Municipal solid waste landfill sites and cancer risk in Germany

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BACKGROUND

The possible cancer risk of exposures associated with solid waste landfill sites is under continuous discussion. The present study aimed to first give a systematic overview of recent research on cancer risk close to landfill sites and second to point out and compare the current research situation available for Germany. We present interim results on the basis of our abstract screening.

METHODS

We conducted a literature search according to PRISMA guidelines [1], which is now in the phase of full text screening.

Information sources

- PubMed (NCBI), from inception to last search date
- Date of last search: 31.10.2022
- Reference lists of included publications and existing reviews

Inclusion criteria

- Reporting cancer incidence or mortality
- Reporting on exposure related to landfill site
- Language: English or German

Exclusion criteria

- Reporting on nuclear waste, radiation exposure or e-waste
- Animal studies (not reporting on humans)

Search strategy

The following terms were used in the PubMed search:

Landfill OR „landfill site“ OR dumpsite OR waste OR „waste management“ OR „waste products“ OR recycling OR composting OR „waste incinerator“ OR "Waste Management"[Mesh] OR "Waste Products"[Mesh] OR "Recycling"[Mesh] OR "Composting"[Mesh]

AND

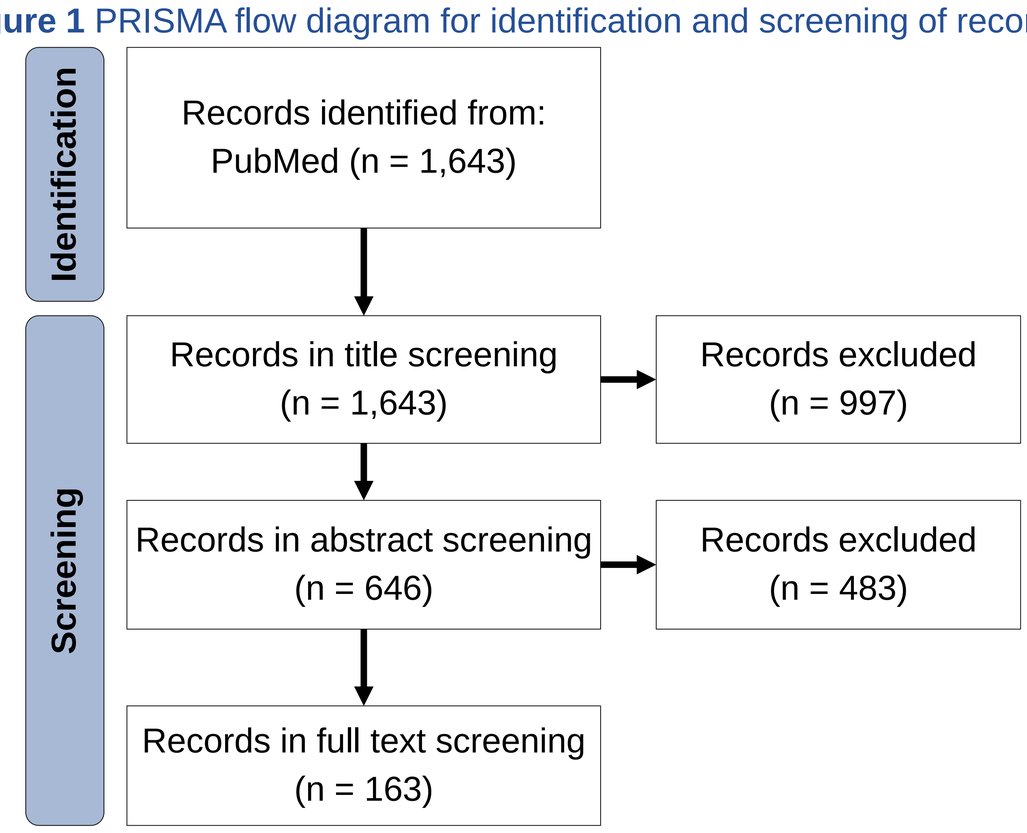
cancer OR neoplasm OR "Neoplasms"[Mesh]

AND

incidence OR mortality OR outcome OR "Incidence"[Mesh] OR "Mortality"[Mesh]

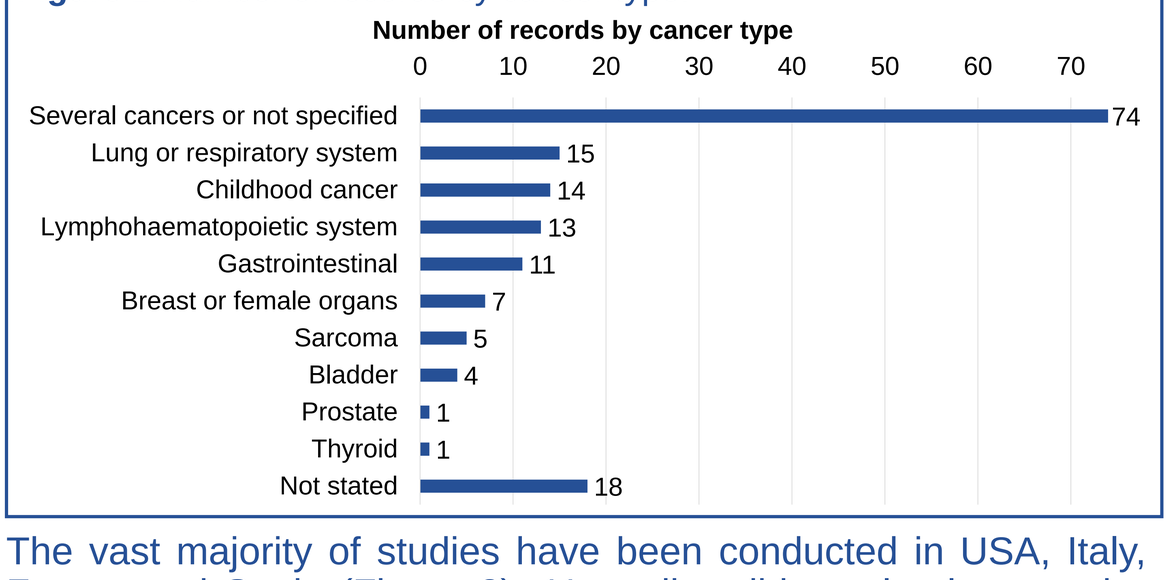
RESULTS

Figure 1 PRISMA flow diagram for identification and screening of records.



In total, 163 records were eligible for full text screening (Figure 1). The range of publication date was 1977-2022. Most studies were published in 2010 or earlier (n = 99), 64 studies were published in 2011 or later. 144 studies reported about exposure of residents living close to a landfill site and 12 studies reported about occupational exposures. Almost half of the studies reported on more than one cancer type (Figure 2). 102 studies reported about cancer incidence, 28 studies about cancer mortality and 14 studies about both outcomes.

Figure 2 Number of records by cancer type.

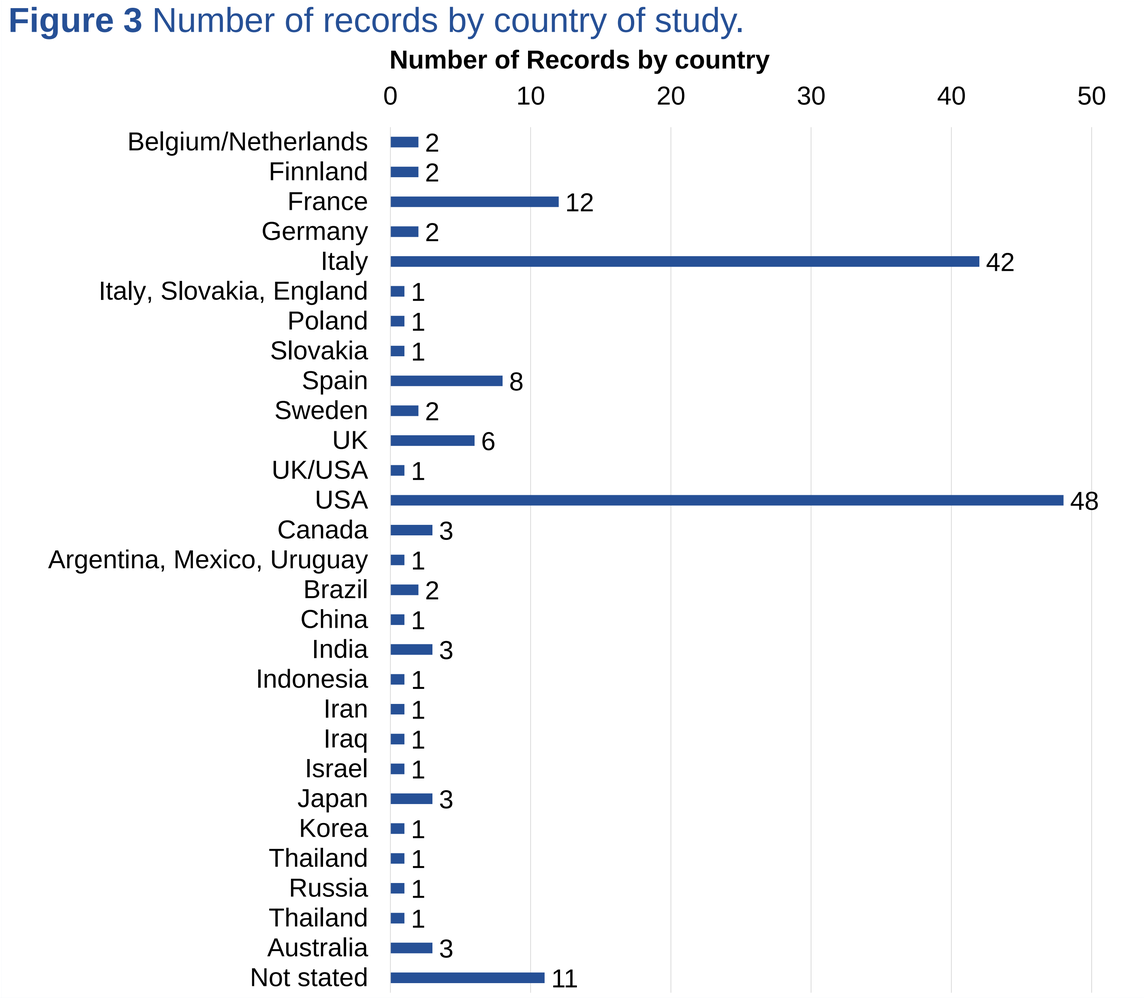


The vast majority of studies have been conducted in USA, Italy, France and Spain (Figure 3). 11 studies did no clearly state the country of study in the abstract.

82 studies reported a positive association or correlation between cancer risk (incidence or mortality) and municipal solid landfill sites, 29 studies reported no association or correlation. However, 52 studies did not clearly state or report the results for cancer risk in the abstract.

Two studies have been conducted in Germany: one including occupational exposure and lung cancer [2], one including residential exposure and leukemia/lymphoma [3]. Both studies were published before the year 2000 and reported a positive relation between exposure and cancer incidence.

Figure 3 Number of records by country of study.



CONCLUSION

The abstract screening already showed an ongoing research world wide on municipal landfill sites and cancer risk, most often conducted in Italy and USA. So far, two studies from Germany have been identified through the PubMed search which might reflect a lack of studies regarding the association between residency in the proximity of landfill sites and cancer risk in the German context.

References

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3. Lotz I, Brand H, Greiser E. Increase in the incidence of leukemia in the area of a former hazardous waste site. Offentl Gesundheitswes. 1991 Aug-Sep;53(8-9):579-80.

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