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Scoping Review: infectious disease risks associated with occupational exposure among non-healthcare workers

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Scoping review ≠ Systematic review

Definitions

Scoping review

A form of knowledge synthesis that addresses an **exploratory research question** aimed at mapping key concepts.

In research related to a defined area or field by **systematically searching, selecting and synthesizing** existing knowledge.

Systematic review

To determine what is known in a given area of research with a **focus on making recommendations** for clinical practice.

Quantitative
(meta-analysis)

Qualitative

Colquhoun HL, Levac D, O'Brien KK, Straus S, Tricco AC, Perrier L, et al. Scoping reviews: time for clarity in definition, methods, and reporting. **Journal of clinical epidemiology**. 2014; 67(12):1291-4

Introduction

Objective and Population

To provide an overview of the nature of the published evidence on the role of infectious diseases in occupational health

- Based on former key systematic review
 - **Haagsma JA**, Tariq L, et al. **Infectious disease risks associated with occupational exposure**: a systematic review of the literature. Occup Environ Med. 2012; 69, 140–146)

January 2009-December 2017



Occupational groups **other than health care workers**

Exposures

- Exposures resulting from **processes** which involve many different microorganisms (composting, recycling, waste water recycling, etc.);
- through **animal contact** (agriculture, food processing, etc.);
- or through **contact with humans** (education, etc.).

Outcome

- **Prevalence, incidence and/or occurrence rate** of symptomatic infectious disease and/or seroconversion

Methods

Methods

Pseudocode of Haagsma et al. -> subqueries -> **Pubmed**

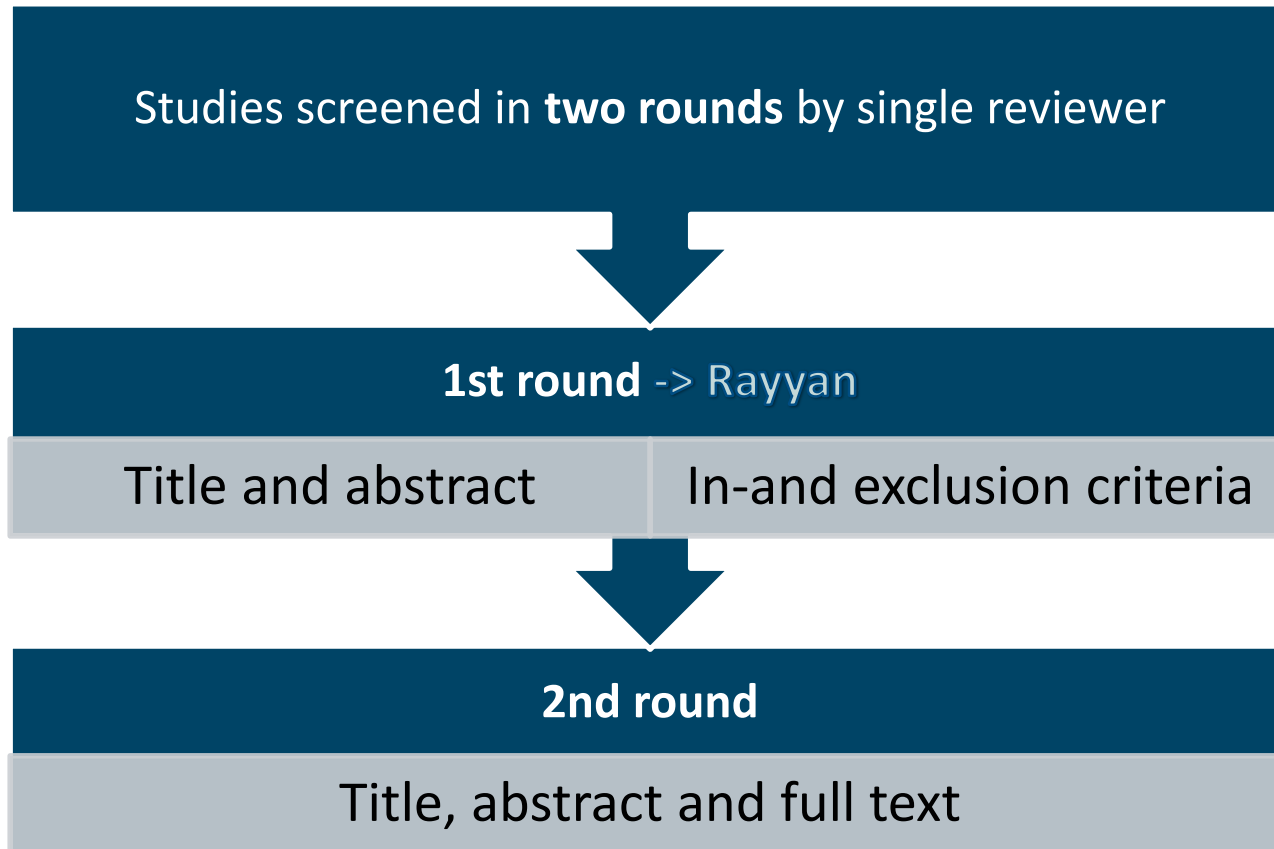
Infectious disease risks associated with occupational exposure: a systematic review of the literature

Juanita A. Haagsma^{1,2§}, Luqman Tariq³, Dick J. Heederik⁴, Arie H. Havelaar^{1,4}

Table A1. Search profile work-related infectious disease

No.	Records	Request
1	3798	((("Work"/ all subheadings) or ("Workplace"/ all subheadings)) in mjme
2	19170	(workers or laborers or employees or occupational) in ti
3	22507	#1 or #2
4	21797	((explode "Communicable-Diseases"/ all subheadings) or ("Zoonoses"/ all subheadings) or (explode "Environmental-Microbiology"/ all subheadings)) in mjme
5	374579	((explode "Virus-Diseases"/ all subheadings) or (explode "Bacterial-Infections"/ all subheadings) or (explode "Parasitic-Diseases"/ all subheadings) or (explode "Mycoses"/ all subheadings)) in mjme
6	422368	((explode "Viruses"/ all subheadings) or (explode "Bacteria"/ all subheadings) or ("Parasites"/ all subheadings) or (explode "Helminths"/ all subheadings) or (explode "Fungi"/ all subheadings)) in mjme
7	213988	(infection* or infectious or microorgan* or micro-organism* or pathogens or pathogenic or virus or viral or bacteria* or fungi or fungal or fungus or mould* or mycoses or parasit* or helminth*) in ti
8	902	(zoonot* or zoonos* or bioaerosol* or air microbiology) in ti
9	2383	#3 and (#4 or #5 or #6 or #7 or #8)

Methods



Methods

Free web application for screening titles and abstracts

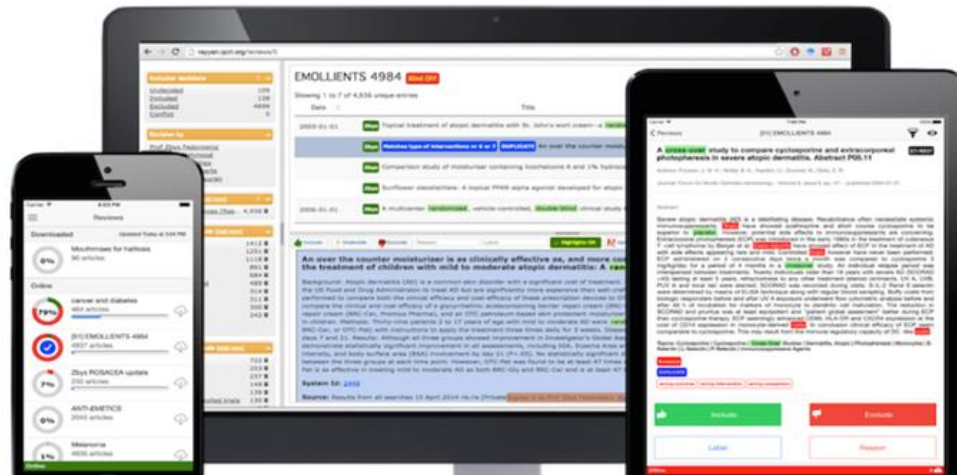
Rayyan <https://rayyan.qcri.org/welcome>

Rayyan QCRI

Rayyan is a 100% FREE web application to help systematic review authors perform their job in a quick, easy and enjoyable fashion. Authors create systematic reviews, collaborate on them, maintain them over time and get suggestions for article inclusion.

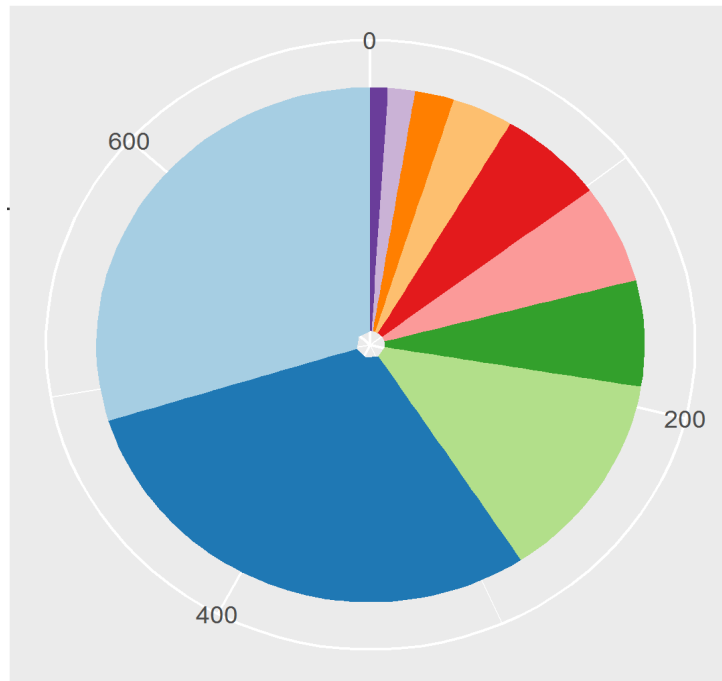


Rayyan also has a mobile app. With this app, you can screen your reviews on the go such as while you are riding the bus. You can even use the app while offline: once connected, the app will automatically sync back to the Rayyan servers!



Methods

Results of the 1st round



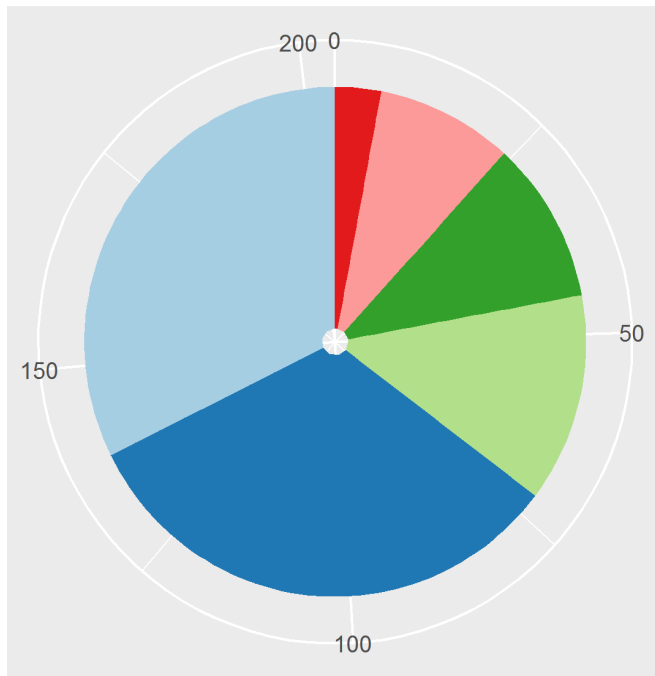
n=697

Decision

- Exclude: Limited to hcw (206)
- Included (204)
- Exclude: No adequate comparison with general population (91)
- Exclude: No specific occ group/occ exposure (46)
- Exclude: Limited to guidelines (43)
- Exclude: No infectious disease outcome (43)
- Exclude: No disease/seroconversion (25)
- Exclude: Limited to qualitative research (16)
- Exclude: Other reasons (11)
- Exclude: No infectious agent (7)

Methods

Results of the 2nd round



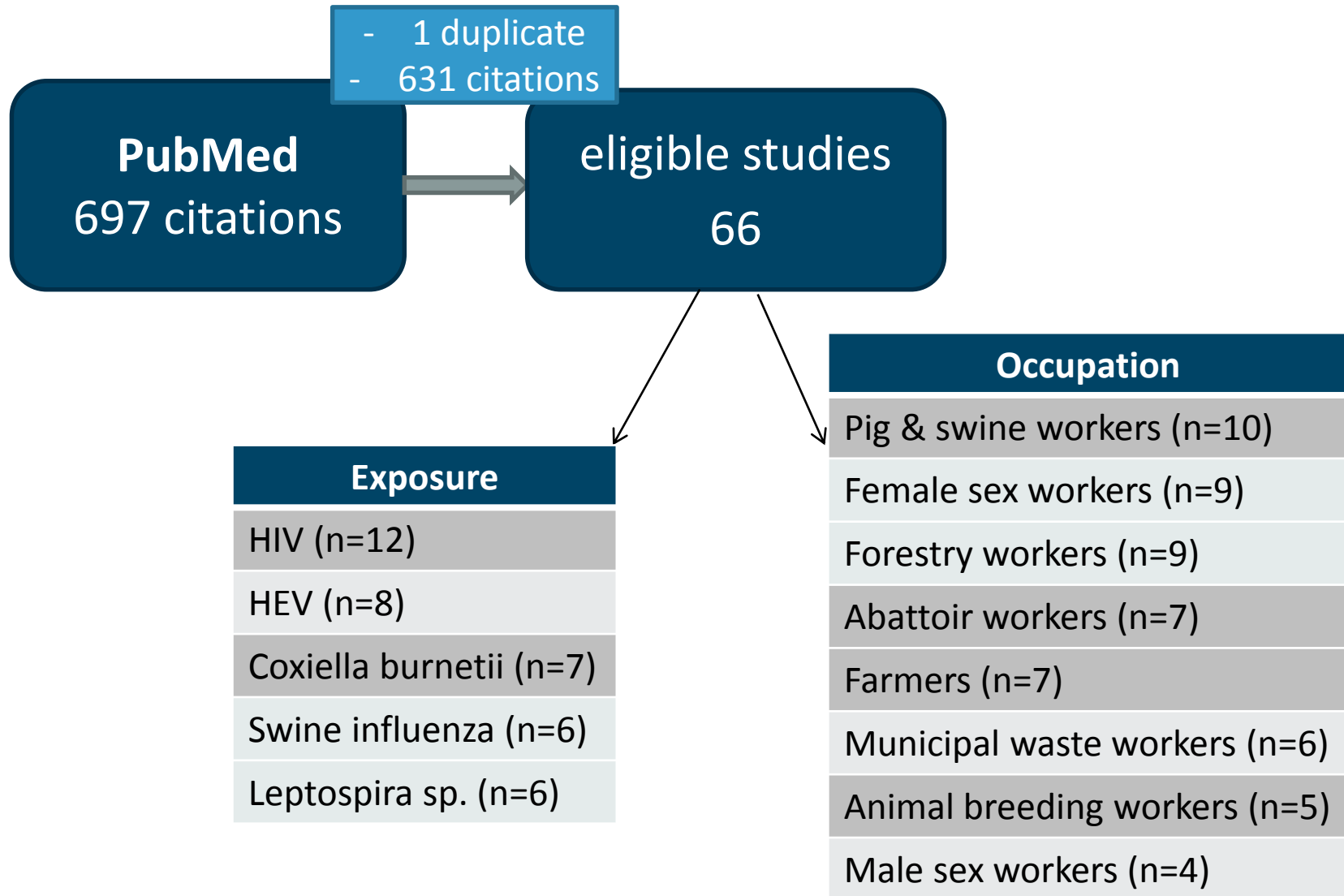
n=204

Decision

- Exclude: No adequate comparison with general population (66)
- Included (66)
- Exclude: No increased risk (27)
- Exclude: No disease/seroconversion (21)
- Exclude: Other reasons (18)
- Exclude: No specific occ group/occ exposure (6)

Results

Results



Next steps....

Next steps....

Systematic review, after registration on **Prospero**

<https://www.crd.york.ac.uk/prospero/>

The screenshot shows the PROSPERO website homepage. At the top left, the text reads "PROSPERO International prospective register of systematic reviews". At the top right is the NHS logo with the text "National Institute for Health Research". Below this is a green navigation bar with links for "Home", "About PROSPERO", "How to register", "Search", "Log in", and "Join". The main content area has a green background with a pattern of overlapping circles. A white box on the left contains the text "Welcome to PROSPERO International prospective register of systematic reviews". Below this are two columns: "Register a review" with a "Register your review now" button, and "Search PROSPERO" with a search input field and a "Go" button.

Next steps....

- + Embase, Lilacs <http://lilacs.bvsalud.org/>
- Qualitative assessment by **SIGN** (Scottish Intercollegiate Guidelines Network)
 - value $\geq 2+$ = low risk of confounding/bias/chance
<http://www.sign.ac.uk/checklists-and-notes.html>
- Analyses of **subgroups** to identify
 - global exposure hazards for specific occupational groups (ISCO-2008);
 - immune-related and respiratory conditions after exposure to bioaerosols;
 - sensitization risk to infection in some occupations (notably mine work).

Next steps....

- Meta-analyses

- Stroup DF, Berlin JA, Morton SC, et al. **Meta-analysis of Observational Studies in Epidemiology: A Proposal for Reporting.** JAMA. 2000;283(15):2008–2012

- or Matrix approach

Forestry workers	Number of studies (total = 9)
Borrelia burgdorferi	2
Campylobacter sp.	1
Hantavirus cardiopulmonary syndrome	1
HEV	2
Salmonella sp.	1
Spotted Fever Group Rickettsiae	1
Toxocara sp.	1

Help! A tick!

Ticks are blood-sucking parasites that attach themselves to the skin of humans or animals. Even though a tick bite is often harmless and painless, you may become (seriously) ill if the parasite carries bacteria.

In the course of their profession, forest and park rangers, forestry workers, tree surgeons, outdoor workers, landscapers and construction workers come into contact with ticks.



Ticks thrive in densely planted and humid environments, such as forests, gardens and meadows.



In practice....

Infographics for forestry workers,...

Lyme disease

15% - 20%

of ticks are infected with the bacteria that carries Lyme disease.

OFFICIALLY RECOGNISED OCCUPATIONAL DISEASE

2% - 3%

of people bitten by a tick will become ill. You therefore need to remove the tick between 12 and 24 hours.

TO REDUCE THE CHANCE OF INFECTION

Prevention

- ✔ Check your body for ticks, including skin folds, **every 3-4 hours.**
- ✔ Stay on **designated paths.**
- ✔ Wear **closed shoes.**
- ✔ **Pull up your socks** over the trouser legs.
- ✔ Use **insect repellents.**
- ✔ Wear **light-coloured** clothing with long sleeves and long pants.



Bitten by a tick?

- ✔ **Remove** the tick as soon as possible, **within 12 to 24 hours.**
- ✔ Use **tick-removing tweezers** (place over the head area).
- ✔ **Disinfect** the skin.
- ✔ Record the **date, location and physical place** of the bite.
- ✔ Report the tick bite using the **TekenNet app.**
- ✔ If a **red, circular skin rash** appears around the bite (after 2 to 30 days), visit your general practitioner to get an antibiotic treatment (Doxycycline).
- ✔ A **blood test shortly after a tick bite is quite pointless**, since it may produce a 'false negative' result.



Tip

Access the **TekenNet** website or app to get an overview of the regions and periods with the highest risk.



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