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Incidence of Guillan-Barré Syndrome in Europe: A targeted literature review

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Introduction and objectives

Guillain-Barré syndrome (GBS) is a rare, rapidly progressing disease due to inflammation of the nerves (polyneuritis) and leading to muscle weakness, sometimes progressing to complete paralysis.[1] There is a paucity of consistent estimates of GBS incidence to guide healthcare decision-making. Previously reported incidence rates of GBS were in the range of 0.8–1.9 (median 1.1) cases per 100,000 person-years.[2] The aim of this targeted literature review (TLR) was to assess the incidence of GBS in Europe over the past decade.

Methods

Search methodology: A literature search of studies in MEDLINE®, MEDLINE®-in-Process, and MEDLINE Epub of Print database was conducted via Ovid platform on 9th June 2021. Study period was limited from 2011 to present.

Study selection: All Europe-based studies reporting data on incidence for patients with GBS were included.

Population: Patients with GBS; Intervention/Comparator: Any

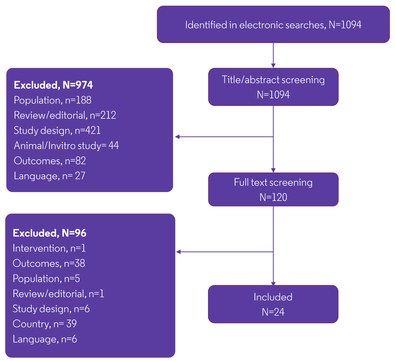
Outcomes: Incidence of GBS, Incidence rate ratio (IRR) of GBS;

Study design: No restriction; Language: English language publications only; Country: Europe only; Date of Publication: 2011 to present

Results

The review identified 24 unique studies.[3-26] The flow of studies through the review is shown in Figure 1.

Figure 1. PRISMA flow diagram for the targeted literature review



Study characteristics

- Twenty-four studies met the inclusion criteria[3-26]. The majority (71%) of the studies were retrospective, involving medical records or registry analyses, and the remaining were either prospective (25%) or cross sectional (4%).
- There were four studies each from Denmark and France, three studies each from Finland and Italy, two studies each from Norway and Serbia, and one study each from Iceland, Netherlands, Spain, Switzerland, and the UK. One of the included European studies did not report the study country.
- The study period of the included studies ranged from 1980 to 2020.
- Among the identified studies, patients were predominantly of male gender and the average age was >50 years.

Outcomes

- Among 24 studies, 19 reported an annual incidence per 100,000 person-years.[3,4,6-9,11-15,17,18,20-22,24-26] The mean annual incidence rate varied between 1.0 and 3.0 per 100,000 person-years in adults (Table 1), and between 0.5 and 1.1 per 100,000 person-years in children (0–9 years).
- The incidence rates of GBS ranged from 1.2–2.5 per 100,000 person-years in men and 0.8–1.75 per 100,000 person-years in women (Figure 2).
- The incidence rates of GBS increased with increasing age.
- Among the included European countries, Italy reported the highest annual incidence rate (3.0 per 100,000 person-years) followed by Norway (2.7 per 100,000 person-years).

A detailed list of studies that reported the annual incidence per 100,000 person-years is presented in the Table 1. The table represents incidence as per geographical location.

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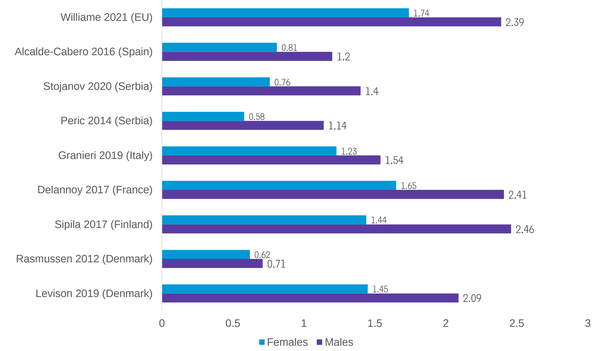
Table 1: Incidence rates reported among the included studies

Reference	Study design	Time frame	Incidence of Guillain-Barré syndrome (per 1,00,000 person-years)
Denmark			
Al-Hakem et al, 2019[3]	Nationwide population-based study	September 2012 to December 2015	1.59
Levison et al, 2019[4]	Retrospective nationwide study	1987 to 2016	1.77 M: 2.09; F: 1.45
Rasmussen et al, 2012[6]	Nationwide population-based cohort study	1 January 1980 to 31 December 2009	Children: 0.67 M: 0.71; F: 0.62
Finland			
Sipila et al, 2015[11]	Retrospective study	1 January 2004 to 31 December 2013	1.82
Sipila et al, 2017[12]	Retrospective study	2004 to 2014	Children: 0.46 Adults: 1.69 M: 2.46; F: 1.44
Skufca et al, 2017[13]	Retrospective study	2002 to 2012	2.59
France			
Delannoy et al, 2017[7]	Cross-sectional study	2008 to 2013	2.42 (95% CI: 2.37–2.47) M: 2.41 (95% CI: 2.34–2.48) F: 1.65 (95% CI: 1.59–1.70)
Roze et al, 2017[9]	Prospective observational study	January 2006 to December 2015	2.1
Iceland			
Hafsteinsdottir, 2018[14]	Retrospective population-based study	20 years	Children: 0.7 Adults: 1.1
Italy			
Benedetti et al, 2019[15]	Retrospective followed by a prospective analysis	1 January 2003 to 31 December 2011	3
Granieri et al, 2019[17]	Retrospective study	January 2008 to July 2013 January 2008 to July 2013	Adults: 1.38 M: 1.54; F: 1.23 Children: 1.05 M: 1.04; F: 1.07
The Netherlands			
Van der Maas et al, 2011[18]	Retrospective study	1996 and 2008	1.14
Norway			
Farbu et al, 2016[21]	Prospective study	2006 to 2008	2.7 M: 1.20 (95% CI: 0.96–1.50) F: 0.81 (95% CI: 0.62–1.05)
Ghaderi et al, 2016[20]	Prospective Registry analysis	3.25 years	2.7 M: Year 2006: 2.56 Year 2007: 4.95 F: Year 2006: 3.40 Year 2007: 3.32
Serbia			
Stojanov et al, 2020[22]	Retro-prospective study	2009 to 2018	1.07 M: 1.4; F: 0.76
Spain			
Alcalde-Cabero et al, 2016[24]	Retrospective assessment of registry	2009 to 2011	1.00 (95% CI: 0.84–1.18) M: 1.20 (95% CI: 0.96–1.50) F: 0.81 (95% CI: 0.62–1.05)
United Kingdom			
Keddie et al, 2021[25]	Epidemiological retrospective database	2016 to 2019	Range: 1.65–1.88
Europe			
Williame et al, 2021[26]	Retrospective database study	2003 to 2014	Europe: 2.06; M: 2.39; F: 1.74

Figure 2: Incidence rate per 100,000 person-years by gender



Conclusion

- This review provides the most recent estimate of GBS incidence in adults and children in Europe over the last 10 years. An increase in the annual incidence rate was observed in few European countries compared with previously published reviews.[1]
- The purpose of this TLR was to provide an overview of GBS incidence in Europe. However, our focused search strategy and the inclusion of only Medline studies could have resulted in the exclusion of a few publications.

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