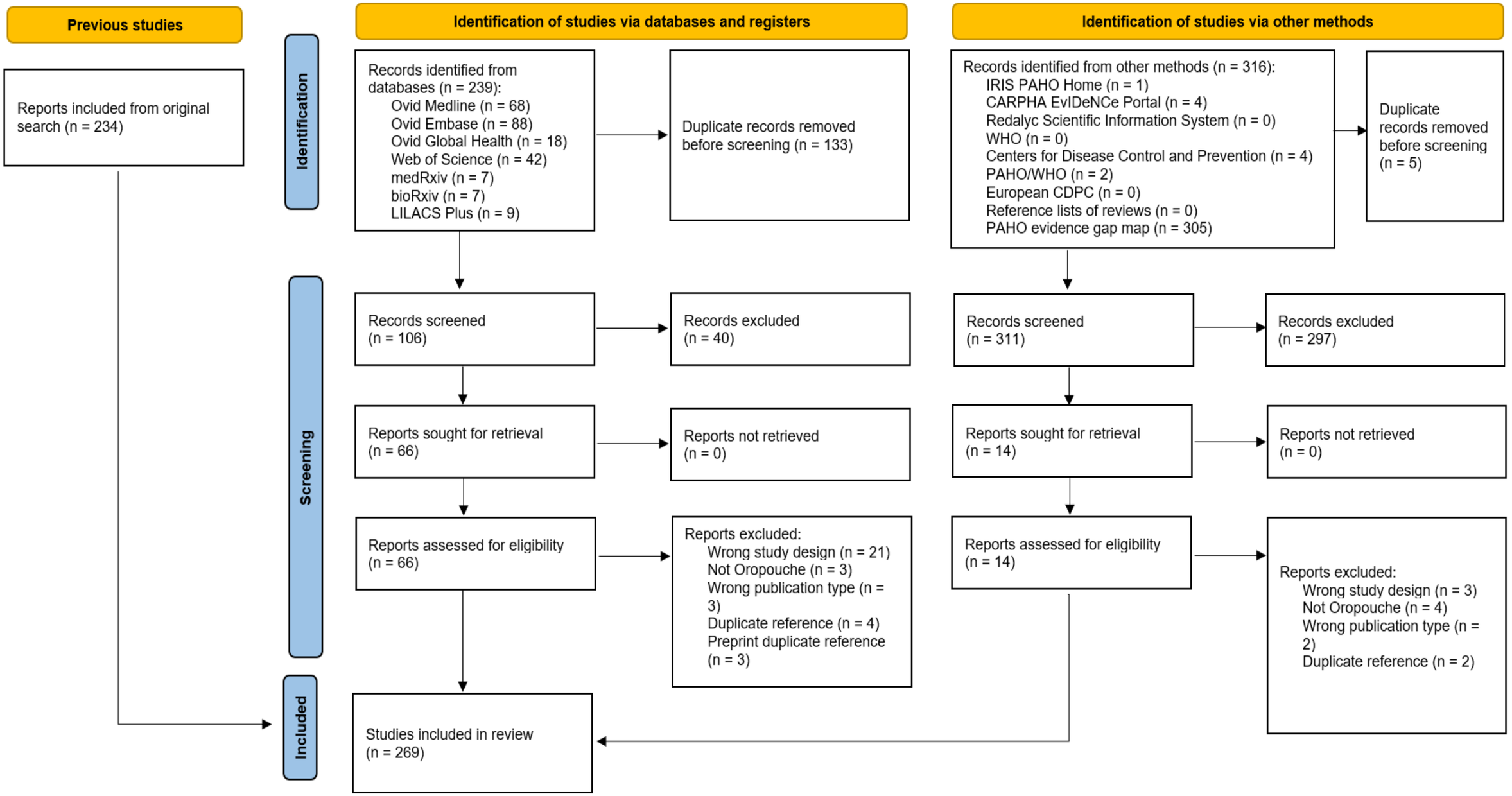
- records identified from grey literature searches: n=275
- records identified from relevant systematic reviews: n=4
- records identified by members of the *Bunyaviricetes* CORC: n=4

After removal of n=57 duplicate records, n=226 were screened on title and abstract, of which n=157 were excluded, leaving n=69 papers assessed for eligibility on full text (n=0 reports not retrieved). Of these, 39 were excluded:

- wrong study design n=17
- not Oropouche n=13
- wrong publication type n=4
- duplicate reference n=5

In total, 234 studies were included.

Figure A.2. PRISMA diagram for the search update, conducted on 5 June 2025



Text equivalent of PRISMA diagram showing the flow of studies through this review for the search update, conducted on 5 June 2025

From searches of databases and registers, n=239 records were identified:

- Ovid Medline n=68
- Ovid Embase n=88
- Ovid Global Health n=18
- Web of Science n=42
- medRxiv n=7
- bioRxiv n=7
- LILACS PLUS n=9

From these, 133 duplicate records were removed before screening.

After removal of duplicates, n=106 records were screened on title and abstract, of which n=40 were excluded, leaving n=66 papers sought for retrieval.

A total of 66 papers were assessed for eligibility on full text (n=0 reports not retrieved). Of these, 34 were excluded:

- wrong study design n=21
- not Oropouche n=3
- wrong publication type n=3
- duplicate reference n=4
- duplicate preprint reference n=3

316 additional records were identified through additional sources:

- records identified from grey literature searches: n=11
- records identified from relevant systematic reviews: n=0
- records identified from the PAHO EGM: n=305

After removal of n=5 duplicate records, n=311 were screened on title and abstract, of which n=297 were excluded, leaving n=14 papers assessed for eligibility on full text (n=0 reports not retrieved). Of these, 11 were excluded:

- wrong study design n=3
- not Oropouche n=4
- wrong publication type n=2
- duplicate reference n=2

In total, 35 studies were included from the search update.

Combined with the results of the initial search (234 studies included), 269 studies were included in the final review.

Annexe B. Search strategies for Ovid MEDLINE, Embase and Global Health; Web of Science; medRxiv; bioRxiv; and LILACS Plus

Search strategy for Ovid Medline ALL (1946 to 4 June 2025)

1. oropouche*.tw,kf.
2. sloth fever*.tw,kf.
3. OROV.tw,kf.
4. Bunyaviridae Infections/
5. 1 or 2 or 3 or 4

Search strategy for Ovid Embase (1974 to 4 June 2025)

1. oropouche*.tw,kf.
2. sloth fever*.tw,kf.
3. OROV.tw,kf.
4. oropouche orthobunyavirus/ or oropouche virus/
5. bunyavirus infection/
6. 1 or 2 or 3 or 4 or 5

Search strategy for Ovid Global Health (1910 to 4 June 2025)

1. oropouche.af.
2. sloth fever.af.
3. OROV.af.
4. 1 or 2 or 3

Search strategy for Web of Science Citation Index (1970 to 5 June 2025)

1. TS=(oropouche*) or TS=("sloth fever*") or TS=(OROV)

Search strategy for medRxiv (June 2019 to 5 June 2025)

1. oropouche OR OROV

Search strategy for bioRxiv (2013 to 5 June 2025)

1. oropouche OR OROV

Search strategy for LILACS Plus (1986 to 5 June 2025)

1. oropouche or OROV or mh:("Bunyaviridae Infections")

Annexe C. List of studies excluded at full text screening

Table C.1. Exclusion reason: wrong study design (n=136)

Author (year)	Title
Akingbola (2024)	The rising concern of Oropouche fever: a call for enhanced surveillance and research in emerging arboviral threats
Al-Tawfiq (2024)	The emergence of Oropouche virus in Cuba - A wake-up call for global health
Alencar (2008)	Potencialidades do Aedes albopictus como vetor de arboviroses no Brasil: um desafio para a atenção primária
Ali (2025)	Risk of Oropouche virus importation to Southeast Asia via international travellers
Anon (2024)	Oropouche fever, the mysterious threat
Atamari-Anahui (2018)	La implicancia del reordenamiento genético en el diagnóstico y la epidemiología del virus Oropuche en el Perú
Atamari-Anahui (2018)	The implication of genetic rearrangement in the diagnosis and epidemiology of Oropuche virus in Peru
Barcante (2024)	Surge in Oropouche fever: the tip of the iceberg in a new public health challenge in Brazil
Barcante (2025)	The growing challenge of arboviruses in Latin America: Dengue and Oropouche in focus
Bertolino (2024)	Oropouche virus infection: What internal medicine physicians should know
Bhattacharya (2025)	Possibility of invasion of Oropouche virus (OROV) in Asia: a real-time assessment is an imperative necessity
Branda (2024)	Oropouche virus presenting in Italy after travel to Cuba
Brickley (2024)	Preparing for the rapid research response to the possible vertical transmission of Oropouche virus: lessons from a decade of congenital Zika research
Brisse (2025)	Oropuche virus-an emerging pathogen with escalating risk for outbreaks of human infection

Author (year)	Title
Cabada (2024)	Establishment of a multisite umbrella cohort study protocol to describe the epidemiology and aetiologies of acute undifferentiated febrile illness in Latin America
Cain (2024)	Oropouche virus: Understanding ‘sloth fever’ disease dynamics and novel intervention strategies against this emerging neglected tropical disease
Capobianchi (2024)	Potential risks of Oropouche virus importation into Europe
Castaño (2025)	Enfermedades re-emergentes y emergentes
Castilletti (2024)	Author's response: Oropouche virus risk for European travellers to Cuba: an emerging public health concern
Castilletti (2024)	First diagnoses of Oropouche virus in Europe: how can we strengthen communication and preparedness globally?
CDC (2024)	Increased Oropouche virus activity and associated risk to travelers
CDC (2024)	Response to Oropouche virus disease cases in U.S. states and territories in the Americas
CDC (2025)	2024 Oropouche outbreak
CDC (2025)	Clinical overview of Oropouche virus disease
CDC (2025)	Interim clinical considerations for pregnant women with confirmed or probable Oropouche virus disease
CDC (2025)	Interim guidance for evaluating and managing infants born to pregnant women with confirmed or probable Oropouche virus disease
CDC (2025)	Updated interim guidance for health departments on testing and reporting for Oropouche virus disease
CDC (2025)	Updated interim guidance for health departments on testing and reporting for Oropouche virus disease
CDC (2025)	Clinical overview of Oropouche virus disease
Ceccarelli (2025)	Oropouche virus infection: Differential clinical outcomes and emerging global concerns of vertical transmission and fatal cases

Author (year)	Title
Culquichicon (2017)	Bibliometric analysis of Oropouche research: impact on the surveillance of emerging arboviruses in Latin America
Dashraath (2025)	Vertical transmission potential of Oropouche virus infection in human pregnancies
de Souza (2024)	ICTV Virus Taxonomy Profile: Peribunyaviridae 2024
Desai (2024)	Oropouche virus: A re-emerging arbovirus of clinical significance (doi: 10.1016/j.ijregi.2024.100456)
Desai (2024)	Oropouche virus: A re-emerging arbovirus of clinical significance (doi: 10.1016/j.ijid.2024.107251)
Dinh (2025)	Oropouche virus
Diniz (2024)	Oropouche fever in Brazil: When the time is now
Diniz (2025)	Additional lessons to prepare for rapid research response to possible vertical transmission of Oropouche virus in Brazil
Dobler (1996)	Arboviruses causing neurological disorders in the central nervous system
Douglas (2024)	The silent invaders: Oropouche and Melao viruses, causes of increased public health risks for the Americas
Dutra (2017)	The re-emerging arboviral threat: Hidden enemies: The emergence of obscure arboviral diseases, and the potential use of Wolbachia in their control
Edridge (2020)	Emerging orthobunyaviruses associated with CNS disease
Elliott (1997)	Emerging viruses: the Bunyaviridae
Escobedo (2024)	Oropouche fever rears its head in Cuba: What lies beneath the surface?
Figueiredo (1999)	Vírus brasileiros da família Bunyaviridae
Figueiredo (2007)	Emergent arboviruses in Brazil
Figueiredo (2014)	Saint Louis encephalitis virus and other arboviruses in the differential diagnosis for dengue
Figueiredo (2019)	Human urban arboviruses can infect wild animals and jump to sylvatic maintenance cycles in South America
Files (2022)	Baseline mapping of Oropouche virology, epidemiology, therapeutics, and vaccine research and development

Author (year)	Title
Garima (2025)	Silent risk: the vertical transmission of Oropouche virus
Giovanetti (2024)	Letter to the editor: Oropouche virus risk for European travellers to Cuba: an emerging public health concern
Giovanetti (2025)	Oropouche virus and the urgent need for global surveillance
Goncalves (2024)	Oropouche Fever and its Current Context in Brazil
Gonzalez-Quevedo (2025)	Oropouche virus - another antecedent event for Guillain-Barre syndrome?
Gordon (1968)	Profilaxia das doencas transmissíveis
Hartman (2023)	Bunyavirales: Scientific Gaps and Prototype Pathogens for a Large and Diverse Group of Zoonotic Viruses
Hassan (2025)	Arboviral infections and pregnancy: An overlooked public health challenge
Hollidge (2010)	Arboviral encephalitides: transmission, emergence, and pathogenesis
Hopkins (2013)	Bunyaviral cap-snatching vs. decapping: Recycling cell cycle mRNAs
Hui (2024)	Summary of global surveillance data of infectious diseases in July 2024
Huits (2024)	New insights into Oropouche: expanding geographic spread, mortality, vertical transmission, and birth defects
Jing (2025)	Risk assessment of global infectious disease events in December 2024
Lavergne (2024)	Oroupouche virus: towards a future emergence?
LeDuc (1989)	Epidemiology of hemorrhagic fever viruses
Li (2024)	Innate immune response against vector-borne bunyavirus infection and viral countermeasures
Liu (2024)	Oropouche fever, a potential threat to global health?
Liu (2024)	Epidemiological and clinical overview of the 2024 Oropouche virus disease outbreaks, an emerging/re-emerging neurotropic arboviral disease and global public health threat
Lorenz (2024)	Brazil reports an increased incidence of Oropouche and Mayaro fever in the amazon region

Author (year)	Title
Makarov (2016)	Zoopathogenic Orthobuniaviruses (Orthobunyavirus, Bunyaviridae)
Martins-Filho (2024)	Oropouche fever: reports of vertical transmission and deaths in Brazil
Martins-Filho (2024)	The underdiagnosed threat of Oropouche fever amidst dengue epidemics in Brazil
Mattar (2016)	Olympic Games Rio 2016 and the uninvited viruses: Potential consequences for Europe and North America
Mattar (2025)	The next arbovirus epidemic in Latin America and beyond: A question of when, not if - Mayaro, Oropouche, Usutu or Disease X?
McQuillan (2025)	Oropouche virus in Panama
Mira (2025)	Oropouche Virus: The Next (Re)Emerging Arboviral Threat?
Miranda-Filho (2024)	Preparing for the rapid research response to the possible vertical transmission of Oropouche virus: lessons from a decade of congenital Zika research
Mohapatra (2024)	Surging Oropouche virus (OROV) cases in the Americas: A public health challenge
Moreira-Soto (2025)	Transfusion-transmitted infections: risks and mitigation strategies for Oropouche virus and other emerging arboviruses in Latin America and the Caribbean
Mourao (2015)	Arboviral diseases in the Western Brazilian Amazon: a perspective and analysis from a tertiary health and research center in Manaus, State of Amazonas
Nunes (2007)	A febre do Oropouche: uma revisão dos aspectos epidemiológicos e moleculares na Amazônia brasileira
Okesanya (2025)	Addressing the emerging threat of Oropouche virus: implications and public health responses for healthcare systems
Organización Panamericana de la Salud (2016)	Instrumento para el diagnóstico y la atención a pacientes con sospecha de arbovirosis
Overturf (2009)	World arboviruses: the Bunyaviridae

Author (year)	Title
PAHO (2024)	Recommendations for the Detection and Surveillance of Oropouche in possible cases of vertical infection, congenital malformation, or fetal death July 17, 2024
PAHO (1982)	Oropouche fever in Brasil
PAHO (1982)	Dengue outbreak in Boa Vista, Roraima territory, Brazil
PAHO (1983)	Public health impact of arthropod- and rodent-borne viral diseases in the Americas
PAHO (2023)	Recommendations for laboratory detection and diagnosis of arbovirus infections in the region of the Americas
PAHO (2024)	Interim guidance on entomological surveillance and prevention measures for oropouche virus vectors
PAHO (2025)	Oropouche virus research agenda January 2025. Development of a research agenda for the characterization of Oropouche virus and its public health implications
Pareek (2024)	Emerging risk of sexual transmission of Oropouche virus
Pastula (2024)	Oropouche Virus: An Emerging Neuroinvasive Arbovirus
Patel (2025)	The Oropouche virus (OROV) and need of advanced diagnostics to mitigate it
Pereira (2025)	Oropouche virus disease-region of the Americas
Pinheiro (1980)	Arboviruses in the Amazon region, Brazil
Pinheiro (1997)	Febre por Oropouche
Policastro (2024)	Oropouche virus in Brazil: Assessing the risks and challenges for transfusion medicine
Porwal (2025)	Mysterious Oropouche virus: Transmission, symptoms, and control
Postigo-Hidalgo (2024)	Probing Oropouche fever ecology beyond the Amazon
Postigo-Hidalgo (2025)	Probing Oropouche fever ecology beyond the Amazon

Author (year)	Title
Ribas (2025)	Oropouche Virus (OROV): Expanding Threats, Shifting Patterns, and the Urgent Need for Collaborative Research in Latin America
Rodriguez-Morales (2017)	Mayaro, Oropouche and Venezuelan Equine Encephalitis viruses: Following in the footsteps of Zika?
Rodriguez-Morales (2025)	Reemergence of Oropouche virus infection in Venezuela, 2025
Romero (2006)	Diagnosis of viral encephalitides: zoonotic-associated viruses
Romero-Alvarez (2018)	Oropouche fever, an emergent disease from the Americas
Romero-Alvarez (2025)	The foretold Oropouche fever epidemic
Sah (2024)	Oropouche fever outbreak in Brazil: an emerging concern in Latin America
Samara (2024)	Potential vertical transmission of Oropouche virus during the current outbreak
Sanabria-Rojas (2015)	Clinical trials in neglected infectious diseases in the context of globalization: an ethical and human rights approach
Sansone (2024)	Prevent the spread of Oropouche fever in Brazil
Sansone (2025)	The Oropouche fever in Latin America: a hidden threat and a possible cause of microcephaly due to vertical transmission
Schwartz (2024)	Oropouche Virus (OROV) in Pregnancy: An Emerging Cause of Placental and Fetal Infection Associated with Stillbirth and Microcephaly following Vertical Transmission
Schwartz (2025)	Novel Reassortants of Oropouche Virus (OROV) Are Causing Maternal-Fetal Infection During Pregnancy, Stillbirth, Congenital Microcephaly and Malformation Syndromes
Schwartz (2025)	A potential mechanism of transplacental transmission of Oropouche virus in pregnancy

Author (year)	Title
Sciancalepore (2022)	Presence and Multi-Species Spatial Distribution of Oropouche Virus in Brazil within the One Health Framework
Sick (2019)	*Culicoides* Biting Midges-Underestimated Vectors for Arboviruses of Public Health and Veterinary Importance
Silva-Caso (2025)	Oropouche virus fever
Singhal (2024)	Rising threat of Oropouche virus transmission from mother to child: An urgent call for action
Soldan (2005)	Emerging infectious diseases: the Bunyaviridae
Souza (2024)	Oropouche fever and pregnancy
Srivastava (2024)	Pregnancy Loss, Oropouche Virus and the Lessons from Pernambuco, Brazil
Sun (2025)	Risk assessment of global infectious disease events in January 2025
ter Horst (2019)	Structural and functional similarities in bunyaviruses: Perspectives for pan-bunya antivirals
Tesh (1994)	The emerging epidemiology of Venezuelan hemorrhagic fever and Oropouche fever in tropical South America
Toledo (2024)	Preparedness for emerging epidemic threats: detection of Oropouche circulation in Cuba
Travassos (1992)	Arboviruses in Serra Norte, Carajas region, Para, Brazil
Ukoaka (2024)	Updated WHO list of emerging pathogens for a potential future pandemic: Implications for public health and global preparedness
Valentine (2019)	Sylvatic cycles of arboviruses in non-human primates
Valero (2017)	Oropouche Virus: what is it and how it is transmitted?
Vasconcelos (1992)	Clinical and ecoepidemiological situation of human arboviruses in Brazilian Amazonia
Vasconcelos (2016)	Emergence of Human Arboviral Diseases in the Americas, 2000-2016

Author (year)	Title
Wermelinger (2023)	The conflict mediation potential to control arboviruses vectors in Brazilian slums
WHO (2024)	Oropouche virus disease
Yoosuf (2025)	Concerns and implications of Oropouche virus infection during pregnancy: A call for further research and public health action
Yvon (2024)	The genome of a bunyavirus can only be defined at the scale of the viral population
Zhang (2009)	Advances in Bunyaviridae viruses that cause human diseases

Table C.2. Exclusion reason: not oropouche (n=72)

Author (year)	Title
Alencar (2011)	New report on the bionomics of *Coquillettidia venezuelensis* in temporary breeding sites (Diptera: Culicidae)
Anonymous (1993)	Emerging infectious diseases
Augot (2017)	Association between host species choice and morphological characters of main sensory structures of *Culicoides* in the Palaeartic region
Ayala (2022)	Redescription of immature stages of *Culicoides paraensis* (Goeldi) (Diptera: Ceratopogonidae), vector of the Oropouche virus
Ayers (2022)	Replication Kinetics of a Candidate Live-Attenuated Vaccine for Cache Valley Virus in *Aedes albopictus*
Beaty (1981)	Molecular basis of bunyavirus transmission by mosquitoes: role of the middle-sized RNA segment
Berezina (1983)	Effect of ribavirin on bunyavirus reproduction in cell culture and in an experiment on white mice
Binder (2019)	Molecular survey of flaviviruses and orthobunyaviruses in *Amblyomma* spp. ticks collected in Minas Gerais, Brazil
Blitvich (2012)	Orthobunyavirus antibodies in humans, Yucatan Peninsula, Mexico

Author (year)	Title
Brenner (2016)	What can Akabane disease teach us about other arboviral diseases
Brenner (2019)	Serological evidence suggests that several Simbu serogroup viruses circulated in Israel
Camarao (2019)	Development and analytical validation of a group-specific RT-qPCR assay for the detection of the Simbu serogroup orthobunyaviruses
Cardoso (2010)	New records and epidemiological potential of certain species of mosquito (Diptera, Culicidae) in the State of Rio Grande do Sul, Brazil
Cooper (2025)	Laboratory and field assays indicate that a widespread no-see-um, *Culicoides furens* (Poey) is susceptible to permethrin
Damasceno (2015)	Mosquito (Diptera: Culicidae) fauna in parks in greater São Paulo, Brazil
de Brito (2007)	Caraparu virus (group C Orthobunyavirus): sequencing and phylogenetic analysis based on the conserved region 3 of the RNA polymerase gene
de Oliveira (2016)	Study of mortality from infectious diseases in Brazil from 2005 to 2010: risks involved in handling corpses
Dietrich (2017)	The Antiviral RNAi Response in Vector and Non-vector Cells against Orthobunyaviruses
do Carmo Silva (2023)	Advancing Chikungunya Diagnosis: A Cost-Effective and Rapid Visual employing Loop-mediated isothermal reaction
Farias (2020)	Diversity of biting midges *Culicoides* (Diptera: Ceratopogonidae), potential vectors of disease, in different environments in an Amazonian rural settlement, Brazil
Felippe-Bauer (2008)	*Culicoides paraensis* (Diptera: Ceratopogonidae) infestations in cities of the Itapocu River Valley, southern Brazil
Frey (2024)	Lrp1 facilitates infection of neurons by Jamestown Canyon virus
Gomes (2025)	Congenital anomalies in Brazil, 2010 to 2022
Gutiérrez (1975)	Aislamiento de virus del grupo Anopheles A en Guatemala
Gutiérrez (1975)	Aislamiento del virus Mermet en Guatemala

Author (year)	Title
Gutiérrez-Vera (2021)	Seroprevalence of arboviruses in Ecuador: Implications for improved surveillance
Hang (2012)	Random amplification and pyrosequencing for identification of novel viral genome sequences
Hart (2009)	Role of the NSs protein in the zoonotic capacity of Orthobunyaviruses
Hoch (1986)	Breeding sites of *Culicoides paraensis* and options for control by environmental management
Hoffmann (2012)	Novel orthobunyavirus in Cattle, Europe, 2011
Hudson (1986)	Annotated list of the Ceratopogonidae (Diptera) of Suriname
Huerta (2024)	New records of *Culicoides (haematomyidium) paraensis* and a key to adult *Culicoides* from Yucatan peninsula, Mexico
Jentes (2010)	Acute arboviral infections in Guinea, West Africa, 2006
Kato (2016)	Bovine Arboviruses in *Culicoides* Biting Midges and Sentinel Cattle in Southern Japan from 2003 to 2013
Le Lay-Rogues (1984)	Serologic survey on arbovirus infections in patients presenting with uveitis
Li (2011)	Fever with thrombocytopenia associated with a novel bunyavirus in China
Lin (2016)	A rare fatal case of a novel bunyavirus-associated hemophagocytic lymphohistiocytosis
Magiorkinis (2011)	A novel bunyavirus in China
Martin (2000)	Standardization of immunoglobulin M capture enzyme-linked immunosorbent assays for routine diagnosis of arboviral infections
Martínez (2021)	Training strategy for the diagnosis and management of arbovirosis in Cienfuegos
Méndez (2009)	Arbovirus surveillance in the Department of Piura. Peru - 2008
Mendez-Andrade (2024)	Habitat anthropization and seasonality affect the assemblage and diversity of *Culicoides* in central Veracruz, Mexico
Mercer (2003)	Biting rates and developmental substrates for biting midges (Diptera: Ceratopogonidae) in Iquitos, Peru

Author (year)	Title
Mercer (2005)	Changes in relative species compositions of biting midges (Diptera: Ceratopogonidae) and an outbreak of Oropouche virus in Iquitos, Peru
Mettler (1982)	Virus inoculation in mice bearing Ehrlich ascitic tumors - antigen production and tumor-regression
Mitchell (1990)	Vector competence of Aedes albopictus for a newly recognized Bunyavirus from mosquitoes collected in Potosi, Missouri
Muttis (2023)	Mosquito diversity from the Urutaú Natural Reserve (Misiones, Argentina)
Odhiambo (2015)	Orthobunyavirus antibodies among humans in selected parts of the Rift Valley and northeastern Kenya
Ojha (2024)	N4-Hydroxycytidine/molnupiravir inhibits RNA virus-induced encephalitis by producing less fit mutated viruses
Organização Pan-Americana da Saúde (2025)	Documento operacional de identificação de *Culicoides* Latreille (Diptera: Ceratopogonidae)
Pinheiro (1977)	Public health hazards among workers along the Trans Amazon highway
Reis (2025)	Culicidae Fauna (Diptera: Culicomorpha) of the Quilombola Community of Abacatal, Ananindeua, Pará, in the Brazilian Amazon
Ricapa-Antay (2018)	Molecular detection and clinical characteristics of Bartonella bacilliformis, *Leptospira* spp., and *Rickettsia* spp. in the Southeastern Peruvian Amazon basin
Roberts (1981)	Oropouche virus. III. Entomological observations from three epidemics in Para, Brazil, 1975
Roberts (1981)	Programa multidisciplinario de vigilancia de las enfermedades infecciosas en zonas colindantes con la Carretera Transamazónica en Brasil. IV. Estudio entomológico
Ronderos (2003)	Diversity of biting midges of the genus *Culicoides* Latreille (Diptera: Ceratopogonidae) in the area of the Yacyreta Dam Lake between Argentina and Paraguay
Sankhe (2025)	Genomic Insights into Neglected Orthobunyaviruses: Molecular Characterization and Phylogenetic Analysis

Author (year)	Title
Santamaria (2024)	*Culicoides* Latreille (Diptera, Ceratopogonidae) of Colombia: records from the collection of insects of medical importance from National Institute of Health
Santana (2010)	Concurrent Dengue and malaria in the Amazon region
Scherer (1975)	The first isolations of eastern encephalitis, group C, and Guama group arboviruses from the Peruvian Amazon region of western South America
Scherer (1975)	Los primeros aislamientos de arbovirus de encefalitis del este y de grupos C y Guama en la región amazónica del Perú
Schneider (2024)	Skin muscle is the initial site of viral replication for arboviral bunyavirus infection
Schnettler (2013)	RNA interference targets arbovirus replication in *Culicoides* cells
Takahashi (1968)	Aino virus, a new member of Simbu group of an arbovirus front mosquitoes in Japan
Temmam (2016)	Characterization of Viral Communities of Biting Midges and Identification of Novel Thogotovirus Species and Rhabdovirus Genus
Van der Waals (1986)	Post-encephalitic epilepsy and arbovirus infections in an isolated rainforest area of central Liberia
Velásquez (2014)	Bionomics, ecology and medical importance of *Coquillettidea (Rhynchotaenia) venezuelensis* Theobald, 1912 (Diptera: Culicidae)
Vieira (2022)	Land-use effects on mosquito biodiversity and potential arbovirus emergence in the Southern Amazon, Brazil
Walker (2018)	Transmissibility of emerging viral zoonoses
Wang (2019)	Evolutionary history of Simbu serogroup orthobunyaviruses in the Australian episystem
Wernike (2016)	Effective interference between Simbu serogroup orthobunyaviruses in mammalian cells
Wirth (1989)	The neotropical biting midges related to *Culicoides paraensis* (diptera, ceratopogonidae)

Table C.3. Exclusion reason: wrong publication type (n=61)

Author (year)	Title
Anderer (2024)	Oropouche Virus Spreads to New Regions in Latin America
Anon (2016)	Existing drugs could fight lethal viral infections A1 - Anonymous
Anon (2024)	Oropouche virus in Europe: Spread is unlikely
Barreto (2024)	Environmental Crisis and the Emergence of the Oropouche: A Potential Public Health Problem
Castro (2024)	Unprecedented spread and genetic evolution of the Oropouche virus: Infectious diseases
CDC (2025)	Countries and Territories with Recent or Previous Oropouche Virus Transmission
Corrales (2021)	Seroprevalence against virus and zoonotic parasitic diseases in sloths of western Panama
Del Valle-Mendoza (2017)	An outbreak of febrile syndromes in the north of Peru: Emerging and reemerging arboviruses
do Rosario (2024)	Emerging threat of Oropouche virus in Brazil: an urgent call for enhanced surveillance and response
Downs (1962)	Virus studies in Trinidadian swamps
Downs (1975)	Malaria: the great umbrella
Drexler (2025)	Oropouche virus more widespread than thought
Fabbri (2006)	Evidence of a new genotype of Oropouche virus (OROV) in Argentina, 2005
Feldmann (2011)	Truly emerging--a new disease caused by a novel virus
Figueiredo (2011)	Molecular diagnosis of viral infections: Arboviruses and rodent-borne viruses
Fujita (2024)	Oropouche in Brazil in 2024
Gomez (2019)	First report of the oropouche virus in Colombia
González (2015)	Oropuche virus: A virus present but ignored

Author (year)	Title
Gopalsamy (2024)	A View on the Emerging Concern of Oropouche Fever in Brazil and Its Diagnosis
Guevara (2015)	First evidence of una virus infections in Indigenous and non-Indigenous communities in Loreto, Peru
Henry (2018)	Etymologia: Oropouche [oro-pooche] virus
Jurado-Cobena (2025)	Efficient Expression of Oropouche Virus Nonstructural Proteins NSs and NSm
Khan (2015)	The role of SARM1 in Toll-like receptor and viral-induced neuronal apoptosis (INM7P.347)
Laine (2025)	Emerging and Resurging Vector-Borne Illnesses
LeDuc (1989)	Oropouche fever
Lenharo (2024)	Mysterious Oropouche virus is spreading: what you should know
Marcio (2012)	Full length sequencing and genome assembling strategies of distinct arboviruses using pyrosequencing data
Martins-Luna (2018)	OROV isolation in a northern region of Peru: First molecular identification and clinical characteristics
Moutinho (2024)	Little-known virus surging in Latin America may harm fetuses
Moutinho (2024)	Little-known virus is on the rise in South America
Nielsen-Saines (2024)	Oropouche virus and potential birth defects
Noji (1994)	Emergency department response to a disaster from an emerging pathogen
Nowotny (2008)	Emergence of mosquito-borne Bunya-, toga-, and reoviruses in central Europe
O'Laughlin (2025)	Oropouche Virus: A Rising Threat in the Western Hemisphere
Onyango (2014)	De novo micro satellite marker mining from scarce amounts of *Culicoides* genomic DNA: Pathway to understanding dispersal and population of the vector of oropouche virus

Author (year)	Title
Organización Panamericana de la Salud (2003)	Zoonosis y enfermedades transmisibles comunes al hombre y a los animales: parasitosis, v.3, 3 ed
PAHO (1962)	Research and research needs in arthropod-borne viruses diseases in Latin America
Perú Instituto Nacional de Salud (1997)	Curso Internacional Enfermedades Virales Emergentes
Quaglia (2024)	Clues emerge about an obscure virus' sudden spread
Rio (2025)	Boletim Educação em Debate - Ed. 14
Rodriguez-Morales (2024)	Re-emergence of Oropouche virus in Brazil and Latin America
Romero-Alvarez (2018)	Emergent viruses in America: The case of Oropouche virus
Sah (2024)	Oropouche fever fatalities and vertical transmission in South America: implications of a potential new mode of transmission
São (2024)	Cuidados em relação ao recém-nascido com suspeita ou confirmação de transmissão vertical pelo OROV: epidemiologia
Schweitzer (2025)	Little-Known Oropouche Virus Is Spreading: What Clinicians Need to Know About the Insect-Borne Illness
Secretaria da Saúde do Estado de São Paulo (2024)	Vigilância da febre do oropouche no Estado de São Paulo
Silva-Caso (2017)	Oropuche virus identification as an emerging etiological agent responsible for acute febrile disease in a eastern middle region of the Peruvian jungle

Author (year)	Title
Silva-Caso (2018)	First outbreak of Oropouche Fever reported in a non-endemic central-western region of the Peruvian Amazon. Molecular diagnosis and clinical characteristics
Soane (2019)	Novel screening ELISA for sensitive detection of Mayaro virus infected patients
Tauro (2018)	An outbreak of chikungunya: Tracking the epidemic threat in Salvador, Brazil
Taylor (2024)	PAHO: Americas report record dengue and Oropouche cases
Taylor (2024)	Oropouche fever: Latin America on high alert for virus that can cause stillbirths
Taylor (2024)	Why are doctors being warned about the Oropouche virus?
Travassos (1989)	Arbovirus research in the Brazilian Amazon
Valero (2017)	Oropouche Virus: what is it and how it is transmitted?
Vasconcelos (1998)	Arboviruses Pathogenic for man in Brazil
Vasconcelos (2010)	Oropouche fever virus: Molecular epidemiology and evolution
Veggiani (2019)	Monitoring of *Culicoides* (Ceratopogonidae), parasite and arboviral vectors in intervened forest environments, Tucuman-Argentina
Vidal-Cardenas (2013)	Exploration malaria and other vector-borne illnesses incidence in entomological workers
Webber (2021)	Oropouche virus in vitro replication is inhibited by acridone
WHO (2024)	WHO launches global strategic plan to fight rising dengue and other Aedes-borne arboviral diseases

Table C.4. Exclusion reason: duplicate reference (n=51)

Author (year)	Title
Alvarez-Falconi (2010)	Oropuche fever outbreak in Bagazan, San Martin, Peru: epidemiological evaluation, gastrointestinal and hemorrhagic manifestations
Anderson (1965)	Oropouche virus: a new human disease agent from Trinidad, West Indies
Araiuo (1978)	Ultra-structural hepatic alterations in hamsters experimentally inoculated with the arbovirus Oropouche (type BeAn 19991)
Barbiero (2025)	Persistent Oropouche virus viremia in two travellers returned to Italy from Cuba, July 2024
Borborema (1982)	Description of the first outbreaks of Oropouche fever recognized in the state of Amazonas, Brazil
Borborema (1982)	Primeiro registro de epidemias causadas pelo virus Oropouche no Estado do Amazonas
Cardoso (2010)	Novos registros e potencial epidemiológico de algumas espécies de mosquitos (Diptera, Culicidae), no Estado do Rio Grande do Sul
Casseb (2015)	Prevalência de anticorpos contra arbovírus da família bunyaviridae em búfalos de água
Castilletti (2024)	Oropouche virus risk for European travellers to Cuba: an emerging public health concern
Cruz (2009)	Serological survey for arboviruses in Juruti, Para State, Brazil
Cruz (2025)	Co-Circulation of 2 during Outbreak, Amazon Region of Peru, 2023-2024
de Figueiredo (2004)	Doenças exantemáticas e primeira epidemia de dengue ocorrida em Manaus, Amazonas, no período de 1998-1999
Dixon (1981)	A multidisciplinary programme of infectious disease surveillance along the Transamazon Highway in Brazil. II. Epidemiology of arbovirus infections
Dixon (1981)	Programa multidisciplinário de vigilancia de las infermedades infecciosas en zonas colindantes con la Carretera Transamazónica en Brasil. II. Epidemiología de las infecciones por arbovirus
Freitas (1980)	Epidemic of Oropouche virus in the eastern part of the State of Para, 1979

Author (year)	Title
Garcia (2016)	Detection of Oropouche viral circulation in Madre de Dios region, Peru (December 2015 to January 2016)
Graf (2025)	Expansion of Oropouche virus in non-endemic Brazilian regions: analysis of genomic characterisation and ecological drivers
Hoch (1987)	Criaderos de *Culicoides paraensis* y opciones para combatirlos mediante el ordenamiento del medio
Hoch (1987)	El virus Oropouche. Transmisión en el laboratorio por *Culex Quinquefasciatus*
Hoch (1987)	Oropouche virus. Transmission in the laboratory by *Culex quinquefasciatus*
Hoch (1987)	El virus Oropouche: transmision en el laboratório por *Culex quinquefasciatus*
Hoch (1987)	Criaderos de *Culicoides paraensis* y opciones para combatirlos mediante el ordenamiento del medio
Hoch (1987)	Laboratory transmission of Oropouche virus by Culex quinquefasciatus say
Izurieta (2009)	Assessing yellow Fever risk in the Ecuadorian Amazon
Laroque (2014)	Epidemiologic survey for arbovirus in Galician capuchin monkeys (*Cebus flavius*) free living in Paraiba and captive capuchin monkey (Cebus libidinosus) from Northeast Brazil
LeDuc (1981)	Epidemic Oropouche virus disease in northern Brazil
LeDuc (1982)	Enfermedades epidémicas causadas por el virus Oropouche en el norte de Brasil
LeDuc (1982)	Epidemic illness caused by Oropouche virus in northern Brazil
LeDuc (1982)	Enfermedades epidemicas causadas por el virus Oropouche en el norte de Brasil
Maier (2025)	Imported Oropouche fever to Germany in a returning traveller from Cuba
Nunes (2009)	Eco-epidemiologia dos arbovírus na área de influência da rodovia Cuiabá-Santarém (BR 163), Estado do Pará, Brasil
Organização Pan-Americana da Saude (2024)	Orientações provisórias de vigilância entomológica e medidas de prevenção contra vetores do vírus Oropouche

Author (year)	Title
Organización Panamericana de la Salud (1982)	Boletín Epidemiológico, v. 3, n. 5, Oct. 1982
Organización Panamericana de la Salud (1982)	Fiebre de oropouche en Brasil
Organización Panamericana de la Salud (2022)	Recomendaciones para la detección y el diagnóstico por laboratorio de infecciones por arbovirus en la Región de las Américas
Organización Panamericana de la Salud (2024)	Orientaciones provisionales para la vigilancia entomológica y las medidas de prevención de los vectores del virus de Oropouche
Pan American Health Organization (PAHO) (1982)	Oropouche fever in Brazil
PAHO (1973)	Surveillance and research on infectious diseases along the trans-Amazon highway
PAHO (1982)	Epidemiological Bulletin, v. 3, n.5, Oct. 1982
PAHO (1982)	Fiebre de Oropouche en Brasil
PAHO (2024)	Orientations provisoires pour la surveillance entomologique et les mesures de prévention concernant les vecteurs du virus Oropouche
PAHO (2025)	Interim guidance on entomological surveillance and prevention measures for Oropouche virus vectors
PAHO (2025)	Epidemiological Update Oropouche in the Americas Region
Pinheiro (1974)	Vigilancia e investigación de las enfermedades infecciosas a lo largo de la carretera transamazónica del Brasil

Author (year)	Title
Pinheiro (1982)	Meningitis associated with Oropouche virus infections
Pinheiro (1964)	An epidemic of Oropouche virus in Belem. (Preliminary note)
Rosa (1996)	Outbreak of oropouche virus fever in Serra Pelada, municipality of Curionopolis, Para, 1994
Schwarz (2022)	Oropouche orthobunyavirus infection is mediated by the cellular host factor Lrp1
Vasconcelos (1989)	First report of epidemics caused by Oropouche virus in Maranhao and Goias States, Brazil
Vasconcelos (1989)	1st register of an epidemic caused by Oropouche virus in the states of Maranhao and Goias, Brazil
Vasconcelos (1989)	Epidemic outbreaks of Oropouche virus in the Maranhão and Goias states, Brazil

Table C.5. Exclusion reason: preprint duplicate reference (n=12)

Author (year)	Title
Azevedo (2024)	Genomic and phenotypic characterization of an Oropouche virus strain implicated in the 2023-24 large-scale outbreak in Brazil
Barbosa (2020)	Oropouche virus glycoprotein topology and cellular requirements for virus assembly
Delatorre (2024)	Oropouche virus outbreak in southeast, Brazil: expanding beyond the Amazonian endemic region
de Melo Iani (2024)	Rapid viral expansion beyond the Amazon basin: increased epidemic activity of Oropouche virus across the Americas
do Nascimento (2019)	Oropouche virus detection in saliva and urine
Gutierrez (2019)	The evolutionary dynamics of Oropouche Virus (OROV) in South America
Naveca (2024)	Emergence of a novel reassortant Oropouche virus drives persistent human outbreaks in the Brazilian Amazon region from 2022 to 2024
Scachetti (2024)	Reemergence of Oropouche virus between 2023 and 2024 in Brazil

Author (year)	Title
Stubbs (2021)	Vesicular stomatitis virus chimeras expressing the Oropouche virus glycoproteins elicit protective immune responses in mice
Usuga (2024)	Co-circulation of two lineages of Oropouche virus in the Amazon basin, Colombia, 2024
Walsh (2024)	Short Report: Investigating Oropouche as a possible etiology for fevers of unknown origin in a clinical cohort from Colombia, 2013-2015
Wise (2019)	Oropouche virus cases identified in Ecuador using an optimised rRT-PCR informed by metagenomic sequencing

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UK Health Security Agency (UKHSA) prevents, prepares for and responds to infectious diseases, and environmental hazards, to keep all our communities safe, save lives and protect livelihoods. We provide scientific and operational leadership, working with local, national and international partners to protect the public's health and build the nation's health security capability.

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