

Table 1: Prevalence of IBD, CD, UC since 2000 all over the world

Country / region	Author	IBD prevalence Estimates, (/10 ⁵)	CD prevalence Estimates, (/10 ⁵)	UC prevalence Estimates, (/10 ⁵)
North America (n=11)				
USA	Limketkai ¹	526.21	281.18	245.03
	Herrinton ²	389.00	129.00	191.00
	Kappelman ³	438.30	200.72	237.58
	Loftus ⁴	307.94	174.00	214.00
	Kappelman ⁵	504.30	241.30	263.00
	Shivashankar ⁶	533.00	246.70	286.30
Canada	Benchimol ⁷	534.38	254.66	258.98
	Green ⁸	486.09	269.73	240.91
	Bitton ⁹	384.90	225.60	139.80
Puerto Rico	Appleyard ¹⁰	24.81	5.89	12.53
	Vendrell ¹¹	38.19	14.89	23.30
South America (n=5)				

Brazil	Gasparini ¹²	52.59	24.28	28.31
	Lima ¹³	38.25	14.15	24.10
	Parente ¹⁴	8.08	3.21	4.87
	Victoria ¹⁵	22.60	5.65	14.81
Chile	Bellolio ¹⁶	66.63	20.75	45.87
Oceania (n=4)				
New Zealand	Coppell ¹⁷	245.01	127.64	97.89
	Gearry ¹⁸	308.24	155.21	145.00
Australia	Studd ¹⁹	335.02	170.34	156.50
	Bhatia ²⁰	344.55	197.32	135.98
Asia (n=14)				
Taiwan, China	Chuang ²¹	10.98	2.07	8.92
	Wei ²²	9.40	1.78	7.62
Hong Kong, China	Ng ²³	45.8	17.5	27.4
Japan	Asakura ²⁴	84.8	21.2	63.3
Korea	Kwak ²⁵	95.6	29.6	66.0
Malaysia	Pang ²⁶	4.27	1.86	2.33

	Mokhtar ²⁷	23.03	7.36	15.67
	Hilmi ²⁸	9.24	2.31	6.66
Sri Lanka	Niriella ²⁹	7.78	2.33	5.45
	Kalubowila ³⁰	6.56	1.22	5.33
India	Sood ³¹	-	-	44.3
Israel	Zvidi ³²	332.1	162.6	169.5
Turkey	Tezel ³³	-	-	4.8
Lebanon	Abdul-Baki ³⁴	159.2	53.1	106.2
Europe (n=24)				
UK*	Lewis ³⁵	291.00	114.00	177.00
	Rubin ³⁶	393.40	144.80	243.40
Sweden	Büsch ³⁷	652.60	194.67	349.31
	Eriksson ³⁸	975.20	414.55	531.11
Denmark	Lophaven ³⁹	875.87	263.81	612.06
	Jacobsen ⁴⁰	445.00	151.00	294.00
Finland	Jussila ⁴¹	595.0	-	-
Italy	Tursi ⁴²	187.23	52.13	103.19
	Macaluso ⁴³	273.01	15.04	29.61
	Sardu ⁴⁴	139.00	15.00	124.00

Spain	Brunet ⁴⁵	545.28	191.40	353.88
	Lucendo ⁴⁶	203.55	116.45	84.76
Croatia	Despalatovic ⁴⁷	117.50	36.90	80.60
	Klarin ⁴⁸	244.99	111.08	133.91
	Pezerovic ⁴⁹	73.25	15.14	58.11
Switzerland	Bähler ⁵⁰	408.00	-	-
	Juillerat ⁵¹	205.60	100.70	105.00
Portugal	Azevedo ⁵²	146	73	71
German	Hein ⁵³	744	322	412
Netherlands	de Groof ⁵⁴	444.2	176.1	231.4
France	Ghione ⁵⁵	276.3	161.1	104
Poland	Holko ⁵⁶	157	35	112.1
Romania	Gheorghe ⁵⁷	3.9	1.5	2.4
Hungary	Kurti ⁵⁸	550	200	340
Africa (n=1)				
Algeria	Hammada ⁵⁹	31.6	19	10.6

IBD: inflammatory bowel disease; CD: Crohn's disease; UC: ulcerative colitis.

USA: the United States of America; UK: United Kingdom.

* Data were all from the 1990s.

Reference

- 1 Limketkai BN, Shah SC, Hirano I, Bellaguarda E, Colombel JF. Epidemiology and implications of concurrent diagnosis of eosinophilic oesophagitis and IBD based on a prospective population-based analysis. *Gut*. 2019;68(12):2152-2160. doi: 10.1136/gutjnl-2018-318074.
- 2 Herrinton LJ, Liu L, Lafata JE, Allison JE, Andrade SE, Korner EJ, et al. Estimation of the period prevalence of inflammatory bowel disease among nine health plans using computerized diagnoses and outpatient pharmacy dispensings. *Inflammatory bowel diseases* 2007; **13**(4): 451-461 doi: 10.1002/ibd.20021.
- 3 Kappelman MD, Rifas-Shiman SL, Kleinman K, Ollendorf D, Bousvaros A, Grand RJ, et al. The prevalence and geographic distribution of Crohn's disease and ulcerative colitis in the United States. *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association* 2007; **5**(12): 1424-1429. doi: 10.1016/j.cgh.2007.07.012.
- 4 Loftus CG, Loftus EV, Jr., Harmsen WS, Zinsmeister AR, Tremaine WJ, Melton LJ, et al. Update on the incidence and prevalence of Crohn's disease and ulcerative colitis in Olmsted County, Minnesota, 1940-2000. *Inflammatory bowel diseases* 2007; **13**(3): 254-261.doi: 10.1002/ibd.20029.
- 5 Kappelman MD, Moore KR, Allen JK, Cook SF. Recent trends in the prevalence of Crohn's disease and ulcerative colitis in a commercially insured US population. *Digestive diseases and sciences* 2013; **58**(2): 519-525. doi: 10.1007/s10620-012-2371-5.
- 6 Shivashankar R, Tremaine WJ, Harmsen WS, Loftus EV, Jr. Incidence and Prevalence of Crohn's Disease and Ulcerative Colitis in Olmsted County, Minnesota From 1970 Through 2010. *Clinical gastroenterology and hepatology : the official clinical practice journal of the American Gastroenterological Association* 2017; **15**(6): 857-863. doi: 10.1016/j.cgh.2016.10.039.
- 7 Benchimol EI, Manuel DG, Guttman A, Nguyen GC, Mojaverian N, Quach P, et al. Changing age demographics of inflammatory bowel

- disease in Ontario, Canada: a population-based cohort study of epidemiology trends. *Inflammatory bowel diseases* 2014; **20**(10): 1761-1769. doi: 10.1097/mib.000000000000103.
- 8 Green C, Elliott L, Beaudoin C, Bernstein CN. A population-based ecologic study of inflammatory bowel disease: searching for etiologic clues. *American journal of epidemiology* 2006; **164**(7): 615-623; discussion 624-618. doi: 10.1093/aje/kwj260.
 - 9 Bitton A, Vutcovici M, Patenaude V, Sewitch M, Suissa S, Brassard P. Epidemiology of inflammatory bowel disease in Quebec: recent trends. *Inflammatory bowel diseases* 2014; **20**(10): 1770-1776. doi: 10.1097/mib.000000000000162.
 - 10 Appleyard CB, Hernandez G, Rios-Bedoya CF. Basic epidemiology of inflammatory bowel disease in Puerto Rico *Inflammatory bowel diseases* 2004; **10**(2): 106-111. doi: 10.1097/00054725-200403000-00007.
 - 11 Vendrell R, Venegas HL, Perez CM, Morell C, Roman RV, Torres EA. Differences in prevalence of inflammatory bowel disease in Puerto Rico between commercial and government-sponsored managed health care insured individuals. *Boletin de la Asociacion Medica de Puerto Rico* 2013; **105**(2): 15-19.
 - 12 Gasparini RG, Sasaki LY, Saad-Hossne R. Inflammatory bowel disease epidemiology in Sao Paulo State, Brazil. *Clinical and experimental gastroenterology* 2018; **11**: 423-429. doi: 10.2147/ceg.S176583.
 - 13 Lima Martins A, Volpato RA, Zago-Gomes MDP. The prevalence and phenotype in Brazilian patients with inflammatory bowel disease. *BMC gastroenterology* 2018; **18**(1): 87. doi: 10.1186/s12876-018-0822-y.
 - 14 Parente JM, Coy CS, Campelo V, Parente MP, Costa LA, da Silva RM, et al. Inflammatory bowel disease in an underdeveloped region of Northeastern Brazil. *World journal of gastroenterology* 2015; **21**(4): 1197-1206. doi: 10.3748/wjg.v21.i4.1197.
 - 15 Victoria CR, Sasaki LY, Nunes HR. Incidence and prevalence rates of inflammatory bowel diseases, in midwestern of Sao Paulo State, Brazil. *Arquivos de gastroenterologia* 2009; **46**(1): 20-25.

- 16 Bellolio Roth F, Gomez J, Cerda J. Increase in Hospital Discharges for Inflammatory Bowel Diseases in Chile Between 2001 and 2012. *Digestive diseases and sciences* 2017; **62**(9): 2311-2317. doi: 10.1007/s10620-017-4660-5.
- 17 Coppel KJ, Galts CP, Huizing FY, Norton JK, Gray AR, Schultz K, et al. Annual Incidence and Phenotypic Presentation of IBD in Southern New Zealand: An 18-Year Epidemiological Analysis. *Inflammatory intestinal diseases* 2018; **3**(1): 32-39. doi: 10.1159/000492615.
- 18 Geary RB, Richardson A, Frampton CM, Collett JA, Burt MJ, Chapman BA, et al. High incidence of Crohn's disease in Canterbury, New Zealand: results of an epidemiologic study. *Inflammatory bowel diseases* 2006; **12**(10): 936-943. doi: 10.1097/01.mib.0000231572.88806.b9.
- 19 Studd C, Cameron G, Beswick L, Knight R, Hair C, McNeil J, et al. Never underestimate inflammatory bowel disease: High prevalence rates and confirmation of high incidence rates in Australia. *Journal of gastroenterology and hepatology* 2016; **31**(1): 81-86. doi: 10.1111/jgh.13050.
- 20 Bhatia R, Yeoh SW, Vaz K, Studd C, Wilson J, Bell S, et al. Inflammatory bowel disease incidence, prevalence and 12-month initial disease course in Tasmania, Australia. *Internal medicine journal* 2019; **49**(5): 622-630. doi: 10.1111/imj.14111.
- 21 Chuang CH, Lin SH, Chen CY, Sheu BS, Kao AW, Wang JD. Increasing incidence and lifetime risk of inflammatory bowel disease in Taiwan: a nationwide study in a low-endemic area 1998-2010. *Inflammatory bowel diseases* 2013; **19**(13): 2815-2819. doi: 10.1097/01.Mib.0000435436.99612.27.
- 22 Wei SC, Lin MH, Tung CC, Weng MT, Kuo JS, Shieh MJ, et al. A nationwide population-based study of the inflammatory bowel diseases between 1998 and 2008 in Taiwan. *BMC gastroenterology* 2013; **13**: 166. doi: 10.1186/1471-230x-13-166.
- 23 Ng SC, Leung WK, Shi HY, Li MK, Leung CM, Ng CK, et al. Epidemiology of Inflammatory Bowel Disease from 1981 to 2014: Results from a Territory-Wide Population-Based Registry in Hong Kong. *Inflammatory bowel diseases* 2016; **22**(8): 1954-1960. doi: 10.1097/mib.0000000000000846.
- 24 Asakura K, Nishiwaki Y, Inoue N, Hibi T, Watanabe M, Takebayashi T. Prevalence of ulcerative colitis and Crohn's disease in Japan. *Journal*

- of gastroenterology 2009; **44**(7): 659-665. doi: 10.1007/s00535-009-0057-3.
- 25 Kwak MS, Cha JM, Lee HH, Choi YS, Seo SI, Ko KJ, et al. Emerging trends of inflammatory bowel disease in South Korea: A nationwide population-based study. *Journal of gastroenterology and hepatology* 2019; **34**(6): 1018-1026. doi: 10.1111/jgh.14542.
- 26 Pang P, Ng YS, Sidhu J, Kok M. Epidemiology of Inflammatory Bowel Disease in Southern Peninsular Malaysia. *The Medical journal of Malaysia* 2018; **73**(2): 86-89.
- 27 Mokhtar NM, Nawawi KNM, Verasingam J, Zhiqin W, Sagap I, Azman ZAM, et al. A four-decade analysis of the incidence trends, sociodemographic and clinical characteristics of inflammatory bowel disease patients at single tertiary centre, Kuala Lumpur, Malaysia. *BMC public health* 2019; **19**(Suppl 4): 550. doi: 10.1186/s12889-019-6858-2.
- 28 Hilmi I, Jaya F, Chua A, Heng WC, Singh H, Goh KL. A first study on the incidence and prevalence of IBD in Malaysia--results from the Kinta Valley IBD Epidemiology Study. *Journal of Crohn's & colitis* 2015; **9**(5): 404-409. doi: 10.1093/ecco-jcc/jjv039.
- 29 Niriella MA, De Silva AP, Dayaratne AH, Ariyasinghe MH, Navarathne MM, Peiris RS, et al. Prevalence of inflammatory bowel disease in two districts of Sri Lanka: a hospital based survey. *BMC gastroenterology* 2010; **10**: 32. doi: 10.1186/1471-230x-10-32.
- 30 Kalubowila U, Liyanaarachchi T, Galketiya KB, Rathnayaka P, Piyasena I, Tennakoon S, et al. Epidemiology and clinical course of inflammatory bowel disease in the Central Province of Sri Lanka: A hospital-based study. *JGH open : an open access journal of gastroenterology and hepatology* 2018; **2**(4): 129-133. doi: 10.1002/jgh3.12058.
- 31 Sood A, Midha V, Sood N, Bhatia AS, Avasthi G. Incidence and prevalence of ulcerative colitis in Punjab, North India. *Gut* 2003; **52**(11): 1587-1590. doi: 10.1136/gut.52.11.1587.
- 32 Zvidi I, Boltin D, Niv Y, Dickman R, Fraser G, Birkenfeld S. The Incidence and Prevalence of Inflammatory Bowel Disease in the Jewish and Arab Populations of Israel. *The Israel Medical Association journal : IMAJ* 2019; **21**(3): 194-197.

- 33 Tezel A, Dokmeci G, Eskiocak M, Umit H, Soylu AR. Epidemiological features of ulcerative colitis in Trakya, Turkey. *The Journal of international medical research* 2003; **31**(2): 141-148. doi: 10.1177/147323000303100211.
- 34 Abdul-Baki H, ElHajj I, El-Zahabi LM, Azar C, Aoun E, Zantout H, et al. Clinical epidemiology of inflammatory bowel disease in Lebanon. *Inflammatory bowel diseases* 2007; **13**(4): 475-480. doi: 10.1002/ibd.20022.
- 35 Lewis JD, Brensinger C, Bilker WB, Strom BL. Validity and completeness of the General Practice Research Database for studies of inflammatory bowel disease. *Pharmacoepidemiology and drug safety* 2002; **11**(3): 211-218. doi: 10.1002/pds.698.
- 36 Rubin GP, Hungin AP, Kelly PJ, Ling J. Inflammatory bowel disease: epidemiology and management in an English general practice population. *Alimentary pharmacology & therapeutics* 2000; **14**(12): 1553-1559.
- 37 Busch K, Ludvigsson JF, Ekstrom-Smedby K, Ekbom A, Askling J, Neovius M. Nationwide prevalence of inflammatory bowel disease in Sweden: a population-based register study. *Alimentary pharmacology & therapeutics* 2014; **39**(1): 57-68. doi: 10.1111/apt.12528.
- 38 Eriksson C, Cao Y, Rundquist S, Zhulina Y, Henriksson I, Montgomery S, et al. Changes in medical management and colectomy rates: a population-based cohort study on the epidemiology and natural history of ulcerative colitis in Orebro, Sweden, 1963-2010. *Alimentary pharmacology & therapeutics* 2017; **46**(8): 748-757. doi: 10.1111/apt.14268.
- 39 Lophaven SN, Lynge E, Burisch J. The incidence of inflammatory bowel disease in Denmark 1980-2013: a nationwide cohort study. *Alimentary pharmacology & therapeutics* 2017; **45**(7): 961-972. doi: 10.1111/apt.13971.
- 40 Jacobsen BA, Fallingborg J, Rasmussen HH, Nielsen KR, Drewes AM, Puho E, et al. Increase in incidence and prevalence of inflammatory bowel disease in northern Denmark: a population-based study, 1978-2002. *European journal of gastroenterology & hepatology* 2006; **18**(6): 601-606.
- 41 Jussila A, Virta LJ, Salomaa V, Maki J, Jula A, Farkkila MA. High and increasing prevalence of inflammatory bowel disease in Finland with

- a clear North-South difference. *Journal of Crohn's & colitis* 2013; **7**(7): e256-262. doi: 10.1016/j.crohns.2012.10.007.
- 42 Tursi A, Elisei W, Picchio M. Incidence and prevalence of inflammatory bowel diseases in gastroenterology primary care setting. *European journal of internal medicine* 2013; **24**(8): 852-856. doi: 10.1016/j.ejim.2013.06.005.
- 43 Macaluso FS, Mocchi G, Orlando A, Scondotto S, Fantaci G, Antonelli A, et al. Prevalence and incidence of inflammatory bowel disease in two Italian islands, Sicily and Sardinia: A report based on health information systems. *Digestive and liver disease : official journal of the Italian Society of Gastroenterology and the Italian Association for the Study of the Liver* 2019. doi: 10.1016/j.dld.2019.05.017.
- 44 Sardu C, Cocco E, Mereu A, Massa R, Cuccu A, Marrosu MG, et al. Population based study of 12 autoimmune diseases in Sardinia, Italy: prevalence and comorbidity. *PloS one* 2012; **7**(3): e32487. doi: 10.1371/journal.pone.0032487.
- 45 Brunet E, Roig-Ramos C, Vela E, Cleries M, Melcarne L, Villoria A, et al. Prevalence, incidence and mortality of inflammatory bowel disease in Catalonia. A population-based analysis. *Annals of medicine* 2018; **50**(7): 613-619. doi: 10.1080/07853890.2018.1523550.
- 46 Lucendo AJ, Hervias D, Roncero O, Lorente R, Bouhmidi A, Angueira T, et al. Epidemiology and temporal trends (2000-2012) of inflammatory bowel disease in adult patients in a central region of Spain. *European journal of gastroenterology & hepatology* 2014; **26**(12): 1399-1407. doi: 10.1097/meg.0000000000000226.
- 47 Despalatovic BR, Bratanic A, Radic M, Jurisic Z, Tonkic A. Epidemiological trends of inflammatory bowel disease (IBD) in Split-Dalmatia County, Croatia from 2006 to 2014. *European journal of internal medicine* 2017; **46**: e17-e19. doi: 10.1016/j.ejim.2017.08.026.
- 48 Klarin I, Majnaric L, Jovanovic Z, Nakic D, Vcev I, Vcev A. Epidemiology and clinical presentation of inflammatory bowel disease in Zadar County, Croatia. *Collegium antropologicum* 2013; **37**(4): 1161-1170.
- 49 Pezerovic D, Klarin I, Zulj M, Majnaric L, Khaznadar E, Vcev A. Incidence and prevalence of inflammatory bowel disease in Vukovarsko-Srijemska County, Croatia, 1991-2000 and 2001-2010: a population-based study. *Collegium antropologicum* 2014; **38**(1): 115-123.

- 50 Bahler C, Vavricka SR, Schoepfer AM, Brungger B, Reich O. Trends in prevalence, mortality, health care utilization and health care costs of Swiss IBD patients: a claims data based study of the years 2010, 2012 and 2014. *BMC gastroenterology* 2017; **17**(1): 138. doi: 10.1186/s12876-017-0681-y.
- 51 Juillerat P, Pittet V, Bulliard JL, Guessous I, Antonino AT, Mottet C, et al. Prevalence of Inflammatory Bowel Disease in the Canton of Vaud (Switzerland): A population-based cohort study. *Journal of Crohn's & colitis* 2008; **2**(2): 131-141. doi: 10.1016/j.crohns.2007.10.006.
- 52 Azevedo LF, Magro F, Portela F, Lago P, Deus J, Cotter J, et al. Estimating the prevalence of inflammatory bowel disease in Portugal using a pharmaco-epidemiological approach. *Pharmacoepidemiology and drug safety* 2010; **19**(5): 499-510. doi: 10.1002/pds.1930.
- 53 Hein R, Koster I, Bollschweiler E, Schubert I. Prevalence of inflammatory bowel disease: estimates for 2010 and trends in Germany from a large insurance-based regional cohort. *Scandinavian journal of gastroenterology* 2014; **49**(11): 1325-1335. doi: 10.3109/00365521.2014.962605.
- 54 de Groof EJ, Rossen NG, van Rhijn BD, Karregat EP, Boonstra K, Hageman I, et al. Burden of disease and increasing prevalence of inflammatory bowel disease in a population-based cohort in the Netherlands. *European journal of gastroenterology & hepatology* 2016; **28**(9): 1065-1072. doi: 10.1097/meg.0000000000000660.
- 55 Ghione S, Sarter H, Fumery M, Armengol-Debeir L, Savoye G, Ley D, et al. Dramatic Increase in Incidence of Ulcerative Colitis and Crohn's Disease (1988-2011): A Population-Based Study of French Adolescents. *The American journal of gastroenterology* 2018; **113**(2): 265-272. doi: 10.1038/ajg.2017.228.
- 56 Holko P, Kawalec P, Stawowczyk E. Prevalence and drug treatment practices of inflammatory bowel diseases in Poland in the years 2012-2014: an analysis of nationwide databases. *European journal of gastroenterology & hepatology* 2018; **30**(4): 456-464. doi: 10.1097/meg.0000000000001047.

- 57 Gheorghe C, Pascu O, Gheorghe L, Iacob R, Dumitru E, Tantau M, et al. Epidemiology of inflammatory bowel disease in adults who refer to gastroenterology care in Romania: a multicentre study. *European journal of gastroenterology & hepatology* 2004; **16**(11): 1153-1159.
- 58 Kurti Z, Vegh Z, Golovics PA, Fadgyas-Freyler P, Gecse KB, Gonczi L, et al. Nationwide prevalence and drug treatment practices of inflammatory bowel diseases in Hungary: A population-based study based on the National Health Insurance Fund database. *Digestive and liver disease : official journal of the Italian Society of Gastroenterology and the Italian Association for the Study of the Liver* 2016; **48**(11): 1302-1307. doi: 10.1016/j.dld.2016.07.012.
- 59 Hammada T, Lemdaoui MC, Boutra F, Zoughailech D, Asselah H. Epidemiological aspects of inflammatory bowel disease in an Algerian population. *Journal Africain d'Hepato-Gastroenterologie* 2011; **5**(4): 293-302. doi: 10.1007/s12157-011-0327-6.

Table 2: Prevalence of Helicobacter pylori since 2000 all over the world

Country / region	Author	Population	Helicobacter pylori prevalence Estimates, %
North America (n=14)			
USA	Sonnenberg ¹	228,506	12.6
	Melius ²	166	54.8
	Genta ³	487,587	10.6
	Bui ⁴	6,347	33.3
	Wang ⁵	1,388	29.6
	Cardenas ⁶	6,235	30.8
	Cardenas ⁷	288	38.2
	Patterson ⁸	246	18.7
	Sonnenberg ⁹	64,451	8.8
	Sonnenberg ¹⁰	596,475	6.3
Canada	Colmers-Gray ¹¹	229	17.5
	Hassan ¹²	500	13.0
	Sethi ¹³	203	37.9
Puerto Rico	González-Pons ¹⁴	528	33.0
South America (n=7)			

Brazil	Ferrari ¹⁵	20,398	50.1
	Nascimento ¹⁶	179	71.5
	Santos ¹⁷	359	64.3
	Zaterka ¹⁸	993	65.7
	Santos ¹⁹	1,001	70.8
Chile	Ferreccio ²⁰	2,615	74.6
	Gonzalez- Hormazabal ²¹	190	48.4
	Oceania (n=7)		
New Zealand	Hsiang ²²	592	18.6
	Fraser ²³	831	34.5
Australia	Robertson ²⁴	500	32.0
	Worthley ²⁵	166	28.3
	Moujaber ²⁶	1,811	17.9
	Pandeya ²⁷	1,316	22.9
	Windsor ²⁸	520	76.0
Asia (n=52)			
Taiwan, China	Pan ²⁹	867	43.9

	Chen ³⁰	2,113	53.3
	Chen ³¹	482	68.3
	Lin ³²	9,311	39.2
Hong Kong, China	Yee ³³	1,751	45.0
	Lee ³⁴	384	34.1
	Xia ³⁵	1,971	42.8
Japan	Tanaka ³⁶	550	8.2
	Takeoka ³⁷	975	23.4
	Adachi ³⁸	1,600	9.8
	Chinda ³⁹	473	24.9
	Fujimoto ⁴⁰	3,819	55.4
	Hirai ⁴¹	186	40.3
	Kawamura ⁴²	2,263	43.0
	Hirayama ⁴³	21,144	27.5
	Ueda ⁴⁴	14,716	39.9
Korea	Nam ⁴⁵	3,221	48.5
	Lee ⁴⁶	4,734	51.0
	Nam ⁴⁷	7,603	50.0
	Kim ⁴⁸	8,916	60.6

	Baeg ⁴⁹	3,663	44.7
	Lim ⁵⁰	15,032	63.1
	Bae ⁵¹	38,571	63.0
	Lee ⁵²	1,552	61.8
	Kim ⁵³	17,028	58.2
	Lim ⁵⁴	23,770	41.5
	Youn ⁵⁵	35,519	50.0
	Lim ⁵⁶	15,195	43.2
	Kwon ⁵⁷	2,002	39.1
	Kwak ⁵⁸	3,297	61.3
	Sung ⁵⁹	58,981	70.9
	Yim ⁶⁰	15,916	56.0
	Kim ⁶¹	20,154	60.4
	Hong ⁶²	2,195	57.1
	Lim ⁶³	15,560	52.8
	Nam ⁶⁴	632	59.0
	Lee ⁶⁵	3,314	59.5
Malaysia	Thevakumar ⁶⁶	275	41.8
	Sasidharan ⁶⁷	1,965	30.4

	Razak ⁶⁸	47	36.2
	Thevakumar ⁶⁶	275	41.8
Sri Lanka	Fernando ⁶⁹	57	70.2
India	Nisha ⁷⁰	500	69.0
	Singh ⁷¹	147	59.2
Israel	Suki ⁷²	235,107	61.3
	Shindler-Itskovitch ⁷³	147,936	52.0
	Boltin ⁷⁴	94,590	51.3
	Refaeli ⁷⁵	147,936	52.0
Turkey	Bor ⁷⁶	854	75.8
	Akin ⁷⁷	1,089	77.5
	Ozaydin ⁷⁸	4,622	83.3
Lebanon	Naja ⁷⁹	308	51.9
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Europe (n=45)			
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UK*	Mendall ⁸⁰	215	32.6
	Murray ⁸¹	3,874	56.5
	Stone ⁸²	1,558	15.1
	Moayyedi ⁸³	8,429	27.6
	Vyse ⁸⁴	7,147	13.4

Sweden	Agréus ⁸⁵	388	15.7
	Thjodleifsson ⁸⁶	359	11.1
Denmark	Bomme ⁸⁷	5,749	17.5
	Bartels ⁸⁸	55,994	19.6
	Bartels ⁸⁹	56,001	20.0
	Dahlerup ⁹⁰	36,629	20.1
	Bartels ⁹¹	60,709	19.5
Finland	Vohlonen ⁹²	12,016	51.4
	Rehnberg-Laiho ⁹³	772	12.3
Italy	Di Ciaula ⁹⁴	2,224	32.5
	Franceschi ⁹⁵	18,460	20.2
	Petruzziello ⁹⁶	2,922	23.5
Spain	Molina-Infante ⁹⁷	319	38.2
	Baena ⁹⁸	267	52.4
	Pérez-Aisa ⁹⁹	587	56.0
	Macías-García ¹⁰⁰	217	49.8
Croatia	Marušić ¹⁰¹	3,000	46.7
	Brkic ¹⁰²	865	41.3
Switzerland	Lehmann ¹⁰³	175	18.9

Portugal	Amaral ¹⁰⁴	166	48.8
	Santos ¹⁰⁵	110	51.8
	Bastos ¹⁰⁶	2,067	86.4
German	Rosania ¹⁰⁷	254	24.8
	Wawro ¹⁰⁸	2,075	28.2
	Franck ¹⁰⁹	516	28.9
	Holtmann ¹¹⁰	491	39.5
	Vasapoli ¹¹¹	148	37.2
	Venerito ¹¹²	1,941	37.9
	Wex ¹¹³	2,318	44.4
Netherlands	Loffeld ¹¹⁴	8,189	39.1
	van Blankenstein ¹¹⁵	1,551	31.7
France	Hervé ¹¹⁶	78	16.7
	Coumes ¹¹⁷	201	21.9
Poland	Celiński ¹¹⁸	512	78.5
	Tacikowski ¹¹⁹	148	35.8
	Szczepanik ¹²⁰	100	39.0
	Laszewicz ¹²¹	3,307	84.2
Romania	Sporea ¹²²	960	72.0

	Popovici ¹²³	128	63.3
Hungary	Bálint ¹²⁴	637	32.0
	Fürész ¹²⁵	2,457	23.3
Africa (n=2)			
Algerian	Raaf ¹²⁶	147	57.1
	Guechi ¹²⁷	210	79.0

USA: the United States of America; UK: United Kingdom.

* Data were all from the 1990s.

References

- 1 Sonnenberg A, Turner KO, Genta RM. Interaction of Ethnicity and H. pylori Infection in the Occurrence of Microscopic Colitis. *Digestive diseases and sciences* 2017; **62**(4): 1009-1015. doi: 10.1007/s10620-016-4441-6.
- 2 Melius EJ, Davis SI, Redd JT, Lewin M, Herlihy R, Henderson A, et al. Estimating the prevalence of active Helicobacter pylori infection in a rural community with global positioning system technology-assisted sampling. *Epidemiology and infection* 2013; **141**(3): 472-480. doi: 10.1017/s0950268812000714.
- 3 Genta RM, Turner KO, Sonnenberg A. Demographic and socioeconomic influences on Helicobacter pylori gastritis and its pre-neoplastic lesions amongst US residents. *Alimentary pharmacology & therapeutics* 2017; **46**(3): 322-330. doi: 10.1111/apt.14162.
- 4 Bui D, Brown HE, Harris RB, Oren E. Serologic Evidence for Fecal-Oral Transmission of Helicobacter pylori. *The American journal of*

- tropical medicine and hygiene 2016; **94**(1): 82-88. doi: 10.4269/ajtmh.15-0297.
- 5 Wang Z, Shaheen NJ, Whiteman DC, Anderson LA, Vaughan TL, Corley DA, et al. Helicobacter pylori Infection Is Associated With Reduced Risk of Barrett's Esophagus: An Analysis of the Barrett's and Esophageal Adenocarcinoma Consortium. *The American journal of gastroenterology* 2018; **113**(8): 1148-1155. doi: 10.1038/s41395-018-0070-3.
 - 6 Cardenas VM, Mulla ZD, Ortiz M, Graham DY. Iron deficiency and Helicobacter pylori infection in the United States. *American journal of epidemiology* 2006; **163**(2): 127-134. doi: 10.1093/aje/kwj018.
 - 7 Cardenas VM, Mena KD, Ortiz M, Karri S, Variyam E, Behravesh CB, Snowden KF, et al. Hyperendemic H. pylori and tapeworm infections in a U.S.-Mexico border population. *Public health reports*. 2010; **125**(3): 441-447. doi: 10.1177/003335491012500313.
 - 8 Patterson T, Straten E, Jimenez S. The prevalence of Helicobacter pylori antibody in different age groups in Central Texas. *Clinical laboratory science : journal of the American Society for Medical Technology* 2012; **25**(2): 102-106.
 - 9 Sonnenberg A, Genta RM. Low prevalence of Helicobacter pylori infection among patients with inflammatory bowel disease. *Alimentary pharmacology & therapeutics* 2012; **35**(4): 469-476. doi: 10.1111/j.1365-2036.2011.04969.x.
 - 10 Sonnenberg A, Turner KO, Spechler SJ, Genta RM. The influence of Helicobacter pylori on the ethnic distribution of Barrett's metaplasia. *Alimentary pharmacology & therapeutics* 2017; **45**(2): 283-290. doi: 10.1111/apt.13854.
 - 11 Colmers-Gray IN, Vandermeer B, Greidanus RI, Kolber MR. Helicobacter pylori status among patients undergoing gastroscopy in rural northern Alberta. *Canadian family physician Medecin de famille canadien* 2016; **62**(9): e547-554.
 - 12 Hassan G, De Repentigny J, Sidani S, Soucy G, Bouin M. The prevalence of helicobacter pylori in Quebec is low and highly dependant on the country of origin. *Canadian Journal of Gastroenterology and Hepatology* 2016; **2016**. doi: 10.1155/2016/4792898.
 - 13 Sethi A, Chaudhuri M, Kelly L, Hopman W. Prevalence of Helicobacter pylori in a First Nations population in northwestern Ontario. *Canadian*

family physician *Medecin de famille canadien* 2013; **59**(4): e182-187.

- 14 Gonzalez-Pons M, Soto-Salgado M, Sevilla J, Marquez-Lespier JM, Morgan D, Perez CM, et al Seroprevalence of *Helicobacter pylori* in Hispanics living in Puerto Rico: A population-based study. *Helicobacter* 2018; **23**(1). doi: 10.1111/hel.12453.
- 15 Ferrari F, Dutra ECG, Zanardi HC, Scolaro BL, Ferrari OM. TIME TRENDS OF *HELICOBACTER PYLORI* PREVALENCE IN ITAJAI - SC: A RETROSPECTIVE STUDY OF 25 YEARS BASED ON ENDOSCOPIC DATABASE. *Arquivos de gastroenterologia* 2019; **56**(1): 10-14. doi: 10.1590/s0004-2803.201900000-13.
- 16 Nascimento RS, Valente SR, Oliveira LC. Seroprevalence of *Helicobacter pylori* infection in chronic chagasic patients, and in the rural and urban population from Uberlandia, Minas Gerais, Brazil. *Revista do Instituto de Medicina Tropical de Sao Paulo* 2002; **44**(5): 251-254. doi: 10.1590/s0036-46652002000500003.
- 17 Santos IS, Boccio J, Santos AS, Valle NC, Halal CS, Bachilli MC, et al. Prevalence of *Helicobacter pylori* infection and associated factors among adults in Southern Brazil: a population-based cross-sectional study. *BMC public health* 2005; **5**: 118. doi: 10.1186/1471-2458-5-118.
- 18 Zaterka S, Eisig JN, Chinzon D, Rothstein W. Factors related to *Helicobacter pylori* prevalence in an adult population in Brazil. *Helicobacter* 2007; **12**(1): 82-88. doi: 10.1111/j.1523-5378.2007.00474.x.
- 19 Santos IS, Minten GC, Valle NC, Tuerlinckx GC, Boccio J, Barrado DA, et al. *Helicobacter pylori* and anemia: a community-based cross-sectional study among adults in Southern Brazil. *Cadernos de saude publica* 2009; **25**(12): 2653-2660.
- 20 Ferreccio C, Rollan A, Harris PR, Serrano C, Gederlini A, Margozzini P, et al. Gastric cancer is related to early *Helicobacter pylori* infection in a high-prevalence country. *Cancer Epidemiol Biomarkers Prev* 2007; **16**(4): 662-667. doi: 10.1158/1055-9965.Epi-06-0514.
- 21 Gonzalez-Hormazabal P, Castro VG, Musleh M, Lanzarini E, Valladares H, Escandar S, et al. Prevalence of resistance of *Helicobacter pylori* to clarithromycin in Santiago, Chile. *Helicobacter* 2016; **21**: 102-103. doi: 10.1111/hel.12344.

- 22 Hsiang J, Selvaratnam S, Taylor S, Yeoh J, Tan YM, Huang J, Patrick A. Increasing primary antibiotic resistance and ethnic differences in eradication rates of *Helicobacter pylori* infection in New Zealand--a new look at an old enemy. *N Z Med J* 2013; **126**(1384): 64-76.
- 23 Fraser AG, Scragg RK, Cox B, Jackson RT. *Helicobacter pylori*, *Chlamydia pneumoniae* and myocardial infarction. *Intern Med J* 2003; **33**(7): 267-272.
- 24 Robertson MS, Cade JF, Savoia HF, Clancy RL. *Helicobacter pylori* infection in the Australian community: current prevalence and lack of association with ABO blood groups. *Intern Med J* 2003; **33**(4): 163-167.
- 25 Worthley DL, Mullighan CG, Dean MM, Gordon DL, Phillips P, Heatley S, et al. Mannose-binding lectin deficiency does not increase the prevalence of *Helicobacter pylori* seropositivity. *Eur J Gastroenterol Hepatol* 2007; **19**(2): 147-152. doi: 10.1097/MEG.0b013e3280106729.
- 26 Moujaber T, MacIntyre CR, Backhouse J, Gidding H, Quinn H, Gilbert GL. The seroepidemiology of *Helicobacter pylori* infection in Australia. *Int J Infect Dis* 2008; **12**(5): 500-504. doi: 10.1016/j.ijid.2008.01.011.
- 27 Pandeya N, Whiteman DC. Prevalence and determinants of *Helicobacter pylori* sero-positivity in the Australian adult community. *J Gastroenterol Hepatol* 2011; **26**(8): 1283-1289. doi: 10.1111/j.1440-1746.2011.06726.x.
- 28 Windsor HM, Abioye-Kuteyi EA, Leber JM, Morrow SD, Bulsara MK, Marshall BJ. Prevalence of *Helicobacter pylori* in Indigenous Western Australians: comparison between urban and remote rural populations. *Med J Aust* 2005; **182**(5): 210-213.
- 29 Pan BL, Huang CF, Chuah SK, Chiang JC, Loke SS. Relationship between *Helicobacter pylori* infection and bone mineral density: a retrospective cross-sectional study. *BMC Gastroenterol* 2018; **18**(1): 54. doi: 10.1186/s12876-018-0780-4.
- 30 Chen LW, Chien CY, Hsieh CW, Chang LC, Huang MH, Huang WY, et al. The Associations Between *Helicobacter pylori* Infection, Serum Vitamin D, and Metabolic Syndrome: A Community-Based Study. *Medicine (Baltimore)* 2016; **95**(18): e3616. doi: 10.1097/md.0000000000003616.

- 31 Chen TS, Chang FY. The prevalence and risk factors of reflux esophagitis among adult Chinese population in Taiwan. *J Clin Gastroenterol* 2007; **41**(9): 819-822. doi: 10.1097/01.mcg.0000225658.30803.79.
- 32 Lin YL, Chiang JK, Lin SM, Tseng CE. Helicobacter pylori infection concomitant with metabolic syndrome further increase risk of colorectal adenomas. *World J Gastroenterol* 2010; **16**(30): 3841-3846. doi: 10.3748/wjg.v16.i30.3841.
- 33 Yee YK, Wong KW, Hui CK, Chan CK, Chan AO, Lam SK, et al. Prevalence and time trend of intestinal metaplasia in Hong Kong. *J Gastroenterol Hepatol* 2009; **24**(5): 896-899. doi: 10.1111/j.1440-1746.2009.05799.x.
- 34 Lee VW, Chan AK, Lee KK, Chan FK. Non-invasive serological detection of Helicobacter pylori antigens in adult Hong Kong Chinese non-ulcer dyspepsia patients. *Curr Microbiol* 2007; **54**(4): 249-253. doi: 10.1007/s00284-005-0179-7.
- 35 Xia B, Xia HH, Ma CW, Wong KW, Fung FM, Hui CK, et al. Trends in the prevalence of peptic ulcer disease and Helicobacter pylori infection in family physician-referred uninvestigated dyspeptic patients in Hong Kong. *Alimentary pharmacology & therapeutics* 2005; **22**(3): 243-249. doi: 10.1111/j.1365-2036.2005.02554.x.
- 36 Tanaka Y, Sakata Y, Hara M, Kawakubo H, Tsuruoka N, Yamamoto K, et al. Risk Factors for Helicobacter pylori Infection and Endoscopic Reflux Esophagitis in Healthy Young Japanese Volunteers. *Intern Med* 2017; **56**(22): 2979-2983. doi: 10.2169/internalmedicine.8669-16.
- 37 Takeoka A, Tayama J, Kobayashi M, Sagara I, Ogawa S, Saigo T, et al. Psychological effects of Helicobacter pylori-associated atrophic gastritis in patients under 50 years: A cross-sectional study. *Helicobacter* 2017; **22**(6). doi: 10.1111/hel.12445.
- 38 Adachi K, Notsu T, Mishiro T, Kinoshita Y. Relationship of Helicobacter pylori Infection with Gastric Black Spots Shown by Endoscopy. *Intern Med* 2019; **58**(6): 767-772. doi: 10.2169/internalmedicine.1751-18.
- 39 Chinda D, Shimoyama T, Iino C, Matsuzaka M, Nakaji S, Fukuda S. Decrease of Estradiol and Several Lifestyle Factors, but Not Helicobacter pylori Infection, Are Significant Risks for Osteopenia in Japanese Females. *Digestion* 2017; **96**(2): 103-109. doi: 10.1159/000479317.

- 40 Fujimoto Y, Furusyo N, Toyoda K, Takeoka H, Sawayama Y, Hayashi J. Intrafamilial transmission of *Helicobacter pylori* among the population of endemic areas in Japan. *Helicobacter* 2007; **12**(2): 170-176. doi: 10.1111/j.1523-5378.2007.00488.x.
- 41 Hirai I, Sasaki T, Kimoto A, Fujimoto S, Moriyama T, Yamamoto Y. Assessment of East Asian-type *cagA*-positive *Helicobacter pylori* using stool specimens from asymptomatic healthy Japanese individuals. *J Med Microbiol* 2009; **58**(Pt 9): 1149-1153. doi: 10.1099/jmm.0.010934-0.
- 42 Kawamura A, Adachi K, Takashima T, Murao M, Katsube T, Yuki M, et al. Prevalence of functional dyspepsia and its relationship with *Helicobacter pylori* infection in a Japanese population. *J Gastroenterol Hepatol* 2001; **16**(4): 384-388.
- 43 Hirayama Y, Kawai T, Otaki J, Kawakami K, Harada Y. Prevalence of *Helicobacter pylori* infection with healthy subjects in Japan. *J Gastroenterol Hepatol* 2014; **29 Suppl 4**: 16-19. doi: 10.1111/jgh.12795.
- 44 Ueda J, Gosho M, Inui Y, Matsuda T, Sakakibara M, Mabe K, et al. Prevalence of *Helicobacter pylori* infection by birth year and geographic area in Japan. *Helicobacter* 2014; **19**(2): 105-110. doi: 10.1111/hel.12110.
- 45 Nam JH, Hong CW, Kim BC, Shin A, Ryu KH, Park BJ, et al. *Helicobacter pylori* infection is an independent risk factor for colonic adenomatous neoplasms. *Cancer Causes Control* 2017; **28**(2): 107-115. doi: 10.1007/s10552-016-0839-x.
- 46 Lee JH, Choi KD, Jung HY, Baik GH, Park JK, Kim SS, et al. Seroprevalence of *Helicobacter pylori* in Korea: A multicenter, nationwide study conducted in 2015 and 2016. *Helicobacter* 2018; **23**(2): e12463. doi: 10.1111/hel.12463.
- 47 Nam SY, Park BJ, Ryu KH, Nam JH. Effect of *Helicobacter pylori* infection and its eradication on the fate of gastric polyps. *Eur J Gastroenterol Hepatol* 2016; **28**(4): 449-454. doi: 10.1097/meg.0000000000000553.
- 48 Kim TJ, Kim ER, Chang DK, Kim YH, Baek SY, Kim K, et al. *Helicobacter pylori* infection is an independent risk factor of early and advanced colorectal neoplasm. *Helicobacter* 2017; **22**(3). doi: 10.1111/hel.12377.

- 49 Baeg MK, Yoon SK, Ko SH, Noh YS, Lee IS, Choi MG. Helicobacter pylori infection is not associated with nonalcoholic fatty liver disease. *World J Gastroenterol* 2016; **22**(8): 2592-2600. doi: 10.3748/wjg.v22.i8.2592.
- 50 Lim JH, Kim N, Lim SH, Kwon JW, Shin CM, Chang YS, et al. Inverse Relationship Between Helicobacter Pylori Infection and Asthma Among Adults Younger than 40 Years: A Cross-Sectional Study. *Medicine (Baltimore)* 2016; **95**(8): e2609. doi: 10.1097/md.0000000000002609.
- 51 Bae SE, Choi KD, Choe J, Kim SO, Na HK, Choi JY, et al. The effect of eradication of Helicobacter pylori on gastric cancer prevention in healthy asymptomatic populations. *Helicobacter* 2018; **23**(2): e12464. doi: 10.1111/hel.12464.
- 52 Lee SP, Lee SY, Kim JH, Sung IK, Park HS, Shim CS. Factors Related to Upper Gastrointestinal Symptom Generation in 2275 Helicobacter pylori Seroprevalent Adults. *Digestive diseases and sciences* 2017; **62**(6): 1561-1570. doi: 10.1007/s10620-017-4529-7.
- 53 Kim TJ, Sinn DH, Min YW, Son HJ, Kim JJ, Chang Y, et al. A cohort study on Helicobacter pylori infection associated with nonalcoholic fatty liver disease. *J Gastroenterol* 2017; **52**(11): 1201-1210. doi: 10.1007/s00535-017-1337-y.
- 54 Lim SH, Kim N, Kwon JW, Kim SE, Baik GH, Lee JY, et al. Trends in the seroprevalence of Helicobacter pylori infection and its putative eradication rate over 18 years in Korea: A cross-sectional nationwide multicenter study. *PLoS One* 2018; **13**(10): e0204762. doi: 10.1371/journal.pone.0204762.
- 55 Youn Nam S, Park BJ, Nam JH, Ryu KH, Kook MC, Kim J, et al. Association of current Helicobacter pylori infection and metabolic factors with gastric cancer in 35,519 subjects: A cross-sectional study. *United European Gastroenterol J* 2019; **7**(2): 287-296. doi: 10.1177/2050640618819402.
- 56 Lim SH, Kim N, Kwon JW, Kim SE, Baik GH, Lee JY, et al. Positive Association Between Helicobacter pylori Infection and Metabolic Syndrome in a Korean Population: A Multicenter Nationwide Study. *Digestive diseases and sciences* 2019. doi: 10.1007/s10620-019-05544-

3.

- 57 Kwon YJ, Kim N, Baek SM, Lee HS, Lee J, Hwang YJ, et al. The prevalence of histologic atrophy and intestinal metaplasia in the corpus has decreased over 15 years in females in the Korean population. *Helicobacter* 2019; **24**(3): e12579. doi: 10.1111/hel.12579.
- 58 Kwak MS, Chung GE, Chung SJ, Kang SJ, Yang JI, Kim JS. Predicting the Development of Gastric Neoplasms in a Healthcare Cohort by Combining *Helicobacter pylori* Antibodies and Serum Pepsinogen: A 5-Year Longitudinal Study. *Gastroenterol Res Pract* 2018; **2018**: 8796165. doi: 10.1155/2018/8796165.
- 59 Sung KC, Rhee EJ, Ryu SH, Beck SH. Prevalence of *Helicobacter pylori* infection and its association with cardiovascular risk factors in Korean adults. *Int J Cardiol* 2005; **102**(3): 411-417. doi: 10.1016/j.ijcard.2004.05.040.
- 60 Yim JY, Kim N, Choi SH, Kim YS, Cho KR, Kim SS, et al. Seroprevalence of *Helicobacter pylori* in South Korea. *Helicobacter* 2007; **12**(4): 333-340. doi: 10.1111/j.1523-5378.2007.00504.x.
- 61 Kim N, Lee SW, Cho SI, Park CG, Yang CH, Kim HS, et al. The prevalence of and risk factors for erosive oesophagitis and non-erosive reflux disease: a nationwide multicentre prospective study in Korea. *Alimentary pharmacology & therapeutics* 2008; **27**(2): 173-185 doi: 10.1111/j.1365-2036.2007.03561.x.
- 62 Hong SN, Lee SM, Kim JH, Lee TY, Kim JH, Choe WH, et al. *Helicobacter pylori* infection increases the risk of colorectal adenomas: cross-sectional study and meta-analysis. *Digestive diseases and sciences* 2012; **57**(8): 2184-2194. doi: 10.1007/s10620-012-2245-x.
- 63 Lim SH, Kwon JW, Kim N, Kim GH, Kang JM, Park MJ, et al. Prevalence and risk factors of *Helicobacter pylori* infection in Korea: nationwide multicenter study over 13 years. *BMC Gastroenterol* 2013; **13**: 104. doi: 10.1186/1471-230x-13-104.
- 64 Nam JH, Choi IJ, Kook MC, Lee JY, Cho SJ, Nam SY, et al. OLGA and OLGIM stage distribution according to age and *Helicobacter pylori* status in the Korean population. *Helicobacter* 2014; **19**(2): 81-89. doi: 10.1111/hel.12112.

- 65 Lee SP, Lee SY, Kim JH, Sung IK, Park HS, Shim CS, et al. Correlation between *Helicobacter pylori* infection, IgE hypersensitivity, and allergic disease in Korean adults. *Helicobacter* 2015; **20**(1): 49-55. doi: 10.1111/hel.12173.
- 66 Thevakumar K, Chandren JR, Perez-Perez GI, Chua EG, Teh LK, Salleh MZ, et al. Assessment of Risk and Sero-Prevalence of *Helicobacter pylori* Colonization among Remote Orang Asli Tribes in Peninsula Malaysia. *PLoS One* 2016; **11**(7): e0159830. doi: 10.1371/journal.pone.0159830.
- 67 Sasidharan S, Ghayethry B, Ravichandran M, Latha LY, Lachumy SJ, Leng KM, et al. Prevalence of *Helicobacter pylori* infection among patients referred for endoscopy: Gender and ethnic differences in Kedah, Malaysia. *Asian Pacific Journal of Tropical Disease* 2012; **2**(1): 55-59. doi: 10.1016/S2222-1808(12)60013-9.
- 68 Razak MRA, Tan HJ, Razlan H, Ibrahim NM, Sutan R. Prevalence of *Helicobacter pylori* infection in epilepsy patients in a teaching hospital in Malaysia. *Neurology Asia* 2012; **17**(4): 293-296 .
- 69 Fernando N, Holton J, Vaira D, DeSilva M, Fernando D. Prevalence of *Helicobacter pylori* in Sri Lanka as determined by PCR. *J Clin Microbiol* 2002; **40**(7): 2675-2676. doi: 10.1128/jcm.40.7.2675-2676.2002.
- 70 Nisha KJ, Nandakumar K, Shenoy KT, Janam P. Periodontal disease and *Helicobacter pylori* infection: a community-based study using serology and rapid urease test. *J Investig Clin Dent* 2016; **7**(1): 37-45. doi: 10.1111/jicd.12122.
- 71 Singh V, Trikha B, Nain CK, Singh K, Vaiphei K. Epidemiology of *Helicobacter pylori* and peptic ulcer in India. *J Gastroenterol Hepatol* 2002; **17**(6): 659-665.
- 72 Suki M, Leibovici Weissman Y, Boltin D, Itskoviz D, Tsadok Perets T, Comaneshter D, et al. *Helicobacter pylori* infection is positively associated with an increased BMI, irrespective of socioeconomic status and other confounders: a cohort study. *Eur J Gastroenterol Hepatol* 2018; **30**(2): 143-148. doi: 10.1097/meg.0000000000001014.

- 73 Shindler-Itskovitch T, Chodick G, Shalev V, Muhsen K. Helicobacter pylori infection and prevalence of stroke. *Helicobacter* 2019; **24**(1): e12553. doi: 10.1111/hel.12553.
- 74 Boltin D, Schmilovitz-Weiss H, Gingold-Belfer R, Leibovitz H, Snir Y, Perets TT, et al. Temporal Trends in Helicobacter pylori Eradication Success in a Test-and-Treat Population. *Digestion* 2018; **98**(3): 169-174. doi: 10.1159/000488448.
- 75 Refaeli R, Chodick G, Haj S, Goren S, Shalev V, Muhsen K. Relationships of H. pylori infection and its related gastroduodenal morbidity with metabolic syndrome: a large cross-sectional study. *Sci Rep* 2018; **8**(1): 4088. doi: 10.1038/s41598-018-22198-9.
- 76 Bor S, Kitapcioglu G, Kasap E. Prevalence of gastroesophageal reflux disease in a country with a high occurrence of Helicobacter pylori. *World J Gastroenterol* 2017; **23**(3): 525-532. doi: 10.3748/wjg.v23.i3.525.
- 77 Akin L, Tezcan S, Hascelik G, Cakir B. Seroprevalence and some correlates of Helicobacter pylori at adult ages in Gulveren Health District, Ankara, Turkey. *Epidemiology and infection* 2004; **132**(5): 847-856. doi: 10.1017/s0950268804002262.
- 78 Ozaydin N, Turkyilmaz SA, Cali S. Prevalence and risk factors of Helicobacter pylori in Turkey: a nationally-representative, cross-sectional, screening with the (1)(3)C-Urea breath test. *BMC public health* 2013; **13**: 1215. doi: 10.1186/1471-2458-13-1215.
- 79 Naja F, Nasreddine L, Hwalla N, Moghames P, Shoaib H, Fatfat M, et al. Association of H. pylori infection with insulin resistance and metabolic syndrome among Lebanese adults. *Helicobacter* 2012; **17**(6): 444-451. doi: 10.1111/j.1523-5378.2012.00970.x.
- 80 Mendall MA, Goggin PM, Molineaux N, Levy J, Toosy T, Strachan D, et al. Childhood living conditions and Helicobacter pylori seropositivity in adult life. *Lancet* 1992; **339**(8798): 896-897. doi: 10.1016/0140-6736(92)90931-r.
- 81 Murray LJ, McCrum EE, Evans AE, Bamford KB. Epidemiology of Helicobacter pylori infection among 4742 randomly selected subjects from Northern Ireland. *Int J Epidemiol* 1997; **26**(4): 880-887. doi: 10.1093/ije/26.4.880.
- 82 Stone MA, Barnett DB, Mayberry JF. General population screening for infection with Helicobacter pylori: a realistic option? *J Med Screen*

- 1998; **5**(3): 162-166. doi: 10.1136/jms.5.3.162.
- 83 Moayyedi P, Axon AT, Feltbower R, Duffett S, Crocombe W, Brauholtz D, et al. Relation of adult lifestyle and socioeconomic factors to the prevalence of *Helicobacter pylori* infection. *Int J Epidemiol* 2002; **31**(3): 624-63. doi: 10.1093/ije/31.3.624.
- 84 Vyse AJ, Gay NJ, Hesketh LM, Andrews NJ, Marshall B, Thomas HI, et al. The burden of *Helicobacter pylori* infection in England and Wales. *Epidemiology and infection* 2002; **128**(3): 411-417. doi: 10.1017/s0950268802006970.
- 85 Agreus L, Hellstrom PM, Talley NJ, Wallner B, Forsberg A, Vieth M, et al. Towards a healthy stomach? *Helicobacter pylori* prevalence has dramatically decreased over 23 years in adults in a Swedish community. *United European Gastroenterol J* 2016; **4**(5): 686-696. doi: 10.1177/2050640615623369.
- 86 Thjodleifsson B, Asbjornsdottir H, Sigurjonsdottir RB, Gislason D, Olafsson I, Cook E, et al. Seroprevalence of *Helicobacter pylori* and cagA antibodies in Iceland, Estonia and Sweden. *Scand J Infect Dis* 2007; **39**(8): 683-689. doi: 10.1080/00365540701225736.
- 87 Bomme M, Hansen JM, Wildner-Christensen M, Hallas J, Schaffalitzky de Muckadell OB. Effects of Community Screening for *Helicobacter pylori*: 13-Year Follow-Up Evaluation of a Randomized Controlled Trial. *Clin Gastroenterol Hepatol* 2017; **15**(11): 1715-1723.e1717. doi: 10.1016/j.cgh.2017.06.006.
- 88 Bartels LE, Pedersen AB, Kristensen NR, Jepsen P, Vilstrup H, Stengaard-Pedersen K, et al. *Helicobacter pylori* infection is not associated with rheumatoid arthritis. *Scand J Rheumatol* 2019; **48**(1): 24-31. doi: 10.1080/03009742.2018.1464205.
- 89 Bartels LE, Jepsen P, Tottrup A, Vilstrup H, Dahlerup JF. *Helicobacter pylori* infection is associated with reduced prevalence of colonic diverticular disease. *Helicobacter* 2017; **22**(4). doi: 10.1111/hel.12384.
- 90 Dahlerup S, Andersen RC, Nielsen BS, Schjodt I, Christensen LA, Gerdes LU, et al. First-time urea breath tests performed at home by 36,629 patients: a study of *Helicobacter pylori* prevalence in primary care. *Helicobacter* 2011; **16**(6): 468-474. doi: 10.1111/j.1523-

5378.2011.00872.x.

- 91 Bartels LE, Jepsen P, Christensen LA, Gerdes LU, Vilstrup H, Dahlerup JF. Diagnosis of Helicobacter Pylori Infection is Associated with Lower Prevalence and Subsequent Incidence of Crohn's Disease. *J Crohns Colitis* 2016; **10**(4): 443-448. doi: 10.1093/ecco-jcc/jjv229.
- 92 Vohlonen I, Pukkala E, Malila N, Harkonen M, Hakama M, Koistinen V, et al. Risk of gastric cancer in Helicobacter pylori infection in a 15-year follow-up. *Scand J Gastroenterol* 2016; **51**(10): 1159-1164. doi: 10.1080/00365521.2016.1183225.
- 93 Rehnberg-Laiho L, Salomaa A, Rautelin H, Koskela P, Sarna S, Kosunen TU. Accelerated decline in Helicobacter pylori seroprevalence rate during the screen and treat project in Vammala, Finland, as demonstrated in 29- to 45-year-old pregnant women. *Apmis* 2004; **112**(1): 34-38.
- 94 Di Ciaula A, Scaccianoce G, Venerito M, Zullo A, Bonfrate L, Rokkas T, et al. Eradication rates in Italian subjects heterogeneously managed for Helicobacter pylori infection. Time to abandon empiric treatments in Southern Europe. *J Gastrointest Liver Dis* 2017; **26**(2): 129-137. doi: 10.15403/jgld.2014.1121.262.itl.
- 95 Franceschi M, Panozzo M, Ferronato A, Antico A, Tomba F, Di Mario F, et al. Time trends in histological and serological prevalence of Helicobacter pylori infection: Focus on a dyspeptic population in a North- East italy area. *Helicobacter* 2016; **21**: 104. doi: 10.1111/hel.12344.
- 96 Petruzzello C, Sinatti D, Gnarra M, Migneco A, Tesori V, Graziani C, et al. May Gender or Ethnicity Affect Delta Over Baseline Values Obtained by 13-C Urea Breath Test? *Rev Recent Clin Trials* 2017; **12**(3): 187-192. doi: 10.2174/1574887112666170816155703.
- 97 Molina-Infante J, Gutierrez-Junquera C, Savarino E, Penagini R, Modolell I, Bartolo O, et al. Helicobacter pylori infection does not protect against eosinophilic esophagitis: results from a large multicenter case-control study. *The American journal of gastroenterology* 2018; **113**(7): 972-979. doi: 10.1038/s41395-018-0035-6.
- 98 Baena Diez JM, Garcia Lareo M, Marti Fernandez J, Leon Marin I, Muniz Llama D, Teruel Gila J, et al. [Prevalence of Helicobacter pylori infection in primary care: sero-epidemiological study]. *Aten Primaria* 2002; **29**(9): 553-557.

- 99 Perez-Aisa MA, Del Pino D, Siles M, Lanas A. Clinical trends in ulcer diagnosis in a population with high prevalence of *Helicobacter pylori* infection. *Alimentary pharmacology & therapeutics* 2005; **21**(1): 65-72. doi: 10.1111/j.1365-2036.2004.02297.x.
- 100 Macias-Garcia F, Llovo-Taboada J, Diaz-Lopez M, Baston-Rey I, Dominguez-Munoz JE. High primary antibiotic resistance of *Helicobacter Pylori* strains isolated from dyspeptic patients: A prevalence cross-sectional study in Spain. *Helicobacter* 2017; **22**(6). doi: 10.1111/hel.12440.
- 101 Marusic M, Majstorovic Barac K, Bilic A, Jurcic D, Gulic S, Grubic Rotkvic P, et al. Do gender and age influence the frequency of *Helicobacter pylori* infection? *Wien Klin Wochenschr* 2013; **125**(21-22): 714-716. doi: 10.1007/s00508-013-0433-0.
- 102 Brkic N, Terzic V, Švagelj M, Cvrkovic M, Brkic H, Švagelj D. The prevalence and characteristics of *Helicobacter pylori*-associated gastritis in dyspeptic patients in Eastern Croatia, determined by immunohistochemistry. *Periodicum Biologorum* 2017; **119**(1): 75-80. doi: 10.18054/pb.v119i1.4219]
- 103 Lehmann FS, Renner EL, Meyer-Wyss B, Wilder-Smith CH, Mazzucchelli L, Ruchti C, et al. *Helicobacter pylori* and gastric erosions. Results of a prevalence study in asymptomatic volunteers. *Digestion* 2000; **62**(2-3): 82-86. doi: 10.1159/000007799.
- 104 Amaral O, Fernandes I, Veiga N, Pereira C, Chaves C, Nelas P, et al. Living Conditions and *Helicobacter pylori* in Adults. *Biomed Res Int* 2017; **2017**: 9082716. doi: 10.1155/2017/9082716.
- 105 Santos A, Pereira L, Paixão P, Braga AC, Oliveira R, Catarino A, et al. *Helicobacter pylori* prevalence, histological and anti biotic resistance patterns among paediatric patients, at a single hospital in Lisbon, during a 5- year period. *Helicobacter* 2016; **21**: 113-114. doi: 10.1111/hel.12344.
- 106 Bastos J, Peleteiro B, Barros R, Alves L, Severo M, de Fatima Pina M, et al. Sociodemographic determinants of prevalence and incidence of *Helicobacter pylori* infection in Portuguese adults. *Helicobacter* 2013; **18**(6): 413-422. doi: 10.1111/hel.12061.
- 107 Rosania R, Von Arnim U, Link A, Rajilic-Stojanovic M, Franck C, Canbay A, et al. *Helicobacter pylori* eradication therapy is not associated

- with the onset of inflammatory bowel diseases. A case-control study. *J Gastrointest Liver Dis* 2018; **27**(2): 119-125. doi: 10.15403/jgld.2014.1121.272.hpy.
- 108 Wawro N, Amann U, Butt J, Meisinger C, Akmatov MK, Pessler F, et al. Helicobacter pylori Seropositivity: Prevalence, Associations, and the Impact on Incident Metabolic Diseases/Risk Factors in the Population-Based KORA Study. *Frontiers in Public Health* 2019; **7**. doi: 10.3389/fpubh.2019.00096.
- 109 Franck C, Hoffmann A, Link A, Schulz C, Wuttig K, Becker E, et al. Prevalence of Helicobacter pylori infection among blood donors in Saxony-Anhalt, Germany - a region at intermediate risk for gastric cancer. *Z Gastroenterol* 2017; **55**(7): 653-656. doi: 10.1055/s-0043-106311.
- 110 Holtmann G, Gschossmann J, Holtmann M, Talley NJ. H. pylori and functional dyspepsia: increased serum antibodies as an independent risk factor? *Digestive diseases and sciences* 2001; **46**(7): 1550-1557.
- 111 Vasapolli R, Schütte K, Schulz C, Vilchez-Vargas R, Malfertheiner P. Prevalence of Helicobacter pylori infection in a prospective case-control observational study. *Helicobacter* 2017; **22**: 100. doi: 10.1111/hel.12416.
- 112 Venerito M, Wex T, Kreutzer J, Götze T, Kandulski A, Malfertheiner P. Significant drop in the serological prevalence of helicobacter pylori-infection in patients born after 1980 in the area of Magdeburg, Germany. *Gastroenterology* 2011; **140**(5): S734-S735. doi: 10.1016/S0016-5085(11)63055-2.
- 113 Wex T, Venerito M, Kreutzer J, Gotze T, Kandulski A, Malfertheiner P. Serological prevalence of Helicobacter pylori infection in Saxony-Anhalt, Germany, in 2010. *Clin Vaccine Immunol* 2011; **18**(12): 2109-2112. doi: 10.1128/cvi.05308-11.
- 114 Loffeld RJ, van der Putten AB. Changes in prevalence of Helicobacter pylori infection in two groups of patients undergoing endoscopy and living in the same region in the Netherlands. *Scand J Gastroenterol* 2003; **38**(9): 938-941.
- 115 van Blankenstein M, van Vuuren AJ, Looman CW, Ouwendijk M, Kuipers EJ. The prevalence of Helicobacter pylori infection in the

- Netherlands. *Scand J Gastroenterol* 2013; **48**(7): 794-800. doi: 10.3109/00365521.2013.799221.
- 116 Herve F, Cailleux N, Benhamou Y, Ducrotte P, Lemeland JF, Denis P, et al. [Helicobacter pylori prevalence in Raynaud's disease]. *Rev Med Interne* 2006; **27**(10): 736-741. doi: 10.1016/j.revmed.2006.07.003.
- 117 Coumes S, Froissart B, Wion N, Reche F, Arvieux C, Borel AL. Prevalence and Factors Associated with Helicobacter Pylori in Patients Undergoing Bariatric Surgery: the SOON Cohort. *Obes Surg* 2018; **28**(12): 3958-3964. doi: 10.1007/s11695-018-3440-4.
- 118 Celinski K, Kurzeja-Mirosław A, Slomka M, Cichoz-Lach H, Madro A, Kasztelan-Szczerbinska B. The effects of environmental factors on the prevalence of Helicobacter pylori infection in inhabitants of Lublin Province. *Ann Agric Environ Med* 2006; **13**(2): 185-191.
- 119 Tacikowski T, Bawa S, Gajewska D, Myszkowska-Ryciak J, Bujko J, Rydzewska G. Current prevalence of Helicobacter pylori infection in patients with dyspepsia treated in Warsaw, Poland. *Prz Gastroenterol* 2017; **12**(2): 135-139. doi: 10.5114/pg.2017.68042.
- 120 Szczepanik AB, Zaleska M, Wiszniewski A, Wislawski S, Misiak A, Maryniak R, et al. Helicobacter pylori infection in patients with haemophilia in Poland: prevalence and risk of upper gastrointestinal bleeding. *Haemophilia* 2005; **11**(4): 376-379. doi: 10.1111/j.1365-2516.2005.01086.x.
- 121 Laszewicz W, Iwanczak F, Iwanczak B. Seroprevalence of Helicobacter pylori infection in Polish children and adults depending on socioeconomic status and living conditions. *Adv Med Sci* 2014; **59**(1): 147-150. doi: 10.1016/j.advms.2014.01.003.
- 122 Sporea I, Popescu A, van Blankenstein M, Sirli R, Focsea M, Danila M. The prevalence of Helicobacter pylori infection in western Romania. *Rom J Gastroenterol* 2003; **12**(1): 15-18.
- 123 Popovici EL, Huiban L, Muzica CM, Trifan AV. Prevalence of Helicobacter pylori infection in a clinical center in northeastern Romania. *Helicobacter* 2018; **23**: 59. doi: 10.1111/hel.12525.
- 124 Bálint L, Dóczi I, Szekeres V, Tiszai A, Róka R, Izbéki F, et al. Helicobacter pylori prevalence remains high in middle aged healthy, south-

east Hungarian, rural males. A population based study. United European Gastroenterology Journal 2013; **1**(1): A268. doi: 10.1177/2050640613502900.

- 125 Furesz J, Lakatos S, Nemeth K, Fritz P, Simon L, Kacserka K. The prevalence and incidence of Helicobacter pylori infections among young recruits during service in the Hungarian Army. Helicobacter 2004; **9**(1): 77-80. doi: 10.1111/j.1083-4389.2004.00200.x
- 126 Raaf N, Amhis W, Saoula H, Abid A, Nakmouche M, Balamane A, et al. Prevalence, antibiotic resistance, and MLST typing of Helicobacter pylori in Algiers, Algeria. Helicobacter 2017; **22**(6). doi: 10.1111/hel.12446.
- 127 Guechi Z, Nait Kaci S, Kechroud M, Berrah N, Mouffok F, Bendissari K, et al. Seroprevalence of helicobacter pylori infection in a South Algerian region. Helicobacter 2012; **17**: 89. doi: 10.1111/j.1523-5378.2012.00986.x.