

# **Human norovirus contamination in water sources: a systematic review and meta-analysis**

## **Short title: Human norovirus pollution in water sources**

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### **2.3. Data search and extraction**

The literature search was performed using two strategies. First, a subject-specific Boolean approach and second, a non-specific search Boolean. The search Boolean varied according to specific database requirement for subject-specific Boolean approach. Generally, subject-specific Boolean consisted in norovirus and inclusion criteria 1 and 2 (section 2.2) whereas,

the non-specific search term was “norovirus”. Detail information on the search strategy can be found in appendix A. For subject-specific Boolean approach, the google scholar search article database was built by applying advance search limited to title-field with the following subject-specific expression: “norovirus stream OR sediment OR surface OR water OR river OR water OR lake OR pond OR freshwater OR waterbody OR groundwater OR water bodies OR prevalence OR occurrence OR incidence OR enumeration OR isolation OR recovery OR recovered OR characterization”. Additional articles were selected using the cited reference links of all returned articles. The WoS article database was created by using the subject-specific expression: “Norovirus\* and (estuar\* or marine\* or stream\* or sediment\* or surface water\* or river water\* or lake\* or pond\* or freshwater\* or waterbod\* or groundwater\* or water\*\*”, span all years till December 28 2020 and refined to research articles. The study record was retrieved from Scopus using title-field subject-specific expression: “norovirus\* AND (estuar\* OR marine\* OR stream\* OR sediment\*OR surface AND water\* OR river AND water\* OR lake\* OR pond\* OR freshwater\* OR waterbod\* OR groundwater\* OR water\*)” limited to articles. PubMed article database was built using advanced search with “norovirus[Title]”. Finally, the search term “norovirus” was applied to all databases for a non-subject specific retrieval of norovirus documents following similar settings or search parameters in subject-specific approach.

The article records from the two search strategies in all the databases were first downloaded in comma separated, BibTeX, tab-delimited, and plaintext file formats and combined for sequential computer-assisted deduplication using R version 4.0.2 (R Core Team, 2020) with bibliometrix r programme package (Aria and Cuccurullo, 2017), ScientoPy v.2.0.3 python programme package (Ruiz-Rosero et al., 2019) and Microsoft Excel version 2016 using the authors’ names, and title fields. Data acquisition was done on December 28 2020 and

followed up by email alert tracking of possible release of new articles until the day final analysis was completed.

**Table S1: National and regional distribution of selected studies on the prevalence of human noroviruses in water resources.**

Country	Frequency	Percent	Continent	Frequency	Percent
South Korea	15	24.6	Asia	28	45.9
Japan	6	9.8	Europe	13	21.3
United States	6	9.8	North America	10	16.4
Brazil	4	6.6	South America	6	9.8
Italy	4	6.6	Africa	4	6.6
Thailand	4	6.6	Total	61	100
Mexico	3	4.9			
Argentina	2	3.3			
Finland	2	3.3			
Singapore	2	3.3			
South Africa	2	3.3			
Canada	1	1.6			
CY, NL, UK, IT, DE, FR, ES, PL, PT	1	1.6			
Egypt	1	1.6			
France	1	1.6			
Hong Kong	1	1.6			
Kenya	1	1.6			
Netherlands	1	1.6			
Norway	1	1.6			
Spain	1	1.6			
Sweden	1	1.6			
United Kingdom	1	1.6			
Total	61	100			

CY, NL, UK, IT, DE, FR, ES, PL, and PT (Cyprus, Netherlands, United Kingdom; Italy, Germany, France, Spain, Poland and Portugal, respectively)

**Table S2: Water type and genogroup records in 61 articles on prevalence of human noroviruses in natural water resources.**

Water types	Frequency	Percent
River water	32	45.1
Groundwater	14	19.7
Composite water	10	14.1
Estuarine water	6	8.5
Marine water	4	5.6
Seawater	3	4.2
Lake water	2	2.8
Total	71	100

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