

SUPPLEMENTAL MATERIAL

Supplementary Methods

Covariate descriptions and categorizations

Regarding the covariates for this analysis, age was defined as the age at the time of diagnosis for cases and the time of interview for controls. Education was defined as the highest level of schooling achieved, categorized as none, primary school, middle school, high school, and college degree or higher. Diet was defined by vegetable and fruit intake tertile, and was categorized as low, intermediate, and high based on reported intake. Alcohol consumption was defined as the grams/day of alcohol consumed and was divided into tertiles (≤ 12 (low), > 12 to 47 (intermediate), and > 47 grams/day (high) that were predefined by the StoP Pooling Center, based on the number of ethanol-standardized drinks (i.e., 1 drink = 12 grams of pure ethanol) reported by study participants. Smoking status was categorized as never, former, or current smoker. Never-smokers were defined as individuals who reported smoking less than 100 cigarettes in their lifetimes. Among current smokers, individuals were categorized based on the number of cigarette-equivalents smoked per day (≤ 10 (low), > 10 and ≤ 20 (intermediate), and > 20 (high) cigarette-equivalents per day). Family history of gastric cancer was defined as a self-reported history of gastric cancer in a first-degree relative. Lastly, *H pylori* exposure was defined as either positive or negative based on serological testing or antigen testing performed at the individual study site; as for all other covariates, harmonization for *H pylori* information (positive versus negative test and type of test) was performed centrally with routine quality checks as noted.

Harmonization of Occupational and Chemical and Environmental Occupational Exposure Data (Primary Exposure)

For studies Italy 2¹¹, Russia¹³, Spain⁷, Brazil 1¹⁸, and Brazil 2¹⁹, detailed occupational histories were available in the form of standardized occupational codes in each countries' national occupation coding system, except for Russia, for which job titles were provided. For studies Italy 1¹⁰, China¹⁴, Japan 1¹⁶, and Japan 2¹⁷, general occupational histories were provided. Because of these country-based differences, we coded all occupations according to the International Standard Classification of Occupations of 1968 (ISCO 68)^{19,20}, which is a standardized occupational classification system that can be universally applied across countries and time by job titles. A researcher who was blinded to the case versus control status of the individual study subjects completed the harmonization process.

In the five studies with detailed occupational history^{7,11,13,18,19}, participants were asked about their current occupation and up to two previous occupations as long as these were held for at least one year. Participants could have therefore been included in multiple occupational categories in this analysis; because time periods are non-overlapping and the endpoint (i.e. gastric cancer) occurs only once, statistical independence is preserved. For participants who reported their current employment status as 'retired', only previously held occupations were considered. Occupations reported as 'housewife', 'seeking employment', 'student', 'other', 'unknown', or 'unclassified' were categorized as 'other' for harmonization purposes, which accounted for 16.2% of the reported occupations. For the Italy 2¹¹, Spain⁷, Brazil 1¹⁸, and Brazil 2¹⁹ studies, country-specific job codes were converted to standardized 2-digit ISCO 68 job codes, while for the Russia study¹³, job titles were converted to 2-digit ISCO 68 codes. Broader 1-digit ISCO 68 codes were used for harmonizing the more general occupational histories collected in the Italy 1¹⁰, China¹⁴, Japan 1¹⁶, and Japan 2¹⁷ studies. For example, occupational history in Italy 1¹⁰ was reported in broad categories such as 'farmer', 'trader', 'factory worker', 'office-worker', 'businessman', 'professional man', 'teacher', 'housewife', 'retired person', 'craftsman', and 'other', with the other three studies using a comparable categorization system. Each job description was matched to a corresponding relevant 1-digit ISCO 68 category.

Importantly, occupations with 2-digit ISCO 68 codes could be collapsed into 1-digit ISCO 68 codes and combined with the general job data, allowing for maximal statistical power in the analysis.

Five studies (Italy¹⁰, Canada¹², China¹⁴, USA¹⁵, and Spain⁷) additionally provided occupational chemical and environmental exposure data. To limit heterogeneity, only those chemical exposures which could be harmonized across at least three studies were included for this analysis. Categories for chemical exposures were created using the Canadian Job Exposure Matrix (CANJEM).²⁰ The CANJEM is a job exposure matrix that provides information on the probability, frequency and intensity of exposure from a list of 258 occupational risk factors. This validated matrix was designed by occupational hygienists and researchers experienced in assessing physical and chemical exposures and is based on industrial hygiene measurements, interview surveys, and workforce surveys. The CANJEM was specifically selected for this analysis because it includes a wide range of well-defined exposures that can be cross-referenced with ISCO 68 job codes, thus enabling internal validation of our findings. Chemical and environmental occupational exposures were those that occurred for at least one-year duration; exposures were categorized as “ever versus never”. Ten chemical and environmental exposures were harmonized across these five studies. Straightforward exposure categories such as Pesticides-Herbicides, Chromium, and Asbestos consisted of study-specific exposures labeled with the term itself. The harmonized exposure categories were defined as follows: Aromatic Amines, exposure to aromatic amines, benzidine, or beta-naphthyl;^{10,12,15} Plastic Dust, exposure to vinyl chloride or synthetic polymer dust;^{7,10,12} Wood Dust, exposure to wood dust or lumber industry;^{7,10,12,15} Ionizing Radiation and Magnetic Fields, exposure to ultraviolet (UV) rays, ionizing radiation, radiation sources, radiation, or low frequency magnetic fields;^{7,10,12,15} Aromatic Hydrocarbons, exposure to benzene and aromatic hydrocarbon solvents;⁷ Volatile Sulfur Compounds, exposure to mustard gas or volatile sulfur compounds;^{7,12,15} and Coal Derivatives, exposure to asphalt, coal tar, soot, and pitch, creosote, or bitumen fumes.^{7,12,15}

Supplemental Table 1. Odds of gastric cancer¹ overall and according to histologic subtype based on detailed occupational categorization (2-digit ISCO 68)

2-digit ISCO68 Code ³ and Job Title	Non-cancer controls (n=3268)	All histological types (n=2704)			Intestinal adenocarcinoma (n=1310)			Diffuse adenocarcinoma (n=658)			Mixed/Undifferentiated/Unclassified (n=698)		
		Cases	OR	(95% CI)	Cases	OR	(95% CI)	Cases	OR	(95% CI)	Cases	OR	(95% CI)
01 Physical Scientists and Related Technicians	52	22	0.66	(0.39-1.12)	5	0.44	(0.17-1.12)	7	0.85	(0.37-1.95)	10	0.74	(0.36-1.53)
02 Architects, Engineers and Related Technicians	8	5	1.17	(0.36-3.82)	2	0.71	(0.14-3.68)	2	1.46	(0.28-7.18)	0		
04 Aircraft and Ships Officers	5	5	1.36	(0.38-4.91)	2	1.12	(0.21-6.00)	1	1.60	(0.18-14.37)	2	2.16	(0.37-12.75)
06 Medical, Dental, Veterinary and Related Workers	66	40	1.09	(0.72-1.65)	17	1.13	(0.63-2.00)	15	1.46	(0.80-2.64)	8	0.65	(0.30-1.41)
13 Teachers	50	18	0.79	(0.44-1.40)	8	0.76	(0.34-1.69)	8	1.33	(0.65-2.95)	2	0.36	(0.08-1.54)
15 Authors, Journalists and Related Writers	11	4	0.59	(0.18-1.90)	2	0.57	(0.15-2.26)	1	0.68	(0.09-5.33)	1	0.81	(0.10-6.67)
19 Professional, Technical and Related Workers	27	20	1.10	(0.60-2.00)	13	1.52	(0.76-3.07)	1	0.27	(0.04-2.02)	5	0.98	(0.37-2.61)
20 Legislative Officials and Government Administrators	57	18	0.49	(0.28-0.85)	7	0.38	(0.17-0.86)	4	0.48	(0.17-1.37)	6	0.55	(0.23-1.32)
21 Managers	26	11	0.66	(0.32-1.39)	5	0.62	(0.23-1.66)	2	0.49	(0.11-2.14)	4	1.40	(0.45-4.36)
31 Government Executive Officials	19	9	0.47	(0.20-1.06)	7	0.72	(0.29-1.80)	1	0.16	(0.02-1.25)	0		
39 Clerical and Related Workers	214	103	0.67	(0.52-0.86)	42	0.59	(0.41-0.85)	30	0.71	(0.47-1.10)	25	0.66	(0.42-1.04)
41 Working Proprietors (Wholesale and Retail Trade)	8	12	2.29	(0.90-5.85)	7	2.78	(0.95-8.13)	3	1.54	(0.40-5.99)	0		
44 Insurance, Real Estate, Securities and Business Services Salesmen	12	13	1.70	(0.75-3.86)	7	1.47	(0.54-3.96)	6	2.59	(0.90-7.40)	0		
45 Salesmen, Shop Assistants and Related Workers	154	111	0.85	(0.65-1.10)	51	0.79	(0.56-1.10)	29	0.90	(0.59-1.38)	31	0.93	(0.61-1.41)

51 Working Proprietors (Catering and Lodging Services)	9	4	0.5 6	(0.1 7-1.89)	0			2	1.2 6	(0.2 6-6.1 3)	2	1.03	(0.22- 4.87)
53 Cooks, Waiters, Bartenders and Related Workers	51	60	1.2 9	(0.8 7-1.90)	26	1.0 7	(0.6 6-1.7 5)	17	1.3 9	(0.7 9-2.4 6)	16	1.48	(0.80- 2.76)
54 Maids and Related Housekeeping Service Workers	141	105	0.8 3	(0.6 0-1.16)	63	1.0 4	(0.7 0-1.5 5)	28	0.6 1	(0.3 6-1.0 2)	14	0.86	(0.42- 1.74)
55 Building Caretakers, Charworkers, Cleaners and Related Workers	68	85	1.3 8	(0.9 9-1.93)	51	1.7 9	(1.2 1-2.6 4)	14	0.9 2	(0.5 1-1.6 8)	19	1.15	(0.67- 1.98)
56 Launderers, Dry-Cleaners, Pressers	5	7	1.6 8	(0.5 1-5.47)	4	2.1 5	(0.5 3-8.7 1)	3	2.4 6	(0.5 7-10. 62)	0		
57 Hairdressers, Barbers, Beauticians and Related Workers	24	19	0.9 5	(0.5 1-1.77)	10	1.0 2	(0.4 7-2.2 5)	1	0.1 7	(0.0 2-1.2 8)	7	1.46	(0.58- 3.69)
58 Protective Service Workers	51	28	0.6 3	(0.3 9-1.02)	14	0.5 6	(0.3 1-1.0 4)	6	0.5 7	(0.2 4-1.3 6)	7	0.77	(0.34- 1.75)
59 Service Workers Not Elsewhere Classified	9	13	1.5 3	(0.6 3-3.72)	6	1.2 9	(0.4 2-3.9 8)	5	3.0 0	(0.9 8-9.2 5)	2	0.95	(0.20- 4.57)
60 Farm Managers and Supervisors	241	223	0.8 4	(0.6 7-1.04)	127	0.9 2	(0.7 1-1.2 0)	37	0.7 3	(0.4 9-1.0 9)	59	0.73	(0.52- 1.03)
62 Agricultural and Animal Husbandry Workers	159	203	1.3 3	(1.0 6-1.68)	120	1.3 7	(1.0 4-1.7 9)	41	1.2 1	(0.8 3-1.7 8)	41	1.42	(0.96- 1.93)
63 Forestry Workers	15	14	0.7 3	(0.3 5-1.55)	10	0.8 8	(0.3 8-2.0 2)	2	0.5 9	(0.1 3-2.6 6)	2	0.43	(0.10- 1.93)
64 Fishermen, Hunters and Related Workers	37	30	1.2 4	(0.7 2-2.13)	14	1.0 5	(0.5 2-2.1 3)	14	2.1 9	(1.0 6-4.5 3)	1	2.60	(0.23- 29.56)
71 Miners, Quarrymen, Well Drillers and Related Workers	24	39	1.7 0	(1.0 1-2.88)	21	1.8 7	(1.0 1-3.4 6)	8	1.5 3	(0.6 7-3.5 1)	10	1.83	(0.85- 3.91)
72 Metal Processers	27	26	1.0 5	(0.6 0-1.83)	12	0.8 8	(0.4 3-1.7 9)	6	1.1 4	(0.4 5-2.8 7)	8	1.35	(0.59- 3.13)
73 Wood Preparation Workers and Paper Makers	4	7	2.2 3	(0.6 4-7.79)	3	1.2 4	(0.2 7-5.7 7)	4	4.9 2	(1.1 7-20. 74)	0		
74 Chemical Processers and Related Workers	42	39	0.9 0	(0.5 7-1.40)	27	1.2 7	(0.7 6-2.1 0)	5	0.4 8	(0.1 9-1.2 2)	7	0.56	(0.24- 1.28)
75 Spinners, Weavers, Knitters, Dyers and Related Workers	36	33	1.0 0	(0.6 1-1.63)	14	0.8 9	(0.4 7-1.7 0)	12	1.6 5	(0.8 4-3.2 3)	6	0.49	(0.19- 1.32)

76 Tanners, Fellmongers, Pelt Dressers	4	6	1.8 2	(0.5 0-6.63)	4	2.1 5	(0.5 2-8.9 8)	1	1.0 4	(0.1 1-9.7 9)	1	2.14	(0.21- 21.35)
77 Food and Beverage Processers	58	67	1.2 8	(0.8 9-1.85)	32	1.1 5	(0.7 3-1.8 0)	19	1.6 0	(0.9 3-2.7 4)	15	1.26	(0.69- 2.29)
79 Tailors, Dressmakers, Sewers, Upholsterers, and Related Workers	89	49	0.6 0	(0.4 2-0.87)	16	0.4 0	(0.2 3-0.7 1)	21	1.0 6	(0.6 4-1.7 7)	11	0.48	(0.25- 0.93)
80 Shoemakers and Leather Goods Makers	39	32	0.9 6	(0.5 9-1.55)	18	1.0 3	(0.5 7-1.8 5)	5	0.5 6	(0.2 2-1.4 6)	9	1.05	(0.49- 2.25)
81 Cabinetmakers and Related Woodworkers	67	67	1.0 0	(0.7 0-1.42)	33	1.0 3	(0.6 7-1.6 0)	18	1.2 0	(0.7 0-2.0 7)	16	0.93	(0.52- 1.67)
83 Blacksmiths, Toolmakers, Machine-Tool Operators	93	116	1.4 1	(1.0 5-1.89)	51	1.4 9	(1.0 3-2.1 7)	30	1.5 1	(0.9 6-2.3 7)	34	1.11	(0.72- 1.71)
84 Machinery Fitters, Machinery Assemblers, Precision Instrument Makers	86	70	0.9 4	(0.6 8-1.32)	35	0.9 4	(0.6 2-1.4 3)	21	1.2 8	(0.7 8-2.11)	14	0.73	(0.40- 1.34)
85 Electrical Fitters and Related Electrical Workers	36	20	0.5 9	(0.3 4-1.03)	7	0.3 6	(0.1 6-0.8 3)	7	0.9 8	(0.4 3-2.2 8)	6	0.72	(0.29- 1.76)
87 Plumbers, Welders, Structural and Sheet Metal Preparers and Erectors	43	39	0.9 8	(0.6 3-1.54)	19	1.0 4	(0.5 9-1.8 3)	9	1.0 4	(0.5 0-2.1 8)	11	0.89	(0.44- 1.79)
89 Glass Formers, Potters, and Related Workers	8	9	1.2 3	(0.4 6-3.25)	4	0.9 2	(0.2 6-3.2 5)	2	1.0 5	(0.2 2-5.1 0)	3	1.67	(0.41- 6.78)
90 Rubber and Plastics Product Makers	27	37	1.5 9	(0.9 5-2.66)	18	1.3 7	(0.7 3-2.5 6)	9	1.6 7	(0.7 7-3.6 4)	10	1.58	(0.74- 3.40)
91 Paper and Paperboard Products Makers	21	18	0.9 7	(0.5 1-1.84)	10	1.0 1	(0.4 6-2.2 1)	3	0.7 8	(0.2 3-2.6 5)	5	1.00	(0.37- 2.74)
92 Printers and Related Workers	11	9	1.0 0	(0.4 1-2.46)	3	0.7 4	(0.2 0-2.7 8)	4	1.3 6	(0.4 2-4.4 4)	1	0.56	(0.06- 3.07)
93 Painters	17	22	1.2 3	(0.6 4-2.38)	9	1.4 6	(0.6 2-3.4 4)	6	1.3 2	(0.5 0-3.4 8)	6	0.92	(0.31- 2.77)
94 Production and Related Workers Not Elsewhere Classified	14	7	0.6 6	(0.2 6-1.68)	3	0.4 7	(0.1 3-1.7 1)	3	1.1 8	(0.3 3-4.2 2)	1	0.39	(0.05- 3.07)
95 Bricklayers, Carpenters, Other Construction Workers	203	246	1.3 0	(1.0 6-1.60)	143	1.5 6	(1.2 2-2.0 0)	47	1.0 4	(0.7 4-1.4 8)	52	1.09	(0.77- 1.54)
96 Stationary Engine and Related Equipment Operators	2	11	6.5 3	(1.4 1-30.1 9)	7	12. 08	(2.0 9-69. 87)	0			3	9.45	(0.94- 95.39)

97 Material-Handling and Equipment Operators, Dockers, Freight Handlers	30	21	0.6 9	(0.3 9-1.22)	6	0.3 4	(0.1 4-0.8 3)	5	0.6 8	(0.2 6-1.7 9)	10	1.91	(0.90- 4.07)
98 Transport Equipment Operators	164	169	1.1 3	(0.8 9-1.42)	71	0.9 8	(0.7 2-1.3 3)	49	1.3 4	(0.9 4-1.9 0)	41	1.21	(0.82- 1.78)
Others Not Else Classified	604	363	0.6 6	(0.5 5-0.80)	124	0.6 2	(0.4 8-0.8 0)	84	0.5 4	(0.4 0-0.7 3)	154	0.81	(0.63- 1.05)

¹Models adjusted for study location, age, sex, education, smoking status, alcohol consumption, diet, GC family history, and *H. pylori* exposure. The reference group was defined *a priori* as subjects who had never held the specific occupation or held that occupation for less than one year; unemployed individuals were excluded from the analysis (see text).

²Includes subjects from studies Italy 2 (Buiatti et al., 1989), Russia (Zaridze et al., 1999), Spain (Santibanez et al., 2012), Brazil 1 (Nishimoto et al., 2002), and Brazil 2 (Hamada et al., 2002).

³ISCO 68, the International Standard Classification of Occupations of 1968

Supplemental Table 2. Risk of gastric cancer¹ overall based on broad occupational categorization (1-digit ISCO-68) according to *H pylori* exposure status²

ISCO 68 Code ³	Industry Title ⁴	<i>H pylori</i> non-exposed (n=1524)				<i>H pylori</i> exposed (n=2545)			
		Cases	Contr ols	OR	(95% CI)	Case s	Contro ls	OR	(95% CI)
1	Professional, Technical and Related Workers	26	101	0.91	(0.55-1.48)	59	87	1.01	(0.71-1.44)
2	Administrative and Managerial Workers	30	129	0.86	(0.54-1.38)	129	202	0.83	(0.64-1.09)
3	Clerical and Related Workers	44	249	0.58	(0.40-0.85)	159	263	0.84	(0.67-1.06)
4	Sales Workers	34	113	1.21	(0.78-1.88)	155	157	1.28	(0.99-1.64)
5	Service Workers	10	8	1.45	(0.50-4.18)	24	26	0.68	(0.35-1.30)
6	Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	22	45	1.41	(0.77-2.58)	82	105	1.17	(0.83-1.63)
7/8/9	Production and Related Workers, Transport Equipment Operators and Laborers	135	183	1.53	(1.10-2.13)	289	312	1.14	(0.93-1.40)

¹Models adjusted for study location, age, sex, education, smoking status, alcohol consumption, diet, and GC family history. The reference group was defined *a priori* as subjects who had never held the specific occupation or held that occupation for less than one year (see text).

²Includes subjects from studies Italy 2 (Buiatti et al., 1989), Russia (Zaridze et al., 1999), USA (Zhang et al., 1999), Spain (Santibanez et al., 2012), Brazil 1 (Nishimoto et al., 2002), Brazil 2 (Hamada et al., 2002), and Japan 2 (Machida-Montani et al., 2004). These studies included data on *H pylori* exposure status, which was determined based on serologic testing in all studies except for De Feo et al., which was according to tissue pathology. A positive exposure ("exposed") was defined as positive serology (or histopathology), while "non-exposed" was defined as negative serology (or histopathology); please see text for additional details

³ISCO 68, the International Standard Classification of Occupations of 1968

⁴An individual can be included in more than one occupational field.