



Shailja Shah, M.D.

M.P.H. Candidate, Epidemiology Track
shailja.c.shah.1@vanderbilt.edu

Practicum Site:
Division of Gastroenterology, Hepatology, and
Nutrition, Department of Medicine
Vanderbilt University Medical Center
Nashville, TN

Practicum Site Supervisor:
Walter Smalley, M.D., M.P.H.

The Global Incidence of Gastric Cancer in the 21st Century: A Systematic Review of Population-Based Studies from 2007-2017

Background: Gastric cancer (GC) is the fifth most common cancer and third most common cause of cancer-related mortality globally. Disease incidence varies among different regions within countries and among ethnicities. *Helicobacter pylori*, the strongest known risk factor for GC, infects over 4.4 billion worldwide and is responsible for at least 80% of the global GC burden. The epidemiology of GC has changed with improvements in sanitation and effective antibiotic therapy against *Helicobacter pylori*. This systematic review aimed to define the global incidence of GC in the past decade.

Methods: We performed a systematic literature search to identify population-based studies that have included incidence rates of GC for a defined population between 2007 to 2017. We recorded incidence per 100,000 person-years. We created choropleth maps for the incidence of GC for males and females stratified by the United Nations geoscheme using Geographic Information System (GIS) Software software.

Results: 114 studies from 130 countries reporting GC incidence rates during or after 2007 were included. The highest incidence rates were found in Iran, Japan, and China (40.1-61.7 per 100 000 person-years). For males, the highest rates were found in China, South Korea, and Iran (59.1-193.4 per 100 000 person-years), while Colombia, South Korea, and Iran had the highest rates for females (27.3-107 per 100,000 person-years). The lowest rates were seen in Gambia, Pakistan, Laos and Timor-Leste (1.3-2.3 100,000 person-years). Males

had the lowest rates in Ghana, Nepal, and Algeria (0.7-1.8 100,000 person-years), while females had the lowest rates in Ghana, Maldives, and Sudan (0.1-0.9 100,000 person-years). In North America, overall incidence rates ranged from 8.7 (United States) to 25 (Canada) per 100,000 person-years (males: 2.8 to 9.3 and females: 2.1 to 4.6 per 100,000 person-years)

Conclusion: We observed marked global variation in GC incidence. Preferential targeting of high risk populations and development of preventive strategies or early cancer detection offer the highest potential for GC alleviation.

