

PIPE SMOKING

&

HEALTH

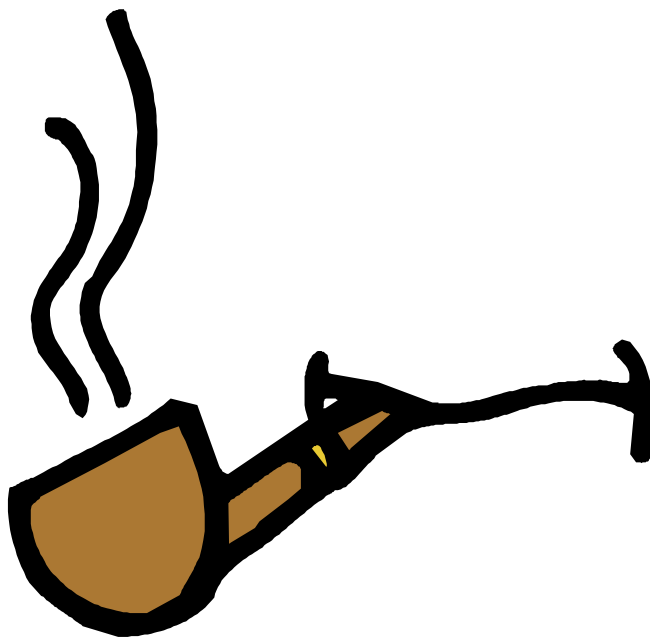
*A review of the medical literature, for
the use of pipe smokers and health care
professionals.*

by

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PREFACE

Most pipe smokers consider themselves greatly different from the other users of tobacco, and as such they must be approached in a much different manner when discussing possible health consequences of their utilization of tobacco. As a result, many needs have been voiced from pipe smokers who would like to know where their type of tobacco use fits into the voluminous literature now pouring forth on the health effects of tobacco use.

In an attempt to obtain a more accurate perspective on the subject, this literature review is being compiled, which represents a current bibliography, with index, of articles dealing with the health effects of pipe smoking. The compiler of this work has a personal interest in the subject both from the perspective being a pipe smoker as well as a toxicologist. It is hoped this compilation will prove beneficial to pipe smokers, as well as health professionals who have to deal with patients who use tobacco in this form.

This review effort is a dynamic process, and the work is constantly being revised with new citations as they are published. If individuals know of any additional literature citations, please send copies of articles to the compiler listed below. Thank you.

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**PIPE SMOKING & HEALTH
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(sorted by SITE vs. CONDITION vs. DATE)**

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72	Stomach	Cancer	Zacho	1975
73	Tobacco	Toxic chemicals	Appel	1990

PIPE SMOKING & HEALTH CITATIONS FROM THE INTERNATIONAL LITERATURE

Abelin T, et al: Relative risk of pulmonary cancer in cigar and pipe smokers, *Cancer*, August 1967; 1288-1296.

CONCLUSION: *"Whatever the explanation may be, the outcome of this study suggests that heavy cigar and pipe smoking may be more hazardous to health than previously thought and should not be considered a safe alternative to cigarette smoking."*

Appel BR, Guirguis G, Kim IS, et al: Benzene, benzo(a)pyrene, and lead in smoke from tobacco products, *Amer J Pub Hlth*, 1990; 80(5):560-564.

CONCLUSION: *"The emissions of benzene and BaP [benzo(a)pyrene], expressed emitted per gram of tobacco consumed, were similar for all products evaluated; for benzene, the mean values for cigars, RYO [roll-your-own] cigarette and pipe tobaccos were 156 +/- 52, 68 +/- 11, and 242 +/- 126 micrograms/g, respectively. Mean values for BaP were 42 +/- 7 and 48 +/- 4 ng/g for cigars and RYO cigarette tobacco, respectively. Lead values were below the limit of reliable quantization in all cases. The mean benzene concentrations in a puff ranged from 1 to 2 x 10(5) micrograms/m³ for cigars, RYO cigarette and pipe tobaccos. For BaP the puff concentration averaged about 60 micrograms/m³ for cigars and RYO cigarette tobacco. The results suggest that smoking cigars, pipes or RYO cigarettes leads to potential exposures which exceed the No Significant Risk levels of benzene and BaP set pursuant to California's Proposition 65."*

Ashton H, Stepney R: Smoking - Psychology and Pharmacology, Tavistock Publications, London, U.K., 1982.

p. 112: *"Pipe smoking in men over fifty years of age was linked with origins in a small family with higher social class, and also (via a different casual path) with long-term occupational and environmental stress. Pipe smoking, unlike cigarette smoking, was not related to emotionality. This finding led the authors to suggest that pipe smoking (with its `series of small defensive behaviors behind which one can hide') is a valuable coping mechanism for the less emotionally reactive man..."*

Axell T, Henricsson V: Leukoedema - an epidemiologic study with special reference to the influence of tobacco habits, *Community Dentistry Oral Epidemiology*, 1981; 9(3):142-146.

CONCLUSION: *"Leukoedema was most common among pipe smokers followed by cigarette smokers and snuff dippers."*

Axell T, Hedin CA: Epidemiologic study of excessive oral melanin pigmentation with special reference to the influence of tobacco Habits, *Scandinavian J Dental Research*, 1982, 90(6):434-442.

CONCLUSION: *"The presence of oral melanin pigmentation was positively correlated with tobacco in a population of 30,118 Swedish adults. Only 9.9 percent of the population showed melanin pigmentation in the oral mucosa; 21.9 percent of the cigarette smokers and 16.8 percent of the pipe smokers were pigmented, compared with 3.0 percent of the nonsmokers."*

Baden E: Prevention of cancer of the oral cavity and pharynx, *CA: a Cancer J Clinicians*, 1987; 37(1):49-62.

CONCLUSION: *"Multiple environmental factors and a multistage pathogenic mechanism appear to be involved in oropharyngeal carcinogenesis. Tobacco and alcohol are the most important risk factors, but other agents may*

also contribute to malignant transformations."

Baric JM, et al: Influence of cigarette, pipe, and cigar smoking, removable partial dentures, and age on oral leukoplakia, *Oral Surg, Oral Med Oral Path*, 1982; 54(4):424- 429.

...data showed that cigar smokers had the lowest prevalence of leukoplakic lesions, whereas persons smoking a pipe only or a pipe plus cigars had the highest prevalence...older smokers (50 years and above) had a significantly higher prevalence than persons under 50 years of age...persons smoking a pipe only or the cigar-pipe combination had a high prevalence on the palate as well as the cheek.

Beaumier JP, Camp L: The Pipe Smoker, Harper & Row, Pub., New York, N.Y., 1980.

Bell JAE, et al: Statistical analysis of mortality rates of cigarette, pipe and cigar smokers, *Canad Med Assoc J*, 1969;100:806-810.

CONCLUSION: *"When the mortality potential of cigarette smoke was defined as 1.0, that of pipe smoke was found to be 0.09...In simpler terms, the smoke from pipes is 10 times less likely, to induce premature mortality than cigarette smoke when the same volume of smoke is inhaled."*

Benhamou S, et al: Lung cancer risk associated with cigar and pipe smoking, *Internat J Cancer*, 1986; 37(6):825-829.

CONCLUSION: *"The risk for lifelong pipe smokers although increased, was not statistically significant (RR=1.61) [cigarettes RR=13.32]."*

Binnie WH, et al: Etiology of oral squamous cell carcinoma, *J Oral Path*, 1983; 12(1):11-29.

CONCLUSION: *"It is noted that cigarette use presents a relatively small risk compared with chewing and pipe smoking, and replacement of cigarette smoking with 'less harmful' forms of tobacco consumption creates an increased risk of oral cancer."*

Brown CA, Woodward M, Tunstall-Pedoe H: Prevalence of chronic cough and phlegm among male cigar and pipe smokers: results of the Scottish Heart Health Study, *Thorax*, 1993; 48(11):1163-1167.

CONCLUSION: *"In all, 463 ex-smokers of cigarettes and 154 who had never smoked cigarettes were cigar or pipe smokers; 1,080 had never smoked any form of tobacco. Ex-cigarette smokers smoked and inhaled more than those who had never smoked cigarettes. Among the ex-cigarette smokers, cigar or pipe smokers had 1.63-1.71 times the prevalence of both chronic cough and chronic phlegm than those who had never smoked (1.31-1.36 among cigar only smokers; 2.23-2.84 among pipe only smokers)...Cigar and pipe smokers have a higher prevalence of chronic cough and phlegm than those who have never smoked, and the difference is more marked in pipe-only smokers than in cigar-only smokers."*

Carstensen JM, et al: Mortality in relation to cigarette and pipe smoking: 16 years' observation of 25,000 Swedish men, *J Epidemiology Community Hlth*, 1987; 41(2):166-172.

CONCLUSION: *"In the cohort, 32% smoked cigarettes, 27% smoked a pipe, and 5% smoked cigars. There were clear convariations between the amount of tobacco smoked and the risk of death due to cancer of the oral cavity and larynx, esophagus, liver, pancreas, lung and bladder as well as due to bronchitis and emphysema, ischemic heart disease (IHD), aortic aneurism, and peptic ulcer ($p<0.001$). Pipe smokers showed risk levels similar to*

cigarette smokers' levels. A close linear increase was observed in lung cancer risk in relation to the amount of tobacco smoked for cigarette, pipe, and cigar smokers, respectively. An increasing risk of IHD with amount smoked was seen among both cigarette and pipe smokers. A similar fraction of inhalers among Swedish cigarette and pipe smokers may explain the similarity in risks."

Casteleden CM, et al: Inhalation of tobacco smoke by pipe and cigar smokers, *Lancet*, July 7, 1973; 21-22.

CONCLUSION: *"In a group of 11 men who smoked cigars or a pipe but who had not previously smoked cigarettes, venous-blood carboxyhemoglobin (COHb) levels were similar (mean 2.3%) to those found in urban non-smokers."*

Christie D, Robinson K, Gordon I, et al: Current mortality in the Australian petroleum industry: the healthy-worker and the influence of life-style factors, *Med J Australia*, 1987; 147(5):222-225.

CONCLUSION: *"Relative all-cause mortality rates (RMR), adjusted for age, were higher among smokers than among nonsmokers and increased linearly with increasing cigarette consumption (1.45 to 2.10, $p < 0.01$). Subjects who smoked pipes and/or cigars only had an RMR similar to that of subjects who smoked < 20 cigarettes/day (1.43). Ex-smokers who had ceased smoking > 5 years before the survey had an RMR of 0.93; ex-smokers who had ceased < 5 years before the survey had an RMR of 1.59. A nonlinear protective effect against mortality was noted for mild to moderate alcohol consumption."*

Claude J, et al: Life-style and occupational risk factors of the lower urinary tract, *American J Epidem*, 1986; 124(4):578-589.

CONCLUSION: *"[regarding risk factor for bladder cancer]...for cigar and pipe smokers, relative risks increased with increasing lifetime consumption, but reached statistical significance only for heaviest pipe smoking ($> 40,000$ pipefuls)."*

Cook DG, et al: Giving up smoking and the risk of heart attacks, *Lancet*, 1986; 2(8520):1376-1380.

CONCLUSION: *"Pipe and cigar smokers who had never smoked cigarettes were a small group with no apparent increase in risk [to developing ischemic heart disease (IHD)]."*

Damber LA, Larson LG: Smoking and lung cancer with special regard to type of smoking and type of cancer. A case control study in North Sweden, *Brit J Cancer*, 1986; 53(5):673- 681.

CONCLUSION: *"Pipe smoking was as common as cigarette smoking and Heavy pipe smokers (> 100 g/week) had RR of 11.1, compared with 4.7 for light smokers (< 100 g/week). Combination smokers (cigarettes and pipe) had RR of 8.9. Risk increased successively with smoking duration, e.g. RR=2.3 for smoking < 30 years vs. 16.2 for > 50 years. High RRs were obtained for small cell (13.8) and squamous cell (11.8) carcinomas."*

Doll R: Smoking and death rates, *JAMA*, 1984; 25(21):2854-2857.

CONCLUSION: *"The four outstanding results were the degree to which total mortality among cigarette smokers was increased (by 68 percent in men who regularly smoked cigarettes only); the much smaller increase in men who regularly smoked only pipes (9 percent) or cigars (12 percent); the rapidity with which the rates in smokers fell once smoking had been discontinued but without every actually reaching the rate in lifelong nonsmokers; and the high proportion of the excess death rate in cigarette smokers that was attributable to coronary thrombosis."*

Elferink JGR: The narcotic and hallucinogenic use of tobacco in pre-Columbian Central America, J

Ethnopharmacology, 1983; 7:111-122.

ENVIRONMENTAL TOBACCO SMOKE - MEASURING EXPOSURES AND ASSESSING HEALTH EFFECTS, Comm. on Passive Smoking, Board on Environmental Studies and Toxicology, National Research Council, National Academy Press, Washington, D.C., 1986.

Feldman RS, et al: Association between smoking different tobacco products and periodontal disease indexes, *J Periodontology*, 54(8), 1983; 54(8):481-487.

CONCLUSION: *"Cigarette smokers had significantly more calculus deposition than pipe/cigar smokers, and both groups accumulated less plaque than nonsmokers. Gingival inflammation and tooth mobility did not differ between smokers and nonsmokers, or between the two smoker groups. After covariance adjustment for age and calculus, all smokers had similar periodontal pocket depth and less plaque, gingival inflammation, and tooth mobility than nonsmokers, but only cigarette smokers had greater bone loss."*

Friberg L, et al: Mortality in smoking discordant monozygotic and dizygotic twins, *Arch Environ Hlth*, 1970; 21:508-513.

CONCLUSION: *"mortality data for pairs where one member is a nonsmoker and the partner smokes only cigars or pipe or both... There is no excess mortality among the smokers. In fact there are fewer deaths among the smokers than among the nonsmokers"*.

Goldman AL: Carboxyhemoglobin levels in primary and secondary cigar and pipe smokers, *Chest*, 1977; 72(1):33-35.

CONCLUSION: *"non-inhaling (whether primary or secondary) cigar or pipe smokers had similar carboxyhemoglobin levels that were only slightly higher than nonsmokers."*

Herling S, Kozlowski LT: The importance of direct questions about inhalation and daily intake in the evaluation of pipe and cigar smokers, *Preventive Med*, 1988; 17(1):73-78.

CONCLUSION: *"The relative contributions of cigarette smoking history, self-reported inhalation, and amount smoked per day in predicting tobacco exposure were assessed in 45 pipe or cigar smokers. Pipe and cigar smokers traditionally have been subdivided into primary (never regular cigarette) and secondary (ex-cigarette) smokers. Self-reported inhalation more accurately predicted expired-air carbon monoxide (CO) levels than cigarette smoking history. Self-reported inhalation and self-reported daily cigarette consumption accounted for most instances of CO levels above the cut-off level of nonsmokers (8 ppm). A primary or secondary distinction was less useful than a noninhaling-inhaling distinction in assessing health risks associated with pipe and cigar smoking. Health-care providers should focus on inhalation and daily intake."*

Hickey N, et al: Cigar and pipe smoking related to four year survival of coronary patients, *Brit Heart j*, 1983; 49:423- 426.

CONCLUSION: *"Pipe smokers who continued smoking the pipe had an observed mortality which was greater than that of the non-smokers, but the numbers were small and the results were not statistically significant. The effect of smoking habit on mortality was not influenced by two other determinants of prognosis: age and severity of initial attack."*

Higgins ITT, Mahan CM, Wynder EL: Lung cancer among cigar and pipe smokers, *Preventive Med*, 1988;

17(1):116-128.

CONCLUSION: *"Pipe and cigar smoking effects on lung cancer risk were evaluated in 2,085 patients and 3,948 controls. Cancer risk was lower among cigar and pipe smokers than among cigarette smokers. Lung cancer risk, expressed as the odds ratio (OR) in current cigarette smokers, was 16.0 times that of never-smokers, 3.1 times that of cigar smokers, 1.9 times that of pipe smokers, 2.5 times that of cigar and pipe smokers, and 10.5 times that of cigar and/or pipe smokers who also smoked cigarettes. Among pipe and/or cigar smokers, lung cancer patients were more likely than controls to have been long-time smokers of >5 cigars or >5 pipefulls per day and to have inhaled: OR=3.2 for those smoking 5 to 9 cigars or pipes per day, OR 12.3 in cigar or pipe smokers who inhaled. The proportion of Keryberg I cancers was higher in cigar and pipe smokers than in cigarette smokers."*

Holcomb HS, et al: Medical absenteeism among cigarette, and cigar and pipe smokers, *Arch Environ Hlth*, 1972; 25:295-300.

CONCLUSION: *"the rank order test showed significantly lower ranking of rates for cigar and pipe smokers for both short and long absences. It would seem worthwhile to explore the possibility that men who are constitutionally able to tolerate tobacco smoke and who have adjusted satisfactorily to their lives and jobs by the time they reach middle age may be likely to adopt the habit of smoking cigars or pipes and may also be likely to have medical absentee rates."*

Howe GR: An epidemiologic study of bladder cancer, in Carcinoma of The Bladder, ed. by J.G. Connolly, Raven Press, N.Y., 1981; 55-60.

CONCLUSION: *"An increased risk was associated with pipe smoking. Pipe smoking also showed a dose-response relationship."*

Jarvis M, Jackson P: Data note -- 12. cigar and pipe smoking in Britain: implications for smoking prevalence and cessation, *Brit J Addiction*, 1988; 83(3):323-330.

CONCLUSION: *"Data on primary and secondary pipe and cigar smoking by sex, age, and socioeconomic group for the years 1973 to 1984 were used to estimate smoking prevalence in Great Britain. Smoking prevalence, adjusted for secondary cigar smoking, declined for both men and women between 1973 (63 and 41 percent, respectively) and 1984 (42 and 33 percent). Cigarette cessation rates increased among men from 1973 to 1984 (30 vs. 45 percent) and among women (20 vs. 35 percent). Adjustment for secondary cigar and pipe smoking eliminated the sex difference in smoking cessation rates. After adjustment for secondary cigar smoking, smoking prevalence dropped more sharply in nonmanual occupational categories for men."*

Jensen OM, Knudsen JB, McLaughlin JK, et al: The Copenhagen case-control study of renal pelvis and ureter cancer: role of smoking and occupational exposures, *Internat J Cancer*, 1988; 41(4):557-561.

CONCLUSION: *"Smoking habits and occupational exposures were evaluated for 96 renal pelvis and ureter cancer patients and 294 controls. Relative risks (RRs) increased among smokers of cigarettes alone (2.6) and in combination with other types of tobacco (3.8). RRs increased among pipe smokers and mixed pipe, cigar, and cigarillo smokers (NS). A dose-effect relationship was noted between lifetime total amount of tobacco smoked and pelvis-ureter tumor risk ($p<0.001$)..."*

Jenson OM, Wahrendorf J, Blettner M, et al: The Copenhagen case-control study of bladder cancer: role of smoking in invasive and non-invasive bladder tumors, *J Epidemiology Community Hlth*, 1987; 41(1):30-36.

CONCLUSION: *"The role of smoking in bladder cancer etiology was studied in 388 patients and 787 controls in Copenhagen. Relative risks (RRS) were increased in cigarette smokers only (RR=2.9) and for smokers of all tobacco products (RR=3.6)...No effects of smoking only pipes, cigars, or cigarillos were apparent."*

Kaufman DW, et al: Cigar and pipe smoking and myocardial infarction in young men, *BMJ*, 1987; 294(6583):1315-1316.

CONCLUSION: *"Among the 217 men with 1st MI and 383 controls who had never smoked cigarettes, none of the relative risk (RR) estimates for pipe and cigar smoking was significantly different from 1.0. The RR estimate for >5 cigars/day was 1.7; for pipes, it was 2.0. Cigars are not recommended as an alternative to cigarette smoking for reducing cardiovascular disease risk."*

Kershbaum A, et al: Cigarette, cigar, and pipe Smoking, *Geriatrics*, March 1968; 126-134.

CONCLUSION: *"In dogs, there was no difference in catecholamine output with cigarette, cigar, or pipe smoke." "In dogs, with inhalation constant, there was no difference in nicotine excretion."*

Keane WM, et al: Epidemiology of head and neck cancer, *Laryngoscope*, 1981; 91(12):2037-2045.

CONCLUSION: *"...Cigar and pipe smokers have a greater risk of lip cancer, an equal risk for oral cavity cancer, and a lesser risk of lung and laryngeal cancer."*

Kramer IRH: Oral leukoplakia, *J Royal Soc Med*, 1980; 73(11):765-767.

CONCLUSION: *"The tobacco habit seems to be associated with the appearance of the lesion through cigar, pipe, and cheroot smokers have infrequent malignant changes. In conclusion the principle prognostic features can be expressed as SHTD, where S indicates the site, H the habits (especially tobacco), T represents the clinical type, and D the degree of epithelial dysplasia."*

Lange P, Goth S, Nyboe J, et al: Decline of lung function related to the type of tobacco smoked and inhalation, *Thorax*, 45(3): 240.

Lychou C: Passiv rokning--glom inte pipoch cigarrokarna! [Passive smoking--don't forget pipe and cigar smokers!], (Letter). *Lakartidningen* 1986; 83(26-27):2373. (Swedish).

CONCLUSION: *"Studies on the health risks of passive smoke exposure must distinguish among different forms of tobacco smoking. Cigarette smokers inhale puffs of smoke, whereas cigar, cigar-cigarette, and pipe smokers only sip. Pipe and cigarette smokers are sometimes chain smokers. Different forms of smoking carry different risks, especially of lung cancer, for smokers themselves and perhaps also for those around them. Such information on each category should be provided." (see also Pershagen G, 1986).*

Lubin JH, et al: Lung cancer risk with cigar and pipe use, *J Nat Cancer Inst*, 1984; 73(2):377-381.

CONCLUSION: *"Results clearly demonstrate a link between cigar and/or pipe use and risk of lung cancer and suggest that differences in risk levels between cigar-only, pipe-only, mixed and cigarette-only smokers are strongly related to inhalation practices."*

MacMahon B: Risk factors for cancer of the pancreas, *Cancer*, 1982; 50(11 supplement):2676-2680.

CONCLUSION: *"In one study, increased risk was associated with smoking of cigars but not pipes; however, although blood levels of most tobacco constituents are higher in pipe smokers than in cigarette smokers larger studies indicated no increased risk for smokers of either pipes or cigars."*

Mani NJ: Tobacco smoking and associated lesions, *Annal Dentistry*, 1984; 43(1):6-14.

CONCLUSION: *"Prevalence of lesions reached a higher level much faster among pipe, chilam, and hukkah smokers."*

Mathe G, Reizenstein P: Extra-pulmonary tumors caused by smoking, *Biomed Pharmacotherapy*, 1988; 42(2):87-88.

CONCLUSION: *"The purpose of this review is to examine the role of tobacco use in the causation of extra-pulmonary tumors...Tobacco use, including smokeless tobacco use, and cigarette, pipe, and cigar smoking, is associated with cancer of the lung, mouth, esophagus, uterus, cervix, larynx, and bladder."*

McCusker K, et al: Plasma nicotine levels in pipe smokers, *JAMA*, 1982; 248(5):577-578.

CONCLUSION: *"The plasma nicotine level was low in all...plasma nicotine levels in this range result from either buccal absorption or passive smoking."*

McLaughlin JK: Risk factors from a population based case -- control study of renal cancer, *Advan Mod Environ Tox*, 1984; 7:227-244.

CONCLUSION: *"Among males, odds ratios for renal cell carcinoma associated with use of tobacco products were 1.7 for cigarettes only; 0.6 for cigars only; 2.2 for pipes only; 2.2 for cigarettes and cigars; 1.2 for cigarettes and pipes; 1.7 for cigars and pipes; and 1.3 for cigars, cigarettes, and pipes."*

Michaels L: Aetiology of coronary artery disease: an historical Approach, *Brit Heart j*, 1966; 28(2):258-264.

CONCLUSION: *"Coronary mortality rates are presented for cigarette, pipe, and cigar smoking."*

Miller GH: Smoking and longevity. Report Number 2", *J Breathing*, 1976; 39(5):3-13.

CONCLUSION: *"...pipe and cigar smoking do not appear to have an effect on longevity."*

Morris AG: Archaeological evidence of "pipe-smoker's wear", *Tydskr Tandeelkd Ver S Afr*, 43(8):361-364.

Morrison AS, et al: An international study of smoking and bladder cancer, *J Urology*, 1984; 131(4):650-654.

CONCLUSION: *"Overall, there was little difference in bladder cancer risk between men who had and who had not smoked pipes, but pipe smoking did appear to be associated with risk among men who had never smoked cigarettes. Cigar smoking was unrelated to bladder cancer."*

Morrison AS: Advances in the etiology of urothelial cancer, *Urologic Clin North America*, 1984; 11(4):557-566.

CONCLUSION: *"Cigar smoking does not appear to be a risk factor, while conflicting results have been found for pipe smoking."*

Mulcahy R: Cigar and pipe smoking and the heart, *BMJ*, 1985; 290(6473):951-952.

CONCLUSION: *"It is concluded that switching from cigarettes to pipe or cigar smoking to decrease the risk of coronary heart disease is not a satisfactory solution, and smoking pipes or cigars after myocardial infarction may increase risk of further coronary episodes."*

Nelson DE, Davis RM, Chrismon JH, et al: Pipe smoking in the United States, 1965-1991: prevalence and attributable Mortality, *Prevent Med*, 1996; 25(2):91-99.

CONCLUSION: *"From 1965 to 1991, the prevalence of current pipe smoking for men declined 12.1% (from 14.1% to 2.0%) while pipe smoking remained very uncommon among women. By 1991, pipe smoking was a behavior found primarily among men age 45 years or older...About 830 deaths (range 720-2,495) in 1965 and 1,095 deaths (range 655-2,820) in 1991 were attributable to pipe smoking. It is concluded that if current trends continue, pipe smoking will become extremely rare in the USA by the year 2000. Reason for the decline in pipe smoking may include the lack of appeal of pipe smoking to women and adolescents or the increasingly unfavorable image of smoking behavior in general. Prevention and cessation efforts need to be directed against all forms of tobacco, including smokeless tobacco use, cigar smoking, and pipe smoking."*

Ockene JK, Pechacek TF, Vogt T, et al: Does switching from cigarettes to pipes or cigars reduce tobacco smoke exposure?, *a J Pub Hlth*, 1987; 77(11):1412-1416.

CONCLUSION: *"Serum thiocyanate (SCN) levels for all PC [pipe and cigar] smokers were higher than for nonsmokers and lower than for cigarette smokers; levels were related to the amount of product smoked..."*

Pechacek TF, et al: Smoke exposure in pipe and cigar smokers - serum thiocyanate measures, *JAMA*, 1985; 254(23):3330-3332.

CONCLUSION: *"Serum thiocyanate levels of both CP [cigar and/or pipe] groups were significantly higher than those of nonsmokers and lower than cigarette-only smokers. However, the number of pipe bowls or cigars smoked per day was significantly related to SCN levels... Individuals currently smoking four or more pipe bowls or four or more cigars per day had an elevated smoke exposure equivalent to about ten cigarettes per day, whether or not they previously smoked cigarettes."*

Pershagen G: Passiv rokning--glom into pipoch cigarrokarna! [Passive smoking--don't forget pipe and cigar smokers!], (Letter). *Lakartidningen*, 1986; 83(26-27):2373. (Swedish)

CONCLUSION: *"A recent letter (Lakartidningen 83(26-27):2373, June 25, 1986) on passive smoking did not distinguish among types of tobacco smoking. The cited Swedish material does not show a significant difference in lung cancer risks between cigarette and pipe smokers. A recent study of the smoking habits of male cigarette, pipe, and cigar smokers showed similar risks for lung cancer in relation to consumption. Swedish pipe smokers inhale puffs to the same extent as cigarette smokers, which may be a significant factor in the similar risk. It is not known how health risks due to environmental exposure to tobacco smoke vary by source of smoke. Long-term effects may be difficult to study because of mixed exposure both inside and outside the home and the dominance of cigarette smoking." (see also Lychou C, 1986).*

"Pipe and Cigar Smoking", The Report of an Expert Group Appointed by Action on Smoking and Health, *Practitioner*, 1973; 210:645-652.

CONCLUSION: *"Those who smoke only pipes or cigars have a much smaller increase in mortality: ranging from*

1 per cent to 20 per cent, in the various studies. Pipe or cigar smokers who smoke moderately and do not inhale have only a very small increase in risk; but the minority who smoke heavily (ten or more cigars or twenty or more pipes daily) and inhale, incur a risk to life similar to that of light cigarette smokers."

LUNG CANCER - *"it is reasonable to conclude from present evidence that light cigar or pipe smoking (one or two cigars or up to four pipes a day) does not increase the risk of lung cancer, but if consumption rises above this level an increased risk is encountered."*

OTHER CANCERS - *"cancer of the mouth, oesophagus or larynx...the risk, however, is not nearly as great as that which cigarette smokers run developing lung cancer." "Cancer of the bladder...there is no evidence of an increased risk in pipe and/or cigar smokers."*

CHRONIC BRONCHITIS - *"lung function is on the average only slightly (about 3 per cent.) reduced in pipe or cigar smokers compared to non-smokers..."*

CORONARY HEART DISEASE - *"Most studies show little increased risk of coronary heart disease in those pipe and cigar smokers who are mainly light smokers." "...the rise in blood-fat level (free fatty acids) is less after pipe or cigar smoking than after cigarette smoking, so long as the smoke is not inhaled."*

DISEASES OF THE TEETH AND GUMS - *"Pipe smokers are just as severely affected as cigarette smokers."*

PASSIVE SMOKING - *"It was concluded that passive smoking was not a significant hazard to non-smokers except under unusually smoky conditions without ventilation, such as those found in the experiments...The present evidence indicates that there is virtually no risk to the healthy non-smoker apart from exceptional exposure to tobacco smoke in an unventilated room or a closed car, but patients already suffering from chronic bronchitis or coronary heart disease may suffer adverse health effects."*

SUMMARY - *"The smoking of pipes or cigars is a much less dangerous habit than the smoking of cigarettes, but it does increase the risk of developing cancer of the mouth, throat, oesophagus and lung above that of non-smokers." "There is no evidence that other people's smoke is dangerous to healthy non-smokers." "The smoke from pipes and cigars is at least as irritating as that from cigarettes." "In public places, the right to be free from smoke should have a higher priority than the right to smoke."*

Pipe Dream. Smoking may help prevent Alzheimer's disease, *The Economist*, Dec. 4, 1993, 329(7840): 88.

CONCLUSION: *"Researchers have linked tobacco smoking with a low rate of Alzheimer's disease. One theory links APOE4, a protein which causes heart problems, with a higher instance of Alzheimer's, which could mean smokers with high amounts of APOE4 died of heart problems before developing Alzheimer's."*

Rodenstein DO, Stanescu DC: Pattern of inhalation of tobacco smoke in pipe, cigarette, and never smokers, *Amer Rev Resp Dis*, 1985; 132(3):628-632.

CONCLUSION: *"In all but one pipe smoker, breathing and smoking were independent activities and overt inhalation was prevented by closure of the oropharyngeal isthmus during smoking."*

Roe FJC: Any questions? (Letter), *BMJ*, 1983; 287(6401):1291.

"While pipe smoking has been found to be less associated with lung cancer, chronic obstructive respiratory disease, and coronary heart disease than cigarette smoking, the reasons are not clear. The method of smoking (pipe vs.

cigarette) and the way a smoker manipulates smoke (inhalation) to experience nicotine-dependent effects may be as important as the way the tobacco is cured (cigarette tobacco is generally flue-cured; pipe tobacco is sun-dried). Other differences between pipe smokers and cigarette smokers, including temperament and lifestyle, are also discussed."

Rose CL, Cohen ML: Relative importance of physical activity for longevity, *Ann Ny Acad Sci*, 1977; 301:671-697.

"...There were no significant age at death differences between nonsmokers and pipe and cigar smokers. With no secular control, pipe and cigar smokers were also more long lived than cigarette smokers (77.7 vs. 65.8 years). This is a reflection of the fact that those born earlier were more apt to be cigar and pipe smokers, while those born later (and therefore in the less long lived group) were more apt to be cigarette smokers, due to the secular shift to cigarette smoking."

Roskamp E: Umwelt und krebs [Environment and cancer], *Schriften-reihe Verein Wasser Boden Lufthygien*, 1985; 63:17-30. (in German).

CONCLUSION: *"Cigarette smoking is linked to 70 percent of all lung cancers, cigars are associated with another 20 percent, and pipe smoking is linked to 17 percent."*

Sandler DP, Comstock GW, Helsing KJ, et al: Deaths from all cancers in non-smokers who lived with smokers, *A J Pub Hlth*, 1989; 79(2):163-7.

CONCLUSION: *Mortality associated with passive smoking was evaluated in a 12-year study of 27,891 white adult smokers and 19,035 never smokers identified in 1963. Death rates were found to be a relative risk similar to those for ex-smokers and for pipe or cigar smokers.*

Seltzer CC: Differences between cigar and pipe smokers in healthy white veterans, *Arch Environ Hlth*, 1972; 1972; 25:187-191.

CONCLUSION: *"The differential features between pure cigar smokers and pure pipe smokers reflect on the custom of combining them into and considering them as a single category. In studies which involve characterizing populations by smoking habits, such a combining practice can only serve to blur important associative differences, especially when considerations of body-build, education, and occupation are involved."*

Slattery ML, Schumacher MC, West DW, et al: Smoking and bladder cancer. The modifying effect of cigarettes on other factors, *Cancer*, 1988; 61(2):402-408.

CONCLUSION: *"Bladder cancer risk estimates associated with caffeinated coffee and alcoholic beverages decreased after controlling for cigarette smoking effects. Among non-cigarette smokers, cigar smoking (odds ratio, OR=2.46) and tea drinking (OR=3.14) were associated with increased bladder cancer risk. An increased risk was also observed for pipe smoking and snuff and chewing tobacco use in non-cigarette smokers (NS)."*

SMOKING AND HEALTH, U.S. Dept. of H.E.W., Washington, D.C., 1964.

SMOKING AND HEALTH - A REPORT OF THE SURGEON GENERAL, DHEW Pub. No. (PHS) 79-50066, Washington, D.C., 1979.

CONCLUSIONS:

2-44: *"Overall mortality ratios for pipe-only smokers as a group are only slightly higher than for nonsmokers...pipe smoking and cigar smoking are associated with elevated mortality ratios for cancers of the upper respiratory tract, including cancer of the oral cavity, the larynx, and the esophagus."*

5-32: *"Pipe and cigar smokers have lung cancer mortality rates which are higher than those of nonsmokers but which are considerable lower than those of cigarette smokers."*

5-36: *"The risk of developing cancer of the larynx in pipe and cigar smokers is similar to that for cigarette smokers."*

5-42: *"The use of pipes, cigars, and chewing tobacco is associated with the development of cancer of the oral cavity. The risk of using these forms is of the same general magnitude as that of using cigarettes."*

5-45: *"The risk of developing esophageal cancer with the use of other forms of tobacco, such as pipe and cigar smoking, is about the same order of magnitude as that for cigarette smokers."*

13-7: *"Prospective epidemiologic studies show that individuals who smoke only pipes and cigars have overall mortality rates slightly higher than nonsmokers, but lower than cigarette smokers. Pipe and cigar smokers have only slightly elevated cause-specific mortality rates for coronary heart disease, lung cancer, and chronic obstructive pulmonary disease when compared to nonsmokers, but their mortality rates for oral cavity cancers often equal or exceed those of cigarette smokers."*

13: OTHER FORMS OF TOBACCO USE

13-42: *"It must be concluded that some risk exists from smoking cigars and pipes, as currently used in the United States, but for most diseases the risk is small relative to the enormous risk of smoking cigarettes."*

Spitz MR, Fueger JJ, Goepfert H, et al: Squamous cell carcinoma of the upper aerodigestive tract. A case comparison analysis, *Cancer*, 1988; 61(1):203-208.

CONCLUSION: *Risk factors for squamous cell carcinoma (SCC) of the upper aerodigestive tract were evaluated in 185 cancer patients and 185 controls. A dose-response relationship between cigarette consumption and aerodigestive SCC was noted for men and women ($p < 0.01$). Cigarette smoking showed highest risk levels for laryngeal cancer (odds ratio, $OR = 15.1$, $p < 0.01$) and lingual cancer ($OR = 14.5$, $p < 0.01$)...increased risks of aerodigestive SCC were associated with snuff dipping, cigar smoking, and pipe smoking in men.*

Steineck G, Norell SE, Feychting M: Diet, tobacco and urothelial cancer. A 14 year follow-up of 16,477 subjects:, *Acta Oncologica*, 1988; 27(4):323-327.

CONCLUSION: *...Furthermore, the magnitude of the risk of urothelial cancer for pipe smokers remains unclear...The rate ratio for men smoking a pipe/cigars, but not cigarettes, was 3.3 (95% confidence interval 1.5-7.4).*

Stewart GG: A history of the medicinal use of tobacco 1492- 1860, *Med Hist*, 1967; 11(3):228-268.

Stockwell HG, Lyman GH: Impact of smoking and smokeless tobacco on the risk of cancer of the head and neck, *Head Neck Surg*, 1986; 9(2):104-110.

CONCLUSION: *"Odds ratios [for squamous cell cancers of the head and neck] 7.4 vs. 4.1 for light smokers*

(<20); 14.4 vs. 10.7 for moderate smokers (20-40); 34.2 vs. 6.5 for heavy smokers (>40); 7.9 vs. 3.6 for ex-smokers; and 6.6 vs. 4.2 for cigar, pipe, or snuff users...Cigar and pipe smokers had higher risks of cancers of the tongue, pharynx, and larynx."

Turner JA, McM, et al: The inhaling habits of pipe smokers, *Br J Dis Chest*, 1981; 75:71-76.

CONCLUSION: "results show that primary pipe smokers smoking pipes do not inhale or absorb significant quantities of nicotine; all carboxyhemoglobin levels in this group, before, during and after smoking, were within the normal range for non-smokers. Plasma nicotine levels were also low and showed a rise similar to that seen in passive smokers."

Turner JA, et al: Distribution of carboxyhemoglobin concentrations in smokers and non-smokers, *Thorax*, 1986; 41(1):25-27.

CONCLUSION: "...primary pipe or cigar smokers inhale less tobacco smoke than cigarette smokers who switch to pipes or cigars...primary pipe smokers also had low mean carboxyhemoglobin concentration (1.36 percent), and none had concentrations above 1.7 percent. [Study involved 1,933 cigarette smokers, 193 cigar smokers (39 primary, 154 secondary), and 106 pipe smokers (30 primary, 76 secondary)]

Tuyns AJ, Esteve J: Pipe, commercial and hand rolled cigarette smoking in oesophageal cancer, *Int J Epidem*, 1983; 12(1):110-113.

CONCLUSION: "After adjustment for age, alcohol consumption, and total tobacco consumption, the comparative relative risks were 6.2 percent for smokers of French commercial cigarettes (n=289), 7.5 percent for smokers of hand-rolled cigarettes (n=183), and 10.7 percent for pipe smokers (n=9). Risk was higher in heavy smokers (>20g/day) than in light smokers (<20g/day) due to the dose-response effect of tobacco exposure."

Umberger E: TOBACCO AND ITS USE: A BIBLIOGRAPHY OF THE PERIODICAL LITERATURE, 1984.

Vainio H, Heseltine E: Tobacco and cancer, *Cancer Research*, 1986; 46(1):444-447.

CONCLUSION: "tobacco smoking (cigarettes, cigars, and pipes) is casually associated with cancers of the lung, bladder, renal pelvis, oral cavity, upper respiratory and digestive tracts, and pancreas."

Vincent SD: Clinical features of premalignant and malignant mucosal disease of the oral cavity, *Comprehensive Therapy*, 1967; 13(6):61-66.

CONCLUSION: "The clinical features of premalignant and malignant mucosal disease of the oral cavity are reviewed. Nicotinic stomatitis, a mucosal abnormality seen typically in pipe smokers, is discussed. The causes of mucosal diseases, including smokeless tobacco use, are reviewed."

Wald NJ, et al: Serum cotinine levels in pipe smokers: evidence against nicotine as cause of coronary heart disease, *Lancet*, October 10, 1981; 775-777.

CONCLUSION: "The mean cotinine level for pipe smokers was 389 ng/ml, significantly higher than the mean level for the cigarette and cigar smokers...our observations indicate that nicotine is unlikely to be the major cause of the excess coronary heart disease mortality in cigarette smokers."

Wilhelmsson C, et al: Tobacco smoking and mortality from various causes, Medical Aspects of Mortality Statistics,

ed. by H. Bostrom (et al), Stockholm, Almqvist and Wiksell International, 1981; 328- 344.

"Pipe and cigar smokers have higher mortality than nonsmokers, but less than cigarette smokers."

Wynder EL, et al: Tobacco and tobacco smoke, *Seminars Oncology*, 1976; 3(1):5-15.

CONCLUSION: *"Heavy cigar smoking (more than eight per day) or heavy pipe smoking (more than 12 per day) also increases the risk for lung cancer among men although they do not intentionally inhale the smoke. It seems apparent that such individuals practically 'sit in their own smoke' much of the day. On the other hand, however, nonsmokers inhaling smoke from a smoke-filled environment do not have a measurably greater risk for lung cancer than other smokers."*

Zacho A, et al: Relationship between type of tobacco used and localization of tumor in patients with gastric cancer, *Acta Chir Scand*, 1975; 141:676-679.

CONCLUSION: *"In cheroot smoking the stomach receives the carcinogens from the smoke as well as the tumour-promoting substances from the unburned tobacco. The same applies, only more so, to pipe smoking, especially when combined with snuff or chewing tobacco."*

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"Notes on lung cancer among cigar and pipe Smokers", *Prev Med*, 1972; 1(4):529-542.

"Pipe & cigar smoking -- is it safe?", *Am. Lung Assoc Bull*, 1960; 60(2):12-13.

"Don't whistle while you work -- smoke pipes and cigars?", *NC MED J*, 1973; 34(1):44.

"Cigar and pipe smoking in relation to lung cancer and excess mortality", *J Natl Cancer Inst*, 1972; 48(6):1795-1803.

"A comparative study of cigarette, cigar and pipe smoking effects on blood lipids, catecholamine excretion and nicotine content of the urine", *Acta Cardiol (Brux)*, 1968; 23(4):317-329.

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