

Supplementary Files

Supplementary File 1 Description of individual INHANCE studies included in the analyses

Location	INHANCE-ID	Recruitment period	Multicenter study	Type of control recruitment	Participation rate (%) cases / controls	Cases (n)	Controls (n)	Special occupational codes available	Participants with occupational history	
									Cases (n)	Controls (n)
France	France (1989-1991)	1989-1991	Yes	Hospital	80 / 86	528	305	No	528	305
France	France (2001-2007)	2001-2007	Yes	Population	83 / 81	2237	3555	Yes	2216	3537
Germany	Germany-Heidelberg	1998-2000	No	Population	96 / 62	234	769	Yes	234	768
Latin America	Latin America	2000-2003	Yes	Hospital	95 / 86	2200	1706	No	1858	1421
Western Europe	Western Europe	2000-2005	Yes	Hospital & Population ^a	82 / 68	1728	1993	Yes	1711	1969

^a Three study centres with population based recruitment (Glasgow, Manchester, Newcastle) and 10 study centres with hospital based recruitment (Athens, Aviano, Barcelona, Bremen, Croatia, Dublin, Oslo, Padova, Prague, Turin)

Supplementary File 2 **List of ISCO68-based risk occupations for head and neck cancer, showing increasing risks for 10 or more years of employment^a**

<i>ISCO68</i>	<i>ISCO68 - Description</i>
532	Waiters, bartenders and related workers
552	Charworkers, cleaners and related workers
560	Launderers, dry-cleaners and pressers
581	Fire-fighters
621	General farm workers
627	Nursery workers and gardeners
629	Agricultural and animal husbandry workers nec ^b
641	Fishermen
729	Metal processors nec ^b
839	Blacksmith, toolmakers, and machine-tool operators nec ^b
852	Electronic fitters
853	Electrical and electronic equipment assemblers
871	Plumbers and pipe fitters
872	Welders and flame-cutters
873	Sheet-metal workers
874	Structural metal preparers and erectors
901	Rubber and plastics product makers (except tires)
951	Bricklayers, stonemasons, and tile setters
952	Reinforced-concreters, cement finishers, and terrazzo workers
953	Roofers
959	Construction workers nec ^b
971	Dockers and freight handlers
979	Material-handling equipment operators nec ^b
98550	Lorry and van drivers (local transport)
99910	Labourers

^a Combined results of two studies:

Richiardi L, Corbin M, Marron M, Ahrens W, Pohlabeln H, Lagiou P, et al. Occupation and risk of upper aerodigestive tract cancer: the ARCAGE study. *Int J Cancer*. 2012;130(10): 2397-2406.

Paget-Bailly S, Guida F, Carton M, Menvielle G, Radoi L, Cyr D, et al. Occupation and head and neck cancer risk in men: results from the ICARE study, a French population-based case-control study. *J Occup Environ Med*. 2013;55(9):1065-1073.

^b not elsewhere classified

Supplementary File 3 **Logistic regression parameters for the association between head and neck cancer and occupationally derived socioeconomic measures for the longest held job**

	<i>Cases</i>	<i>Controls</i>	<i>Model1^a regression coefficient</i>	<i>Model2^b regression coefficient</i>	<i>Model3^c regression coefficient</i>	<i>Model4^d regression coefficient</i>	<i>Model5^e regression coefficient</i>
<i>SIOPS (14-78)</i>	5818	7326	-0.0294**	-0.0212**	-0.0206**	-0.0200**	-0.0060*
<i>ISEI (10-90)</i>	5818	7326	-0.0241**	-0.0182**	-0.0177**	-0.0172**	-0.0097*

^a Adjustment for sex, age, study centre

^b Variables of model1 and further adjustment for cigarette smoking (status, duration, cigarettes/day, packyears)

^c Variables of model2 and further adjustment for alcohol consumption (status, drinks/day, interaction drinks/day*duration cigarette smoking)

^d Variables of model3 and further adjustment for worked \geq 10 years in risk occupations (10 years before study)

^e Variables of model4 and further adjustment for respective other continuous SES / prestige variable (SIOPS, ISEI) and ever worked in manual job

* p-value <0.05 ** p-value <0.0001

Supplementary File 4 **Sensitivity Analyses – adjusted Odds Ratios (OR) and 95% Confidence Intervals (CI) for the association between head and neck cancer and occupational socioeconomic measures (alternative job periods)**

	Cases	Controls	Model1 ^a OR (95%-CI)	Model2 ^b OR (95%-CI)	Model3 ^c OR (95%-CI)	Model4 ^d OR (95%-CI)	Model5 ^e OR (95%-CI)
<i>SIOPS - quartiles of control distribution</i>							
<i>First job</i>							
1st quartile (45-78)	680	1623	1.00	1.00	1.00	1.00	1.00
2nd quartile (35-44)	1626	2109	1.73 (1.54-1.94)	1.51 (1.33-1.72)	1.49 (1.31-1.69)	1.44 (1.26-1.64)	1.17 (1.00-1.38)
3rd quartile (28-34)	1816	1831	2.09 (1.87-2.35)	1.59 (1.40-1.82)	1.57 (1.38-1.78)	1.44 (1.26-1.64)	1.10 (0.92-1.31)
4th quartile (14-27)	1696	1763	1.85 (1.64-2.08)	1.56 (1.36-1.79)	1.51 (1.32-1.74)	1.31 (1.13-1.51)	0.98 (0.80-1.21)
<i>Last job</i>							
1st quartile (52-78)	604	1832	1.00	1.00	1.00	1.00	1.00
2nd quartile (41-51)	1081	1764	1.79 (1.59-2.03)	1.48 (1.29-1.70)	1.48 (1.29-1.70)	1.46 (1.27-1.67)	1.37 (1.16-1.61)
3rd quartile (31-40)	2225	2092	2.66 (2.38-2.99)	1.90 (1.67-2.16)	1.86 (1.64-2.12)	1.75 (1.53-1.99)	1.47 (1.21-1.78)
4th quartile (14-30)	1908	1638	3.09 (2.74-3.48)	2.29 (2.00-2.61)	2.24 (1.96-2.56)	2.06 (1.8-2.37)	1.64 (1.35-2.00)
<i>Highest SIOPS in job history</i>							
1st quartile (55-78)	754	2033	1.00	1.00	1.00	1.00	1.00
2nd quartile (45-54)	916	1501	1.66 (1.47-1.88)	1.35 (1.18-1.55)	1.34 (1.17-1.53)	1.31 (1.14-1.5)	1.13 (0.94-1.35)
3rd quartile (37-44)	1901	1943	2.41 (2.16-2.68)	1.89 (1.67-2.13)	1.85 (1.64-2.09)	1.77 (1.56-2.00)	1.39 (1.16-1.66)
4th quartile (14-36)	2247	1849	2.81 (2.52-3.14)	2.13 (1.88-2.41)	2.08 (1.83-2.36)	1.90 (1.67-2.17)	1.38 (1.14-1.67)
<i>ISEI - quartiles of control distribution</i>							
<i>First job</i>							
1st quartile (47-90)	740	1824	1.00	1.00	1.00	1.00	1.00
2nd quartile (36-46)	1631	2091	1.75 (1.57-1.95)	1.49 (1.32-1.69)	1.48 (1.31-1.68)	1.40 (1.24-1.59)	1.23 (0.98-1.54)
3rd quartile (30-35)	1741	1566	2.33 (2.08-2.61)	1.78 (1.57-2.03)	1.75 (1.54-2.00)	1.61 (1.41-1.84)	1.44 (1.13-1.85)
4th quartile (10-29)	1706	1845	1.73 (1.54-1.94)	1.58 (1.38-1.80)	1.54 (1.35-1.76)	1.36 (1.18-1.56)	1.31 (1.01-1.70)
<i>Last job</i>							
1st quartile (57-90)	650	1849	1.00	1.00	1.00	1.00	1.00
2nd quartile (41-56)	1076	1796	1.61 (1.43-1.82)	1.37 (1.20-1.57)	1.36 (1.19-1.56)	1.33 (1.16-1.53)	1.06 (0.89-1.26)
3rd quartile (32-40)	2159	1900	2.60 (2.32-2.91)	1.93 (1.70-2.19)	1.87 (1.65-2.13)	1.76 (1.54-2.00)	1.24 (1.00-1.54)
4th quartile (10-31)	1933	1781	2.66 (2.37-2.99)	2.07 (1.82-2.36)	2.02 (1.78-2.31)	1.85 (1.62-2.12)	1.29 (1.02-1.62)
<i>Highest ISEI in job history</i>							
1st quartile (59-90)	574	1695	1.00	1.00	1.00	1.00	1.00
2nd quartile (45-58)	1420	2132	1.89 (1.67-2.13)	1.56 (1.36-1.78)	1.53 (1.34-1.75)	1.50 (1.31-1.72)	1.21 (1.00-1.45)
3rd quartile (36-44)	1987	1916	2.59 (2.31-2.92)	1.97 (1.73-2.25)	1.93 (1.69-2.20)	1.81 (1.58-2.07)	1.31 (1.06-1.60)
4th quartile (10-35)	1837	1583	2.85 (2.52-3.22)	2.42 (2.10-2.78)	2.36 (2.06-2.72)	2.17 (1.88-2.51)	1.55 (1.25-1.91)
<i>Manual/non-manual</i>							
<i>First job was manual job</i>							
No	971	2140	1.00	1.00	1.00	1.00	1.00
Yes	4847	5186	1.76 (1.61-1.92)	1.52 (1.38-1.69)	1.50 (1.36-1.66)	1.38 (1.24-1.53)	1.07 (0.88-1.30)
<i>Last job was manual job</i>							
No	1455	3301	1.00	1.00	1.00	1.00	1.00
Yes	4363	4025	2.08 (1.92-2.25)	1.64 (1.50-1.80)	1.61 (1.47-1.76)	1.50 (1.36-1.65)	1.05 (0.89-1.23)
<i>Ever worked in manual job</i>							
No	601	1684	1.00	1.00	1.00	1.00	1.00
Yes	5217	5642	2.17 (1.96-2.41)	1.71 (1.52-1.93)	1.68 (1.50-1.90)	1.54 (1.36-1.74)	1.15 (1.01-1.32)

ISEI – International Socio-Economic Index; SIOPS – Standard International Occupational Prestige Scale

^a Adjustment for sex, age, study centre

^b Variables of model1 and further adjustment for cigarette smoking (status, duration, cigarettes/day, packyears)

^c Variables of model2 and further adjustment for alcohol consumption (status, drinks/day, interaction drinks/day*duration cigarette smoking)

^d Variables of model3 and further adjustment for worked \geq 10 years in risk occupations (10 years before study)

^e Variables of model4 and further adjustment for respective other SES / prestige variables (SIOPS, ISEI, manual/non-manual) of the corresponding job period (first job, last job, or highest SIOPS/highest ISEI/ever worked in manual job)

Supplementary File 5a

Stratified analyses of the association between head and neck cancer and ISEI^a / manual vs non-manual^b

	Cases	Controls	OR (95%-CI) ^c	Cases	Controls	OR (95%-CI) ^c
Sex	Men			Women		
<i>ISEI (p=0.987)^d</i>						
1st quartile (m:55-90 / w:47-88) ^e	583	1569	1.00	100	313	1.00
2nd quartile (m:39-54 / w:36-46) ^e	1086	1550	1.42 (1.23-1.64)	138	310	1.39 (0.98-1.97)
3rd quartile (m:32-38 / w:30-35) ^e	1900	1585	1.75 (1.52-2.01)	188	308	1.71 (1.22-2.39)
4th quartile (m:10-31 / w:10-29) ^e	1616	1359	1.77 (1.53-2.06)	207	332	1.48 (1.02-2.14)
<i>Manual job (p=0.978)^d</i>						
No	1192	2560	1.00	235	621	1.00
Yes	3993	3503	1.49 (1.35-1.66)	398	642	1.33 (1.03-1.72)
Study region	Europe			Latin America		
<i>ISEI (p<0.001)^d</i>						
1st quartile (56-90)	559	1722	1.00	100	79	1.00
2nd quartile (40-55)	957	1701	1.35 (1.17-1.57)	220	171	0.90 (0.60-1.35)
3rd quartile (32-39)	1524	1474	1.68 (1.45-1.94)	572	401	0.81 (0.56-1.17)
4th quartile (10-31)	1195	1235	1.69 (1.45-1.98)	691	543	0.85 (0.58-1.23)
<i>Manual job (p<0.001)^d</i>						
No	1214	3014	1.00	213	167	1.00
Yes	3021	3118	1.46 (1.31-1.62)	1370	1027	0.88 (0.68-1.15)
Type of study	Hospital based			Population based		
<i>ISEI (p<0.001)^d</i>						
1st quartile (56-90)	322	459	1.00	337	1342	1.00
2nd quartile (40-55)	597	586	1.24 (1.01-1.52)	580	1286	1.37 (1.14-1.65)
3rd quartile (32-39)	1233	884	1.23 (1.01-1.49)	863	991	1.90 (1.58-2.29)
4th quartile (10-31)	1192	958	1.27 (1.04-1.54)	694	820	1.96 (1.60-2.39)
<i>Manual job (p<0.001)^d</i>						
No	671	839	1.00	756	2342	1.00
Yes	2673	2048	1.20 (1.04-1.39)	1718	2097	1.54 (1.35-1.77)
Ever/never smoked cigarettes	Ever smoked >= 100 cigarettes			Never smoked >= 100 cigarettes		
<i>ISEI (p=0.019)^d</i>						
1st quartile (56-90)	579	1135	1.00	80	666	1.00
2nd quartile (40-55)	1080	1198	1.44 (1.25-1.67)	97	674	1.11 (0.80-1.54)
3rd quartile (32-39)	2008	1398	1.73 (1.50-2.00)	88	477	1.31 (0.92-1.87)
4th quartile (10-31)	1788	1096	1.90 (1.64-2.21)	98	682	0.97 (0.67-1.40)
<i>Manual job (p=0.001)^d</i>						
No	1272	2027	1.00	155	1154	1.00
Yes	4183	2800	1.57 (1.42-1.74)	208	1345	0.97 (0.75-1.26)
Ever/never drank alcohol^f	Ever drank alcohol			Never drank alcohol		
<i>ISEI (p=0.432)^d</i>						
1st quartile (56-90)	618	1665	1.00	41	136	1.00
2nd quartile (40-55)	1115	1681	1.42 (1.24-1.63)	62	191	0.96 (0.58-1.59)
3rd quartile (32-39)	2018	1713	1.69 (1.47-1.93)	78	162	1.31 (0.78-2.20)
4th quartile (10-31)	1743	1443	1.75 (1.51-2.02)	143	335	1.39 (0.84-2.29)
<i>Manual job (p=0.194)^d</i>						
No	1345	2912	1.00	82	269	1.00
Yes	4149	3590	1.49 (1.35-1.65)	242	555	1.41 (0.98-2.03)
Ever/never manual	Ever worked in manual job			Never worked in manual job		
<i>ISEI (p=0.510)^d</i>						
1st quartile (56-90)	322	665	1.00	337	1136	1.00
2nd quartile (40-55)	950	1369	1.26 (1.05-1.51)	227	503	1.28 (1.01-1.63)
3rd quartile (32-39)	2059	1830	1.47 (1.23-1.74)	37	45	1.59 (0.92-2.75)
4th quartile (10-31)	1886	1778	1.54 (1.28-1.84)	0	0	

^a ISEI for longest job, categories based on quartiles of control distribution

^b Longest job was manual job yes/no

^c Odds ratios (OR) and 95% confidence Intervals (CI) adjusted for sex, age, study centre, cigarette smoking (status, duration, cigarettes/day, packyears), alcohol consumption (ever/never, drinks/day), an interaction term drinks/day*duration cigarette smoking), and worked >= 10 years in risk occupations (10 years before study)

^d Test of interaction between stratification factor and ISEI / manual job

^e Categories for ISEI-distribution separately in control groups for men (m) and women (w)

^f Ever/never drank >15.6 ml of ethanol

Supplementary File 5b Stratified analyses of the association between head and neck cancer and ISEI^a / manual vs non-manual^b

<i>Tumour subsite</i>	<i>Cases</i>	<i>Controls</i>	<i>OR (95%-CI)^c</i>	<i>Cases</i>	<i>Controls</i>	<i>OR (95%-CI)^c</i>	<i>Cases</i>	<i>Controls</i>	<i>OR (95%-CI)^c</i>	<i>Cases</i>	<i>Controls</i>	<i>OR (95%-CI)^c</i>
<i>ISEI</i>	<i>Oral cavity</i>			<i>Oropharynx</i>			<i>Hypopharynx</i>			<i>Larynx</i>		
1st quartile (56-90)	138	1801	1.00	178	1801	1.00	90	1801	1.00	210	1801	1.00
2nd quartile (40-55)	255	1872	1.44 (1.14-1.83)	270	1872	1.23 (0.99-1.53)	152	1872	1.33 (0.99-1.78)	410	1872	1.59 (1.30-1.95)
3rd quartile (32-39)	391	1875	1.66 (1.31-2.10)	456	1875	1.54 (1.25-1.91)	303	1875	1.72 (1.30-2.28)	787	1875	1.89 (1.55-2.29)
4th quartile (10-31)	355	1778	1.60 (1.25-2.05)	377	1778	1.41 (1.12-1.77)	282	1778	1.95 (1.45-2.61)	696	1778	2.12 (1.73-2.61)
<i>Manual job</i>	<i>Ever smoked cigarettes, ever drank alcohol</i>			<i>Ever smoked cigarettes, never drank alcohol</i>			<i>Never smoked cigarettes, ever drank alcohol</i>			<i>Never smoked cigarettes, never drank alcohol</i>		
No	298	3181	1.00	372	3181	1.00	188	3181	1.00	475	3181	1.00
Yes	841	4145	1.46 (1.23-1.73)	909	4145	1.36 (1.16-1.59)	639	4145	1.64 (1.34-2.02)	1628	4145	1.60 (1.40-1.85)
<i>ISEI (p=0.018)^e</i>	<i>Manual job (p=0.002)^e</i>			<i>Manual job (p=0.002)^e</i>			<i>Manual job (p=0.002)^e</i>			<i>Manual job (p=0.002)^e</i>		
1st quartile (56-90)	556	1070	1.00	23	65	1.00	62	595	1.00	18	71	1.00
2nd quartile (40-55)	1032	1104	1.44 (1.24-1.67)	48	94	1.50 (0.78-2.91)	83	577	1.26 (0.88-1.82)	14	97	0.57 (0.25-1.30)
3rd quartile (32-39)	1944	1319	1.71 (1.48-1.98)	64	79	2.03 (1.04-3.97)	74	394	1.49 (1.01-2.20)	14	83	0.61 (0.25-1.44)
4th quartile (10-31)	1677	963	1.87 (1.60-2.19)	111	133	2.22 (1.15-4.29)	66	480	1.06 (0.70-1.62)	32	202	0.61 (0.28-1.33)
No	1218	1896	1.00	54	131	1.00	127	1016	1.00	28	138	1.00
Yes	3991	2560	1.56 (1.41-1.74)	192	240	1.81 (1.14-2.87)	158	1030	1.00 (0.75-1.34)	50	315	0.86 (0.47-1.59)

^a SIOPS for longest job, categories based on quartiles of control distribution

^b Longest job was manual job yes/no

^c Odds ratios (OR) and 95% confidence Intervals (CI) adjusted for sex, age, study centre, cigarette smoking (status, duration, cigarettes/day, packyears), alcohol consumption (ever/never, drinks/day), an interaction term drinks/day*duration cigarette smoking), and worked ≥ 10 years in risk occupations (10 years before study)

^d Ever/never smoked ≥ 100 cigarettes in lifetime and ever/never drank alcohol (>15.6 ml of ethanol)

^e Test of interaction between stratification factor and ISEI / manual job