SURVEILLANCE REPORT

Giardiasis (lambliasis)

Annual Epidemiological Report for 2019

Key facts

- In 2019, 18 004 confirmed giardiasis cases were reported in the EU/EEA.
- The EU/EEA notification rate was 5.2 cases per 100 000 population. The highest notification rates were reported in Belgium and Bulgaria.
- The EU/EEA notification rate was stable in the period 2015–2018, with a drop in 2019, the reasons for which have yet to be determined.
- The highest notification rate per 100 000 population was observed in the age group 0–4 years (16.5 for males and 15.0 for females).

Introduction

Giardiasis is a common parasitic infection worldwide, caused by the protozoan *Giardia lamblia* (syn. *G. duodenalis*, *G. intestinalis*). The disease may be asymptomatic and self-limiting, or characterised by fatigue, bloating, acute diarrhoea and other chronic gastrointestinal symptoms [1]. Infection occurs frequently via ingestion of cysts found in contaminated water (water-themed recreational activities, swimming pools or drinking water) or food, but person-to-person transmission may also occur, e.g. through sexual transmission [2].

Methods

This report is based on data for 2019 retrieved from The European Surveillance System (TESSy) on 19 January 2022. TESSy is a system for the collection, analysis, and dissemination of data on communicable diseases.

For a detailed description of the methods used to produce this report, refer to the 'Methods' chapter in the 'Introduction to the Annual Epidemiological Report' [3].

An overview of the national surveillance systems is available online [4].

A subset of the data used for this report is available through ECDC's online *Surveillance Atlas of Infectious Diseases* [5].

In 2019, 25 EU/EEA Member States (23 EU Member States, and Iceland and Norway) reported giardiasis data, 23 of them with national coverage. Twenty-one Member States reported case-based data, while the remaining four reported aggregated data. Eight Member States used the latest case definition (EU 2018), while 15 adopted previous ones.

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A majority of Member States (22) undertook passive surveillance, while Czechia, Greece and Portugal had active surveillance. Out of the 21 Members States where cases were laboratory-reported, 18 also had cases reported by physicians and/or hospitals.

Notification rates and age-standardised rates were not calculated for Romania and Spain because their national surveillance systems do not cover the whole population. In addition, at the time of reporting, Spain had not yet received data from all the regions that normally report this information. Therefore, case numbers for 2019 are lower than expected.

Epidemiology

For 2019, 18 004 confirmed giardiasis cases were reported by 25 countries in the EU/EEA, with an overall rate of 5.2 cases per 100 000 population. The highest number of confirmed cases were reported by the United Kingdom, followed by Germany and Belgium. These three countries combined accounted for 58% of all confirmed giardiasis cases in the EU/EEA. Belgium had the highest notification rate of 18.0 cases per 100 000 population, followed by Bulgaria at 16.3 cases per 100 000 population (Table 1, Figure 1).

More than two-thirds (68.7%) of giardiasis cases with reported information were domestically acquired. The proportion of travel-associated cases exceeded 50% in three countries reporting more than 50 cases (Germany, Norway and Sweden). Sweden, in particular, reported that 81.1% of its giardiasis cases were travel-associated. Among cases with complete travel information, India accounted for the highest proportion of cases (19.3%) with known travel destination.

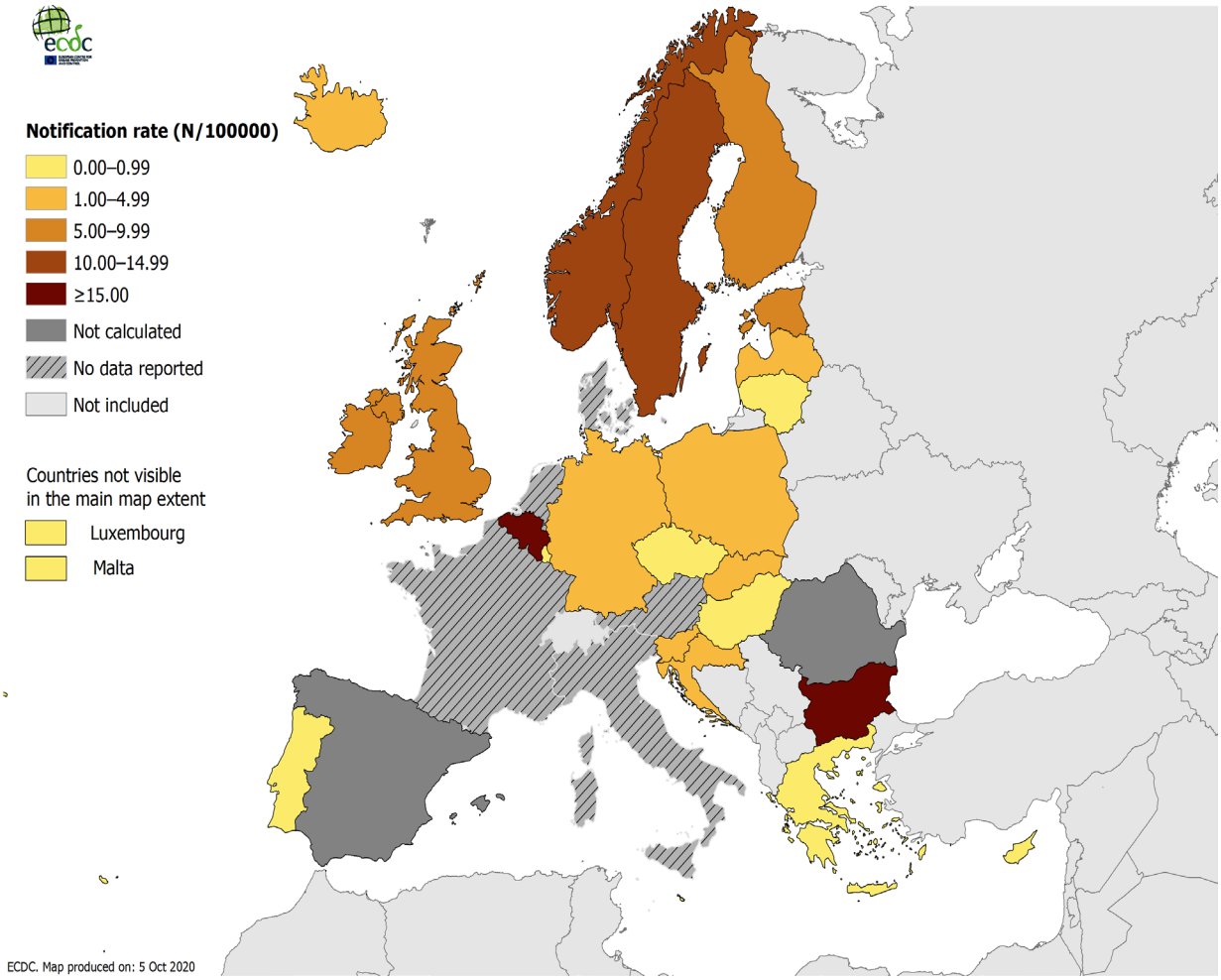
Table 1. Distribution of confirmed giardiasis cases and rates per 100 000 population by country and year, EU/EEA, 2015–2019

Country	2015		2016		2017		2018		2019		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Austria	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Belgium	1 270	11.3	1 998	17.7	1 996	17.6	2 376	20.8	2 062	18.0	18.1
Bulgaria	1 245	17.3	1 367	19.1	788	11.1	1 058	15.0	1 141	16.3	18.2
Croatia	93	2.2	50	1.2	51	1.2	50	1.2	62	1.5	1.6
Cyprus	6	0.7	1	0.1	5	0.6	3	0.3	2	0.2	0.2
Czechia	33	0.3	45	0.4	28	0.3	34	0.3	50	0.5	0.5
Denmark	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Estonia	181	13.8	187	14.2	161	12.2	107	8.1	121	9.1	9.4
Finland	259	4.7	282	5.1	278	5.1	291	5.3	296	5.4	5.7
France	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Germany	3 584	4.4	3 480	4.2	3 337	4.0	3 407	4.1	3 291	4.0	4.1
Greece	NR	NR	NR	NR	NR	NR	61	0.6	51	0.5	NR
Hungary	130	1.3	108	1.1	73	0.7	59	0.6	56	0.6	0.6
Iceland	25	7.6	19	5.7	26	7.7	25	7.2	16	4.5	4.1
Ireland	145	3.1	202	4.3	239	5.0	271	5.6	253	5.2	5.2
Italy	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Latvia	184	9.3	76	3.9	49	2.5	92	4.8	64	3.3	3.3
Liechtenstein	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lithuania	9	0.3	10	0.3	9	0.3	18	0.6	18	0.6	0.6
Luxembourg	2	0.4	0	0.0	6	1.0	0	0.0	3	0.5	0.5
Malta	0	0.0	4	0.9	4	0.9	6	1.3	2	0.4	0.4
Netherlands	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Norway	247	4.8	343	6.6	485	9.2	465	8.8	578	10.8	10.8
Poland	1 687	4.4	1 445	3.8	1 229	3.2	928	2.4	781	2.1	2.1
Portugal	26	0.3	30	0.3	45	0.4	34	0.3	43	0.4	0.4

Country	2015		2016		2017		2018		2019		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Romania	959	NR	892	NR	1 060	NR	1 270	NR	1 089	NR	NR
Slovakia	228	4.2	284	5.2	190	3.5	156	2.9	146	2.7	2.7
Slovenia	30	1.5	54	2.6	64	3.1	47	2.3	39	1.9	1.9
Spain	1 627	NR	2 069	NR	2 953	NR	3 536	NR	1 633	NR	NR
Sweden	1 473	15.1	1 491	15.1	1 000	10.0	1 252	12.4	1 102	10.8	10.5
United Kingdom	4 536	7.0	4 723	7.2	5 225	7.9	5 510	8.3	5 105	7.7	7.8
EU/EEA	**17 979**	**5.5**	**19 160**	**5.8**	**19 301**	**5.4**	**21 056**	**5.6**	**18 004**	**5.2**	**5.3**

Source: country reports
ASR: age-standardised rate
ND: no data reported
NR: no rate calculated

Figure 1. Distribution of confirmed giardiasis cases per 100 000 population by country, EU/EEA, 2019

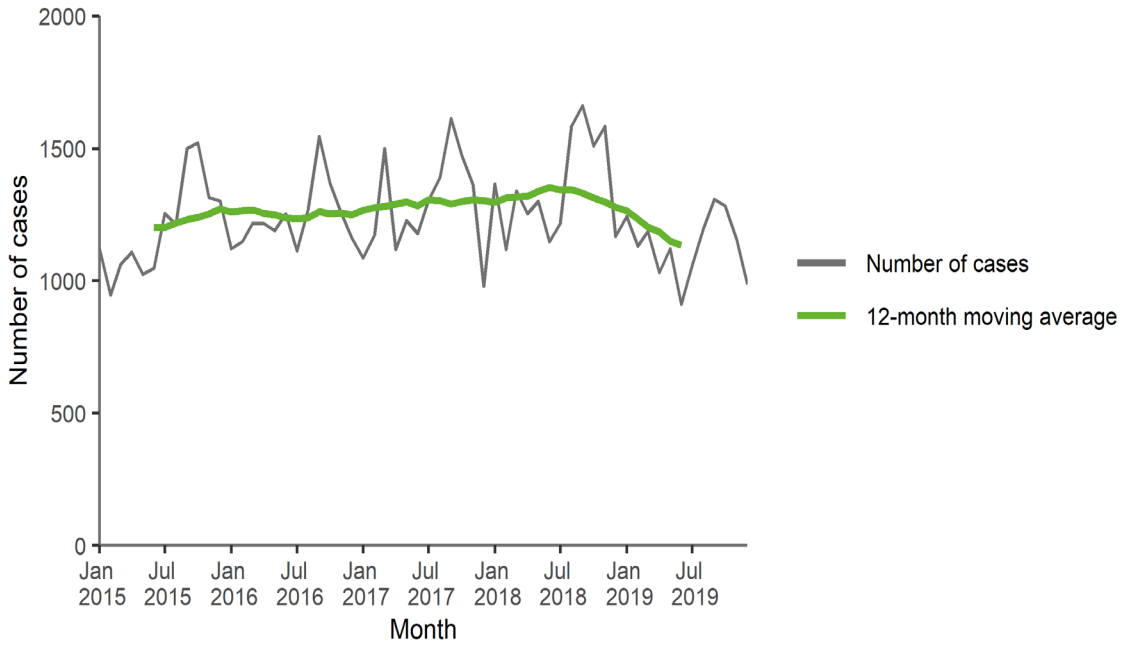


Source: Country reports from Belgium, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Sweden, and the United Kingdom.

The notification rates confirmed that giardiasis cases have remained stable in the EU/EEA in the period 2015–2018, with a drop in 2019 (Figure 2).

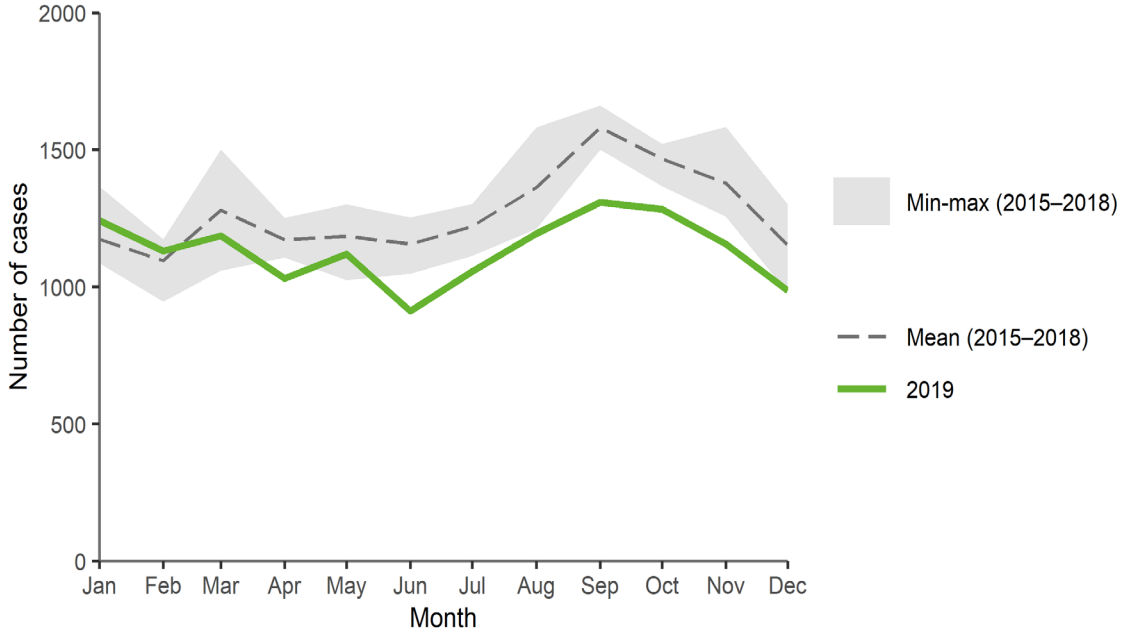
In 2019, giardiasis cases continued to show the same degree of seasonal variability as in previous years, albeit at lower levels. Higher number of cases are usually reported in summer, with a peak in September (Figure 3).

Figure 2. Distribution of confirmed giardiasis cases by month, EU/EEA, 2015–2019



Source: Country reports from Cyprus, Czechia, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

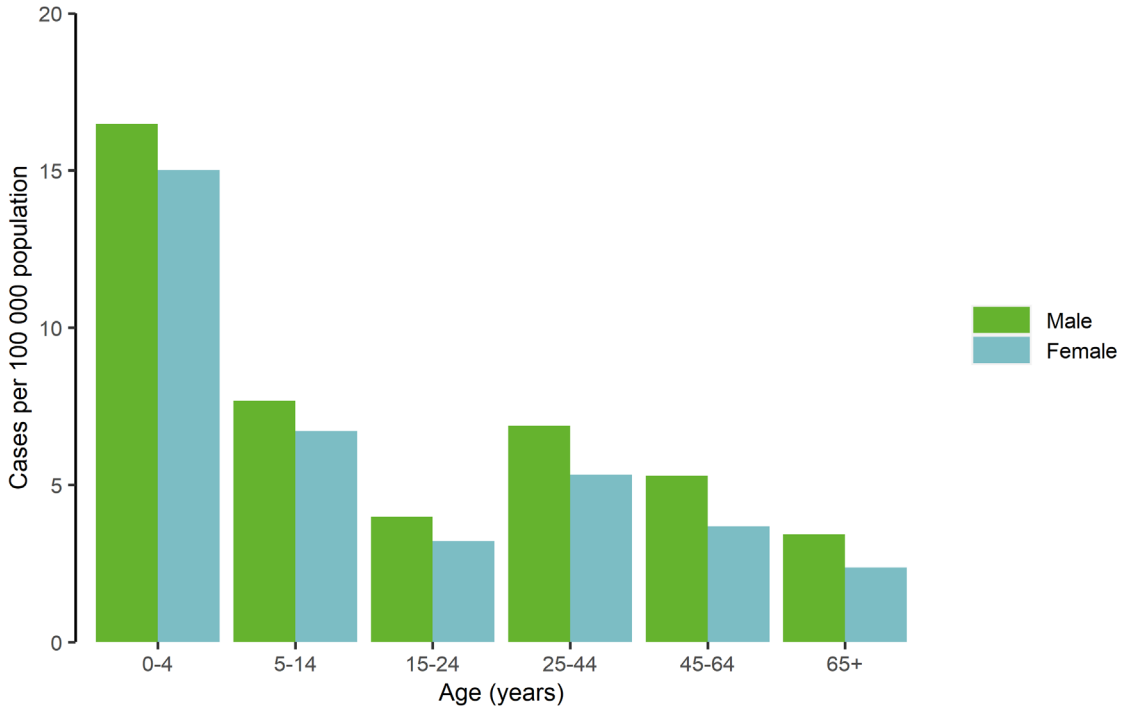
Figure 3. Distribution of confirmed giardiasis cases by month, EU/EEA, 2015–2018 and 2019



Source: Country reports from Cyprus, Czechia, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

Of the 16 837 confirmed cases with information on gender, 56% were males and 44% were females, corresponding to a male-to-female ratio of 1.3:1, with males overrepresented in every age group (Figure 4). The highest notification rate per 100 000 population was detected in the age group 0–4 years (16.5 for males and 15.0 for females), a figure which is three to five times higher than the other age groups. The notification rate decreased with age and was the lowest in persons ≥ 65 years of age (3.4 cases in males and 2.4 cases in females, per 100 000 population).

Figure 4. Distribution of confirmed giardiasis cases per 100 000 population, by age and gender, EU/EEA, 2019



Outbreaks and other threats

No multi-country threats related to giardiasis were reported in 2019. Between November 2018 and May 2019, Italy reported its first large outbreak, which involved more than 200 people [6]. The authors propose that due to the limitations of the surveillance system in place, i.e. retrospective passive surveillance of confirmed cases, they were unable to pinpoint the source of the outbreak with certainty. However, they attribute it to tap water consumption. This highlights the importance of implementing timely control measures and strengthening surveillance systems in countries where they are lacking or incomplete, particularly by improving surveillance at the local and regional levels for rapid detection of rising case numbers.

Discussion

Giardiasis is the most commonly reported among the five food- and waterborne parasitic diseases under mandatory EU surveillance. Surveillance of giardiasis covers the entire population in most EU/EEA countries. However, a 2016 review of *giardia* in 19 Eastern European countries showed discrepancies between the notification rates provided in the study and the officially reported rates in TESSy, suggesting underreporting throughout Eastern Europe [7]. Five EU Member States do not have surveillance systems for giardiasis and do not report cases.

While the EU/EEA notification rate was stable in the period 2015–2018, the annual number of cases increased steadily in the same period, with a decline in 2019.

Spain had the greatest yearly decrease, but this was most likely due to underreporting caused by a lack of validated subnational data (see the 'Methods' section). For all the other countries reporting sizeable decreases, the specific reasons behind these are unclear, and would need to be further elucidated.

G. lamblia organisms have been sub-classified using molecular typing into eight genetic assemblages (designated A–H), but only two of them (A and B) have been found to infect humans [8]. Recent studies found assemblage-specific risk factors and routes of transmission [9, 10]. *G. lamblia* also infects other mammalian hosts and thus has zoonotic potential. Studies in Slovakia detected the first human cases linked to dog-specific assemblage C and cat-specific assemblage F, in Europe [11].

Human infection occurs most frequently via contaminated food or water, including recreational water exposure [10, 12]. Person-to-person transmission, e.g. through sexual transmission or poor hygiene practices, may also occur. The sexual route seems to acquire epidemiological importance in some subpopulations, i.e. interconnected networks of men who have sex with men [13].

In many countries, there may be a misconception that infections are largely associated with travelling abroad. In most EU Member States, however, cases with known probable country of infection were mainly domestically acquired. However, in three Nordic countries (Iceland, Norway and Sweden), cases were predominantly associated with travel outside the EU. Sweden, which had the third-highest notification rate in the EU/EEA, continues to report over 80% of the cases as infected abroad, mainly in Asia and Africa [14].

Public health implications

Giardiasis remains the most reported food- and waterborne parasitic disease in the EU/EEA. Cases are likely underreported and under-ascertained. More studies are needed to understand the epidemiology and determinants of this disease and its long-term outcomes. Parasites have complex lifecycles, often with long incubation periods and asymptomatic or subclinical manifestations, making clinical diagnosis challenging. Regardless of travel history, all human stool samples submitted for diagnostic testing should be screened for giardia cysts by microscopy to enable proper reporting of locally acquired cases. Advances in the molecular characterisation of giardiasis diagnostics would enable more granular subtyping of isolates with large genetic differences, particularly during outbreaks. Giardiasis is a public health threat because of the increasing occurrence of antimicrobial resistance, and its potential to cause outbreaks and spread further due to climate change.

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