

The role of alcohol in the incidence of pancreatic cancer according to the results of cohort and case-control studies

Author/year	Study Design	Location	Sample size	Study Population	Period time	Duration of follow-up	Dose category	Main Outcomes
(24), Heuch et al /1983	Cohort	Norwegian	16,713	A probability sample of males was selected from the general adult Norwegian population, a set of brothers, living in Norway, spouses and siblings, males and females.	1964-1978	None	Not reported	Use of alcohol showed the strongest positive association. RR: 5.4 P < 0.001
(51) Norell et al /1986	Case-control	Sweden	The study included 99 cases, along with two control groups: 138 population-based controls and 163 hospital-based controls.	The cases consisted of individuals aged 40 to 79 years who had been diagnosed with cancer.	1982-1984	None	10≤ g/day 2-9 g/day 0-1 g/day	No consistent links were observed between coffee, artificial sweeteners, or alcohol consumption and the risk. However, a threefold increase in risk was associated with smoking at least one pack of cigarettes per day. 10≤ g/day for Hospital controls: (RR: 0.5, 95% CI (0.3-1.0)) 2-9 g/day for Hospital controls: (RR:0.5, 95% CI (0.3-0.9))

								<p>0-1 g/day for Hospital controls: (RR: 1.0, 95% CI (-))</p> <p>10≤ g/day for Population controls: (RR: 0.6, 95% CI (0.3-1.1))</p> <p>2-9 g/day for Population controls: (RR: 0.7, 95% CI (0.5-1.2))</p> <p>0-1 g/day for Population controls: (RR: 1.0, 95% CI (-))</p>
(27), Hiatt et al /1988	Case-control	USA	Cases: 49 Control: 11504	Cases: pancreatic cancer were found by cross-matching this cohort with a file of cancer cases derived from hospital discharges in the KPMCP in Northern California from 1960	1969-1984	15 years	Past drinker < 1 drink/day > 1 drink/ day	No significant associations were found between alcohol consumption and the risk of pancreatic cancer. Past drinker: (RR: 2.6, 95% CI (0.8-8.6))

				through 1984 and any additional KPMCP members with cancer diagnoses recorded in the San Francisco Bay Area Surveillance. The control group comprised men and women who had previously provided information on the amount and frequency of their coffee, tea, and alcohol consumption.				< 1 drink per day: (RR: 1.3, 95% CI (0.5-3.1)) > 1 drink/ day: (RR: 0.9, 95% CI (0.3-2.7))
(28), Cuzick et al /1989	Case-control	England	cases :216 controls :279	Cases were identified from major teaching and general hospitals across three regions, encompassing all patients with newly diagnosed cancer of the exocrine pancreas.	1983 -1986	None	Never <4 units/week 4-14 units/week ≥14 units/week	There were no significant associations between intakes of alcohol and the risk of pancreatic cancer. Never: (RR: 1.00) <4 units/week for Recent: (RR: 0.95) 4-14 units/week for Recent: (RR: 0.97) ≥14 units/week for Recent: (RR: 1.73)

								<p><4 units/week for Recent: (RR: 0.93)</p> <p>4-14 units/week for Recent: (RR: 1.32)</p> <p>≥14 units/week for Recent: (RR: 1.55)</p>
(29), Olsen et al /1989	Case-control	USA	<p>Cases: 212</p> <p>Controls: 220</p>	<p>Cases: White males ages 40 to 84 whose deaths occurred between January 1, 1980 and June 30, 1983 with pancreatic cancer (exocrine only) listed on the death certificate, controls: White males, ages 40-84</p>	1980-1983	None	<p>0 Drinks/Day</p> <p>1 Drinks/Day</p> <p>2-3 Drinks/Day</p> <p>≥4 Drinks/Day</p>	<p>There were no significant associations between intakes of alcohol and the risk of pancreatic cancer.</p> <p>0 Drinks/Day in All Respondents: (OR: 1.00, 0.95 CI (-))</p> <p>0 Drinks/Day in Spouses Only: (OR: 1.00, 0.95 CI (-))</p> <p>1 Drinks/Day in All Respondents: (OR: 0.77, 95% CI (0.47-1.30))</p> <p>1 Drinks/Day in Spouses Only: (OR:</p>

								<p>0.73, 95% CI (0.41-1.2))</p> <p>2-3 Drinks/Day in All Respondents: (OR: 1.42, 95% CI (0.67-3.03))</p> <p>2-3 Drinks/Day in Spouses Only: (OR: 1.30, 95% CI (0.57-2.97))</p> <p>≥4 Drinks/Day in All Respondents: (OR: 2.69, 95% CI (1.00-7.27))</p> <p>≥4 Drinks/Day in Spouses Only: (OR: 2.33, 95% CI (0.81-6.67))</p>
(61), Mizuno et al /1992	Case-control	Japan	Cases: 124 Controls: 124	Newly diagnosed exocrine pancreatic cancer patients.	1989-1990	None	<p>0 Drinks/month</p> <p>1-2 Drinks/month</p> <p>1-2 Drinks/week</p> <p>3-5 Drinks/week</p> <p>Every day</p>	<p>There were no significant associations between intakes of alcohol and the risk of pancreatic cancer.</p> <p>0 Drinks/month: (OR:1.00, 95% CI (-))</p>

								<p>1-2 Drinks/month: (OR:1.20, 95% CI (0.51-2.85))</p> <p>1-2 Drinks/week: (OR: 1.07, 95% CI (0.35-3.26))</p> <p>3-5 Drinks/week: (OR: 3.74, 95% CI (0.28-1.95))</p> <p>Every day: (OR: 1.24, 95% CI (0.56-2.71))</p>
(62), Sciallero et al /1993	Case-control	Italy	Case: 150 Control: 160	<p>Case: were patients referred to the unit of gastroenterology after National institute for cancer research</p> <p>The control group consisted of 160 patients admitted to the regional hospital of Liguria during the same period for various non-cancer-related diseases.</p>	1983-1990	None	<p>0 Drinks/Day</p> <p>1-2 Drinks/Day</p> <p>3-5 Drinks/Day</p> <p>≥6 Drinks/Day</p>	<p>There were no significant associations between intakes of alcohol and the risk of pancreatic cancer.</p> <p>0 Drinks/Day: (OR: 1.00, 95% CI (-))</p> <p>1-2 Drinks/Day : (OR:1.71, 95% CI (0.71-4.13))</p> <p>3-5 Drinks/Day: (OR: 8.05, 95% CI (0.93-69.3))</p>

								≥6 Drinks/Day: (OR: 1.95, 95% CI (0.78-4.87))
(25), Zheng et al /1993	Cohort	USA	17,818	The study population consisted of white male policyholders aged 35 years or older.	1966-1986	20 years	Never < 3 times/Mo 3-9 times/Mo ≥ 10 times/Mo	Consuming 3 or more drinks a day significantly increases the death rate from pancreatic cancer. Never: (RR Adjusted for age: 1.0, RR Adjusted for age and alcohol index for smoking variables: 1.0, 95% CI (-)) < 3 times/Mo: (RR Adjusted for age: 2.0, RR Adjusted for age and alcohol index for smoking variables: 2.0, 95% CI (0.8-5.2)) 3-9 times/Mo: (RR Adjusted for age: 3.7, RR Adjusted for age and alcohol index for

								smoking variables: 3.6, 95% CI (1.4-9.3)) ≥ 10 times/Mo: (RR Adjusted for age: 3.4, RR Adjusted for age and alcohol index for smoking variables: 3.1, 95% CI (1.2-8.0))
(26), Porta et al /1994	Cohort	Spain	N= 602	Patients in whom one of the following diagnoses were suspected at admission: cancer of the exocrine pancreas, chronic pancreatitis, pancreatic cysts and pseudo cysts, and cancer of the extra hepatic biliary system	1980	None	Non-regular drinker 2 to 7 cups/week 8 to 14 cups/week ≥15 cups/week	Consuming 15 or more drinks a day significantly increases the death rate from pancreatic cancer. Non-regular drinker: (OR: 1.00, 95% CI (-)) 2 to 7 cups/wee: (OR: 2.93, 95% CI (0.80-10.71)) 8 to 14 cups/wee: (OR: 3.62, 95% CI (0.93-14.06)) ≥15 cups/week: (OR: 4.45, 95% CI (4.45))
(52), Shibata et al /1994	Cohort	USA	13,979	All residents of Leisure World, Laguna	1981	None	< 1 Drinks/Day 1-2 Drinks/Day	There were no significant associations

				Hills, a retirement community near Los Angeles			> 2 Drinks/Day	between intakes of alcohol and the risk of pancreatic cancer. < 1 Drinks/Day: (RR: 1.00, 95% CI (-)) 1-2 Drinks/Day: (RR: 1.01, 95% CI (0.58-1.77)) > 2 Drinks/Day: (RR: 0.91, 95% CI (0.44-1.88))
(63), Fernandez et al /1995	Case-control	Italy	Cases: 362 Controls: 1,408	Cases: patients <75 years old with histologically confirmed incident (i.e., diagnosed within the year before the interview) cancer of the pancreas. Controls: patients <75 years old admitted for a wide spectrum of acute, nonneoplastic, nondigestive disorders	1992	None	≥6 drinks per day	There were no significant associations between intakes of alcohol and the risk of pancreatic cancer. (RR: 1.0; 95% CI (0.6-1.7))

				to the Ospedale Maggiore and several teaching hospitals in Milan.				
(64), Ji et al /1994	Case-control	China	Cases: 451 Controls: 1,552	NR	1990-1993	None	< 161 g/week 161- < 332.5 g/week 332.5- < 565 g/week ≥ 565 g/week	There were no significant associations between intakes of alcohol and the risk of pancreatic cancer. < 161 g/week for men: (RR: 0.7, 95% CI (0.4-1.3)) < 161 g/week for women: (RR: 0.4, 95% CI (0.1-1.7)) 161- < 332.5 g/week for men: (RR: 1.1, 95% CI (0.7-1.8)) 161- < 332.5 g/week for women: (RR: 0.8, 95% CI (0.3-2.4)) 332.5- < 565 g/week for men: (RR: 0.9, 95% CI (0.5-1.4)) ≥ 565 g/week for men: (RR: 0.9, 95% CI (0.5-1.4))

(49), Silverman et al /1995	Case-control	USA	Cases: 157 Control: 701 white and 526 black	Cases: All incident cases of pancreatic carcinoma first diagnosed between August 1986 and April 1989 among residents of the study areas, aged 30 to 79 years. Controls: The control group was selected from the general population of the same study areas.	1986-1989	None	Men: never drank 1-8 drank/week 8-22 drank/week 22-57 drank/week ≥57 drank/week Women: never drank 1-8 drank/week 8-21 drank/week ≥21 drank/week One drink = 1.5 ounces of hard liquor, 12 ounces of beer, or 4 ounces of wine.	Consuming 21 or more drinks a day in black women significantly increases the death rate from pancreatic cancer. Never drank for White men: (RR: 1.0, 95% CI (-)) 1-8 drank/week for White men (RR: 0.8, 95% CI (0.5-1.4)) 8-22 drank/week for White men: (RR: 0.8, 95% CI (0.4-1.3)) 22-57 drank/week for White men: (RR:1.0, 95% CI (0.6-1.9)) ≥57 drank/week for White men: (RR: 1.4, 95% CI (0.6-3.2)) Never drank for black men: (RR: 1.0, 95% CI (-)) 1-8 drank/week for black men: (RR: 0.6, 95% CI (0.2-1.6))
-----------------------------	--------------	-----	--	--	-----------	------	---	--

								8-21 drank/week for black women: (RR: 1.8, 95% CI (0.8-4.0)) ≥21 drank/week for black women: (RR:2.5, 95% CI (1.02-5.9))
(65), Lee et al /1996	Cohort	Taiwan	282	Patients with confirmed pancreatic cancer	1989 - 1994	5 years	Not reported	Alcohol drinking did not increase the risk for pancreatic cancer patients. (OR 1.09, 95% CI (0.75-1.58))
(66), Tavani et al /1997	Case-control	Italy	Case: 361 Control: 997	Cases: Subjects with histologically confirmed incident pancreatic cancer, diagnosed within the year before the interview. Controls: Patients admitted to the same hospital network as the cases, but for acute, non-neoplastic conditions.	1983-1992	None	0-4 drinks/day 4-7 drinks/day 7-8 drinks/day >8 drinks/day	No significant associations were observed between alcohol consumption and the risk of pancreatic cancer. 0-4 drinks/day for model A: (RR: 0.9, 95% CI (0.6-1.2)) 0-4 drinks/day for model B: (RR: 0.9, 95% CI (0.7-1.3)) 4-7 drinks/day for model A: (RR: 1.1, 95% CI (0.7-1.7))

								<p>4-7 drinks/day for model B: (RR: 1.1, 95% CI (0.7-1.7))</p> <p>7-8 drinks/day for model A: (RR: 1.3, 95% CI (0.7-2.4))</p> <p>7-8 drinks/day for model B: (RR: 1.4, 95% CI (0.7-2.7))</p> <p>>8 drinks/day for model A: (RR: 1.1, 95% CI (0.5-2.1))</p> <p>>8 drinks/day for model B: (RR: 1.1, 95% CI (0.5-2.2))</p>
(67), Talamini et al /1999	Case-control	Not reported	Case: 630 Control: 700 Prospectively study: 69	Case: male with chronic pancreatitis Control: random controls taken from the Verona polling list and submitted to a complete medical check-up.	1971- 1995	34 years	0-40 g/day 40-80 g/day	Consuming 40 or more gram a day significantly increases the death rate from pancreatic cancer. 0-40 g/day: (RR: 1, 95% CI (-)) 40-80 g/day: (RR: 2.2, 95% CI (1.5-3.3))
(68), Villeneuve et al / 2000	Case-control	Italy	Cases: 229 Control: 1552	Cases: patients aged below 75 years with histologically	1983-1992		≤3 cups/month 1-6 cups/week 1 cups/day	There were no significant associations between intakes of

				confirmed incident cancer of the pancreas Control: patients admitted to the same network of hospitals for acute, non-neoplastic diseases, unrelated to alcohols or tobacco			2-3 cups/day ≥4 cups/day	alcohol and the risk of pancreatic cancer. ≤3 cups/month for age<60: (OR: 1.0, 95% CI (-)) 1-6 cups/week for age<60: (OR: 0.88, 95% CI (0.35-2.25)) 1 cups/day for age<60: (OR: 0.37, 95% CI (0.12- 1.15)) 2-3 cups/day for age<60: (OR: 0.89, 95% CI (0.44-1.80)) ≥4 cups/day for age<60: (OR: 1.04, 95% CI (0.50-2.19)) ≥4 cups/day for age>60: (OR: 1.09, 95% CI (0.58-2.04))
(69), Michaud et al /2001	Cohort	USA	HPFS:51,529 NHS: 121,700	HPFS: men 40–75 years NHS: female registered nurses 30–55 years	HPFS:1986-1994 NHS: 1976-1984	8 years	0 g/day 0.1–1.4 g/day 1.5–4.9 g/day 5.0–29.9 g/day ≥30 g/day	Among current smokers, those men who drank more than 5 g of alcohol a day had an elevated risk of pancreatic cancer, but these associations were

								<p>statistically no significant.</p> <p>HPFS</p> <p>0 g/day: (Age-adjusted RR:1.0, Multivariate RR:1.0, 95% CI (-))</p> <p>0.1–1.4 g/day: (Age-adjusted RR: 1.08, Multivariate RR:1.01, 95% CI (0.36-2.83))</p> <p>1.5–4.9 g/day: (Age-adjusted RR:1.51, Multivariate RR:1.44, 95% CI (0.67-3.12))</p> <p>5.0–29.9 g/day: (Age-adjusted RR:1.29, Multivariate RR:1.23, 95% CI (0.59-2.53))</p> <p>≥30 g/day: (Age-adjusted RR:1.50, Multivariate RR:1.34, 95% CI (0.58-3.08))</p> <p>NHS</p> <p>0 g/day: (Age-adjusted RR:1.0, Multivariate RR:1.0, 95% CI (-))</p>
--	--	--	--	--	--	--	--	---

								<p>0.1–1.4 g/day: (Age-adjusted RR: 0.74, Multivariate RR:0.72, 95% CI (0.41-1.30))</p> <p>1.5–4.9 g/day: (Age-adjusted RR: 1.04, Multivariate RR:1.07, 95% CI (0.68-1.67))</p> <p>5.0–29.9 g/day: (Age-adjusted RR: 0.91, Multivariate RR:0.93, 95% CI (0.61-1.42))</p> <p>≥30 g/day: (Age-adjusted RR:0.87, Multivariate RR:0.78, 95% CI (0.36-1.68))</p>
(50), Ozawa et al /2001	Case-control	USA	Case: 526 Control: 1227 2153	Controls aged 65–79 years consisted of a stratified random sample drawn from the Health Care Financing Administration rosters of the population age 65 or older in each study area	1986-1989	None	<p>men</p> <p>Never drank</p> <p>1-8 drinks/week</p> <p>8-21 drinks/week</p> <p>21-57 drinks/week</p> <p>≥ 57 drinks/week</p> <p>Women</p> <p>Never drank</p> <p>1-8 drinks/week</p> <p>8-21 drinks/week</p> <p>≥ 21 drinks/week</p>	<p>Consuming 21 drinks a week or more for black women significantly increases the death rate from pancreatic cancer. Never drank for white men: (OR: 1.0, 95% CI (-))</p> <p>1-8 drinks/week for white men: (OR:0.8, 95% CI (0.5-1.4))</p>

						<p>1 drink = 1.5 oz. of hard liquor or 12 oz. of beer or 4 oz. of wine.</p>	<p>8-21 drinks/week for white men: (OR:0.8, 95% CI (0.4-1.3))</p> <p>21-57 drinks/week for white men: (OR:1.0, 95% CI (0.6-1.9))</p> <p>≥ 57 drinks/week for white men: (OR:1.4, 95% CI (0.6-1.9)),</p> <p>Never drank for black men: (OR: 1.0, 95% CI (-))</p> <p>1-8 drinks/week for black men: (OR:0.6, 95% CI (0.2-1.6))</p> <p>8-21 drinks/week for black men: (OR:1.2, 95% CI (0.5-2.6))</p> <p>21-57 drinks/week for black men: (OR:0.6, 95% CI (0.2-1.6))</p> <p>≥ 57 drinks/week for black men: (OR:2.2, 95% CI (0.9-5.6)).</p> <p>Never drank for white women: (OR: 1.0, 95% CI (-))</p>
--	--	--	--	--	--	---	--

								<p>1-8 drinks/week for white women: (OR:0.7, 95% CI (0.4-1.1))</p> <p>8-21 drinks/week for white women: (OR:0.4, 95% CI (0.2-0.9))</p> <p>Never drank for black women: (OR: 1.0, 95% CI (-))</p> <p>1-8 drinks/week for black women: (OR:1.1, 95% CI (0.5-2.2))</p> <p>8-21 drinks/week for black men: (OR:1.8, 95% CI (0.8-4.0))</p> <p>≥ 21 drinks/week for black women: (OR:2.5, 95% CI (1.02-5.9))</p>
(70), Stolzenberg et al /2001	Cohort	Finland	27101	Healthy male smokers aged 50–69 years	1985–1997	13 years	<p>None</p> <p>0–5.3 g</p> <p>5.3–13.4 g</p> <p>13.4–27.7 g</p> <p>>27.7 g</p>	No significant associations were observed between dietary methionine, vitamins B6 and B12, or alcohol intake and pancreatic cancer risk.

								<p>None: (MHR:1.0, 95% CI (-))</p> <p>0–5.3 g: (MHR:1.39, 95% CI (0.75-2.56))</p> <p>5.3–13.4 g: (MHR:1.39, 95% CI (0.75-2.56))</p> <p>13.4–27.7 g: (MHR: 1.24, 95% CI (0.66-2.32))</p> <p>>27.7 g: (MHR: 1.40, 95% CI (0.75-2.62))</p>
(71), Lin et al /2002	Cohort	Japan	110792	The study areas covered almost all of Japan. Including 6 cities 34 towns and 5 villages. Among the cohort population, 46,465 men and 64,327 women (110,792 total), aged 40–79 years.	1988-1997	10 years	<p>0-29 g/ day</p> <p>30-59 g/ day</p> <p>≥ 60 g/ day</p>	<p>No significant associations were observed between alcohol consumption and the risk of pancreatic cancer.</p> <p>0-29 g/ day for men: (RR: 1.16, 95% CI (0.66-2.04)) (P: 0.76)</p> <p>30-59 g/ day for men: (RR:1.07, 95% CI (0.56-2.06)) (P: 0.76)</p>

								<p>≥ 60 g/ day for men: (RR:0.98, 95% CI (0.39-2.46)) (P: 0.76)</p> <p>0-29 g/ day for women: (RR: 1.01, 95% CI (0.53-1.91)) (P: 0.66)</p>
(72), Ye et al /2002	Cohort	Swedish	178688	Among patients admitted to hospital for alcoholism (n=178 688), alcoholic chronic pancreatitis (n=3500), non-alcoholic chronic pancreatitis (n=4952), alcoholic liver cirrhosis (n=13 553), or non-alcoholic liver cirrhosis	1965-1994	30 years	Not reported	The excess risk for pancreatic cancer among alcoholics is small and could conceivably be attributed to confounding by smoking.
(73), Inoue et al /2003	Case-control	Japan	Case: 200 Control:2000	Cases: pancreatic cancer newly diagnosed Controls were selected by random sampling from all cancer-free individuals without a past history of cancer,	1988-1999	None	Not reported	alcohol Consuming significantly increases the death rate from pancreatic cancer. Former: (OR: 3.70, 95% CI (2.28-6.00)) Current: (OR: 0.5, 95% CI (0.34-0.73))

				with comparable gender and age strata.				
(33), Hassan et al /2007	Case-control	USA	Case: 808 Control: 808	Case: patients with pathologically diagnosed pancreatic cancer. Control: The control subjects were healthy friends and genetically unrelated family members (spouses and in-laws) of patients.	2000-2006	None	≤60 mL ethanol/day Ethanol/day	Consuming 60 mL ethanol or more drinks a day significantly increases the death rate from pancreatic cancer. ≤60 ml ethanol/day: (OR: 0.9, 95% CI (0.7-1.2)) > 60 ml ethanol/day (OR: 1.6, 95% CI (1.1-2.5))
(74), Anderson et al /2009	Case-control	Canada	Cases: 422. Controls: 312	Cases: Men and women with a first primary, pathologically confirmed adenocarcinoma of the pancreas or adenocarcinoma metastasis confirmed as pancreatic cancer. Controls: Men and women under 75 years of age with no personal history of	2003-2007	None	≤1 per week 1-6 per week ≥1 per day	The association was statistically significant for individuals who consumed 1 to 6 alcoholic drinks per week, but not for those who drank more than one alcoholic drink per day. ≤1 per week: (OR Age-adjusted: 1.0, OR Multivariate adjusted: 1.0, 95% CI (-)

				pancreatic or colorectal cancer.				1-6 per week: (OR Age-adjusted: 0.47, 95% CI (0.32-0.68), OR Multivariate-adjusted: 0.50, 95% CI (0.32-0.78)) ≥ 1 per day: (OR Age-adjusted: 0.86, 95% CI (0.59-1.24), OR Multivariate-adjusted: 0.88, 95% CI (0.56-1.38))
(75), Heinen et al /2009	Cohort	Netherlands	120852	The study commenced in September 1986 and initially included 58,279 men and 62,573 women aged 55 to 69 years.	1986	13.3 years	0.1-5 g/day 5-15 g/day 15-30 g/day ≥ 30 g/day	No significant associations were found between alcohol consumption and the risk of pancreatic cancer. Additionally, these associations were not influenced by folate intake or smoking status. In Microscopically Verified Pancreatic Cancer cases 0.1-5 g/day: (RR: 1.05, 95% CI (0.64-1.71))

								5-15 g/day: (1.15, 95% CI (0.68-1.95)) 15-30 g/day: (RR: 0.75, 95% CI (0.38-1.48)) ≥ 30 g/day: (RR: 1.92, 95% CI (0.99-3.73))
(76), Jiao et al /2009	Cohort	USA	450416	Participants aged 50 to 71 years	1995-2003	None	Limited alcohol use (≤2 drinks for men, ≤1 drink for women) Heavy alcohol use (for men: ≥ 2 drinks/day, for women: ≥ 1 drinks/day)	Heavy drinking per day Adjusted for sex significantly increases pancreatic cancer mortality.
(60), Jiao et al /2009	Cohort	USA	470681	The study included 470,681 participants aged 50 to 71 years.	1995-2003	8 years	0-0.99 drinks/day 1-1.99 drinks/day 2-2.99 drinks/day 3-3.99 drinks/day 4-4.99 drinks/day 5-5.99 drinks/day ≥ 6 drinks/day. One drink was defined as 12 ounces of beer, 5 ounces of wine, or	Consuming 4 drink alcohol or more a day drinks significantly increases the death rate from pancreatic cancer. 0-0.99: (RR: 1.00, 95% CI: (-)) 1-1.99: (RR: 0.9, 95% CI (20.75-1.12))

							1.5 ounces of 80-proof liquor, each equivalent to approximately 13–14 grams of alcohol.	2-2.99 drinks/day: (RR: 1.03, 95% CI: 0.75-1.42)) 3-3.99 drinks/day: (RR: 1.31, 95% CI (0.94-1.82)) 4.4.99 drinks/day: (RR: 1.54, 95% CI (1.02-2.31)) 5-5.99 drinks/day: (RR: 1.28, 95% CI (0.68-2.41)) ≥ 6 drinks/day: (RR: 1.55, 95% CI (1.13-2.3))
(77), Johansen et al /2009	Cohort	Sweden	33346	All men born in 1921, 1926–1942, 1944, 1946 and in 1948–1949, and all women born in 1926, 1928, 1930–1938, 1941 and 1949 received an invitation.	1974-2004	30 years	Low Intermediate High Missing	High alcohol intake is linked to an increased risk of pancreatic cancer, and this risk may be further elevated in individuals who experience weight gain. Low: (RR: 1.00, 95% CI (-)) Intermediate: (RR: 1.41, 95% CI (1.03-1.95))

								High: (RR: 1.38, 95% CI (0.78-2.45)) Missing: (RR: 1.41, 95% CI (0.83-2.37)) (P: 0.050)
(78), Stevens et al, 2009	Cohort	England and Scotland	1.3 million	Middle-aged women who had been invited for screening for breast cancer at breast cancer screening centers.	1996–2006	10 years	Non 1-2 units/week 3-6 units/week 7-13 units/week ≥14 units/week	Alcohol consumption and physical activity demonstrated little to no association with the risk of pancreatic cancer.
Gupta et al, 2010 (46)	Case-control	USA	532 cases, 1701 controls	The people in the case group were diagnosed with exocrine pancreatic adenocarcinoma and were between 21 and 85 years old. Control group participants were randomly selected from the same population.	Not reported	None	≥ 5 drinks (70 g) per day	Alcohol consumption increases the risk of pancreatic cancer in men but not in women. As the dose and duration of alcohol consumption increases, the chance of getting infected increases. 22–35 drinks per week: (OR: 2.2, 95% CI (1.1-4.0)) >35 drinks per week: (OR: 2.6, 95% CI (1.3-5.1)) P-trend = 0.04

Miyasaka et al, 2010 (79)	Case-control	Japan	187 cases and 2070 controls	Case: Pancreatic cancer patients including 112 men (age range 41-80 years) and 75 women (age range 43-93 years). Controls: 1,050 male participants; (age range, 40-79 years) and 1,020 female participants (age range, 40-79 years).	2001-2006	None	> 5g ethanol per day	Alcohol consumption did not have a significant risk for pancreatic cancer (OR not reported).
Talamini et al, 2010 (35)	Case-control	Italy	326 cases and 652 controls	Pancreatic cancer patients (case) and non-neoplastic patients (control). with an average age of 63 years.	1991-2008	None	<7 drinks/week, 7-13 drinks/week, 14-20 drinks/week, 21-34 drinks/week and ≥ 35 drinks/week	In general, alcohol consumption did not have a significant effect on increasing the risk of pancreatic cancer, but high alcohol consumption increases the risk. <7 drinks/week: (OR:1.04, 95% CI (0.60-1.80)), 7-13 drinks/week:(OR:1.47, 95% CI (0.83-2.62)),

								14-20 drinks/week: (OR:1.50, 95% CI (0.86-2.62)), 21-34 drinks/week: (OR:2.03, 95% CI (1.10-3.74)), >=35 drinks/week: (OR:3.42, 95% CI (1.79-6.55)),
Gapstur et al, 2011 (34)	Cohort	USA	1,030,467 participants	453770 men and 576697 women aged 30 to 111 years in 50 US states.	1982- December 2006	24 years	< 1 drink/day, 1 drink/day, 2 drink/day, 3 drink/day and >= 4 drink/day	Consuming 3 or more drinks a day significantly increases the death rate from pancreatic cancer. <1 drink/day: (OR: 1.06, 95% CI (0.99- 1.13)) 1 drink/day: (OR: 0.99, 95% CI (0.90-1.08)) 2 drinks/day: (OR: 1.06, 95% CI (0.97- 1.17)) 3 drinks/day: (OR: 1.25, 95% CI (1.11- 1.42))

								>=4 drinks/day: (OR: 1.17, 95% CI (1.06-1.29)) P-trend< 0.001
Nakamura et al, 2011 (80)	Cohort	Japan	30826 people	People over 35 living in Takayama.	1992-December 1999	7 years	>15.6 g/day, 15.6 - 53.5 g/day, >= 53 g/day	No significant associations were observed between alcohol consumption and the risk of death from pancreatic cancer. >15.6 g/day: (HR: 1.00, 95% CI) 15.6 - 53.5 g/day: (HR: 0.52, 95% CI (0.21-1.27)) >= 53 g/day: (HR: 0.93, 95% CI (0.41-2.11)) P-trend = 0.17
Sonoyama et al, 2011 (81)	Case-control	Japan	226 cases and 448 controls	Case: 132 men and 94 women with pancreatic cancer with an average age of 65 years. Control: 286 men and 162 women.	Not reported	None	medium consumption: 0-23 g ethanol/day, High consumption: >=23 g ethanol/day.	High consumption of alcohol in people whose Tumor protein p53 genotype is Pro/Pro significantly increases the risk of cancer, but the effect of alcohol is not

								<p>significant in other genotypes.</p> <p>0-23 g/day:</p> <p>Arg/Arg genotype: (OR: 1.00 (reference))</p> <p>Arg/Pro genotype: (OR: 1.83, 95% CI (0.61-5.48))</p> <p>Pro/Pro genotype: (OR: 1.60, 95% CI (0.30-8.48))</p> <p>>=23 g/day:</p> <p>Arg/Arg genotype: (OR=1.00 (reference))</p> <p>Arg/Pro genotype: (OR:1.66, 95% CI (0.78-3.55))</p> <p>Pro/Pro genotype: (OR:3.66, 95% CI (1.07-12.56))</p>
Kuzmickiene et al, 2013 (82)	Cohorts	Lithuania	7132 people	Men aged 45 to 59 living in Kaunas.	January 1978-December 2008	30 years	0.1–9.9 g ethanol per week, 10.0–24.9 g ethanol per week, 25.0–99.9 g ethanol per week	Alcohol consumption has no significant relationship with pancreatic cancer. 0.1–9.9 g/week: (HR: 1.00 (reference)),

							and ≥ 100 g ethanol per week.	10.0–24.9 g/week: (HR: 1.02, 95% CI (0.49-2.14)) 25.0–99.9 g/week: (HR: 1.40, 95% CI (0.67-2.95)) 100.0 g/week: (HR: 1.57, 95% CI (0.66-3.74))
Ueda et al, 2013 (83)	Cohort	Japan	506 people	Patients diagnosed with chronic pancreatitis who had had at least 2 years of follow-up.	September 2009-December 2010	2 years	Dosage was not reported.	In those who continued to drink alcohol after being diagnosed with chronic pancreatitis, the risk of developing cancer increased significantly. (HR: 5.07, 95% CI (1.13-22.73)) P-trend = 0.03

La Torre et al, 2014 (84)	Case-control	Italy	80 cases and 392 controls	Case: Pancreatic cancer patients. Control: outpatients without cancer diagnosis.	2005-2008	None	>= 1 drink per day	Alcohol consumption alone does not have a significant effect on pancreatic cancer, but alcohol consumption along with smoking or diabetes or hypercholesterolemia has a significant effect on increasing the risk of pancreatic cancer. drinking alcohol alone: (OR: 1.48, 95% CI (0.78-2.78)) Smoking alone: (OR: 0.65, 95% CI (0.30-1.43)) Drinking alcohol and smoking together: (OR: 3.29, 95% CI (1.89-5.73)) Diabetes alone: (OR: 0.65, 95% CI (0.30-1.43)) Drinking alcohol and diabetes together:
---------------------------	--------------	-------	---------------------------	---	-----------	------	--------------------	--

								(OR: 3.31, 95% CI (1.50-7.32)) Hypercholesterolemia alone: (OR: 3.75, 95% CI (2.01-6.98)) Alcohol consumption and Hypercholesterolemia together: (OR: 5.11, 95% CI (2.66-9.82))
Mizuno et al, 2014 (85)	Cohort	Japan	688 people	Pancreatic cancer patients with an average age of 67.6 years.	December 1993- January 2013	None	< 50 g/day, 50-80 g/day, >80 g/day	Alcohol consumption decreased the average age of pancreatic cancer, and with increasing dose, a further decrease in the

								<p>average age of onset was observed.</p> <p>< 50 g/day: age average= 68.0, 95% CI (67.1-68.9)</p> <p>50-80 g/day: age average= 66.5, 95% CI (64.5-68.5),</p> <p>>80 g/day: age average= 63.8, 95% CI (60.1-67.5)</p> <p>In addition, the mean age of those who simultaneously smoked and consumed alcohol (at least 80 grams per day) decreased significantly and to a greater extent. age average= 60.1, 95% CI (55.8-64.3)</p>
Ding et al, 2015 (86)	Case-control	China	618 people	206 pancreatic cancer patients and 412 healthy individuals (controls).	January 2011- October 2013	None	Only the history of alcohol use or non-use was checked and the dose was not reported.	<p>Pancreatic cancer patients were more likely to drink alcohol than controls.</p> <p>P-trend = 0.04</p>

Piciucchi et al, 2015 (87)	Cohort	Italy	293 people	Pancreatic cancer patients, 25 of whom were diagnosed with Early Onset Pancreatic Cancer (they were 50 years old or younger at the time of cancer diagnosis).	January 2006- January 2013	None	Consuming 12.5 grams of alcohol per day for at least one year or consuming less alcohol for a longer period of time.	There was no difference in alcohol consumption between patients with Early Onset Pancreatic Cancer and the elderly. P-trend = 0.6
Rahman et al, 2015 (88)	Case-control	Canada	345 cases and 1285 controls	Case: Pancreatic cancer patients Control: healthy people who were randomly selected.	February 2011- August 2012	None	< 1 drink/day, 1-3 drinks/day, 4-20 drinks/day and >= 21 drinks/day	Alcohol consumption did not have a significant impact on the risk of pancreatic cancer. < 1 drink/day: (OR: 1.00 (reference)) 1-3 drinks/day: (OR: 0.78, 95% CI (0.58-1.05)) 4-20 drinks/day: (OR: 0.86, 95% CI (0.63-1.17)) >= 21 drinks/day: (OR:1.35, 95 % CI (0.81-2.27))
Andersson et al, 2016 (89)	Cohort	Sweden	28,098 participants	11063 men and 17035 women who were	1991- December 2013	17 years (From 1996 to 2013)	The average alcohol consumption	Alcohol consumption has no significant

				between 44 and 73 years old.			among the participants was 10.7 g/day, and further information on the doses of alcohol consumption among the participants was not reported.	effect on the risk of pancreatic cancer. (HR: 1.00, 95% CI (0.99-1.01)) P-trend = 0.999
Shakeri et al, 2016 (90)	Case-control	Iran	357 cases and 328 controls	Case: Pancreatic cancer patients referred to 4 treatment centers in Tehran. Control: healthy subjects who were age- and sex-matched with the case group.	January 2011- January 2015	None	<= 47.18 liters in lifetime, >57.18 L in lifetime	In general, alcohol consumption significantly increases the risk of pancreatic cancer, but the effect of high alcohol consumption was not significant. Never used alcohol: OR: 1.00 (Reference), Ever used: (OR: 4.16, 95% CI (1.86-9.31))
Yallev 2017 (91)	Case-control	USA (United States of America)	384	Patients diagnosed with pancreatic cancer/ Both genders/ Average age: 67 years	2004-2009	None	drinks/week	No significant association was found between alcohol intake and the risk of pancreatic cancer.

								(OR: 1.00, 95% CI (0.99-1.01)) P= 0.883
Jiang 2017 (92)	Cohort	China	156	Patients with pancreatic ductal adenocarcinoma/ Both genders/ 17- 45 years old	1999-2014	15 years	drank a mean of at least 12.5 g of alcohol per day for at least 1 year, or a lower amount for > 1 year	no significant association between alcohol intake and the risk of pancreatic cancer P= 0.697
Kearns 2017 (93)	Case-control	UK (United Kingdom)	4113	Patients with at least one READ code for pancreatic cancer/ Both genders/ Average age: 70 years	1995-2013	None	Not reported	There is a significant relationship between alcohol consumption and the chance of pancreatic cancer (OR: 1.23, 95% CI (1.13-1.34)) P=<0.0001
Molina-Montes 2017 (94)	Cohort	Italy, France, Denmark, Germany, Greece, Spain, Norway, Sweden, UK and The Netherlands	865	Patients diagnosed with pancreatic cancer/ Both genders/ Average age: 60 years	1990-2002	11.3 years	Non-drinkers: 0 drinks per day (0 g per day alcohol); moderate drinkers: no more than 1 drink/d (4=12g per day alcohol); drinkers: more than 1 drink per	In all three groups of non-drinkers, moderate drinkers and drinkers, there is no significant relationship between alcohol consumption and pancreatic cancer (95% CI) P= 0.20

							day (412g per day alcohol)	
Afsar 2018 (53)	Cohort	Turkey	32	Patients diagnosed with pancreatic cancer/ Both genders	2011-2014	3 years	Not reported	No significant association between alcohol intake and the risk of pancreatic cancer P= 0.006
Huang 2018 (95)	Cohort	USA (United States of America) and Hawaii	187226	Patients diagnosed with pancreatic cancer/ Both genders/ 45–75 years	1996-2012	16.2 years	24-48 g/day	No significant association between alcohol intake and the risk of pancreatic cancer (RR: 1.11, 95% CI (0.70-1.75)) P= 0.67
Murakami 2018 (96)	Case-control	Japan	118	Patients with diabetes and pancreatic cancer/ Both gender/ 58-88 years	2007-2017	None	Not reported	No significant association between alcohol intake and the risk of pancreatic cancer P= 0.884
Naudin 2018 (47)	Cohort	Denmark, Italy, Netherlands, Norway, Spain, Sweden, Varese,	1283	Patients with pancreatic cancer/ Both gender/ 35 to 70 years	1999-2013	14 years	Comparing alcohol intake greater than 60 g/day to 0.1-4.9g/day	Alcohol intake was statistically significantly associated

		Murciaand, Florence, Ragusa, Turin, Asturias, Bilthoven, Utrecht and the United Kingdom						with pancreatic cancer risk in men No statistically significant association between baseline alcohol intake and pancreatic cancer risk in women (HR for 60 g/day:1.63, 95% CI (1.16-2.29)) P= 0.03
Pang 2018 (97)	Cohort	China	209290	Patients with pancreatic cancer / Both gender/ Aged 30–79	2004-2008 and 2013- 2014	5 years	≥420 g/week <280 g/week	There is a significant relationship in people who consume weekly No significant association between alcohol intake and the risk of pancreatic cancer in men who drank occasionally, monthly, or reduced their alcohol intake (HR: 1.33, 95% CI (1.11-1.58))
Arriaga 2019 (98)	Cohort	Australia	365084	Adults/ Both gender/ 18=< Ages		10 years	Not consuming two drinks of	No significant association between

							alcohol compared to consuming 20 g/day	alcohol intake and the risk of pancreatic cancer (HR for never drinker: 1, 95% CI (0.23-0.86))
Gonoi 2019 (99)	Cohort	Japan	1848	Patient with hepatocellular carcinoma/ Both gender/ Average age: 68.5 years	2004-2012	8 years	>50 g/day	No significant association between alcohol intake and the risk of pancreatic cancer P= 0.75
Jayasekara 2019 (100)	Cohort	Australia	38472	Melbourne residents/ Both gender/ 20 -29 years	1990–1994	4 years	> 0–19 g/day 20–39 g/day ≥ 40 g/day	No evidence of an association was observed between alcohol intake and risk of pancreatic cancer Increased survival in pancreatic cancer is associated with lower alcohol consumption at a younger age (HR 1.09 per 10 g/day increment, 95% CI (1.02-1.18)) p value = 0.01

Schulpen 2019 (101)	Cohort	Netherland	449	Patients with pancreatic cancer/ Both gender/ 55-69 years	2006-2014	8 yeras	Moderate alcohol intake: 5–25 g/day	No significant association between alcohol intake and the risk of pancreatic cancer (HR: 0.66, 95% CI (0.40-1.10))
Bagni 2020 (102)	Cohort	Denmark	1159	Patients with diagnosis of pancreatic cancer/ Both gender/ >18 years of age	2008-2017	9 years	>7 units per week for women and >14 units per week for men	Alcohol drinking were not significantly associated with shorter overall survival
Gentiluomo 2020 (103)	Cohort	France, Germany, Greece, Italy, Spain, Sweden, the Netherlands, and theUnited Kingdom	833	Patients with diagnosis of pancreatic cancer/ Both gender	1992-2005	12 years	Not reported	No significant association between alcohol intake and the risk of pancreatic cancer
Jeon 2020 (104)	Cohort	USA	1766	Patients with diagnosis of pancreatic cancer/ Both gender/ Ages: 40-81 years.	2006–2015	19 years	Not reported	No significant association between alcohol intake and the risk of pancreatic cancer (HR: 1.74, 95% CI (0.81-3.75))

								P= 0.16
Kirkegård 2020 (105)	Cohort	Denmark	28231	Patients with incident acute pancreatitis/ Both gender/ 56-70 years	1999-2015	16 years	Not reported	No significant association between alcohol intake and the risk of pancreatic cancer
Kito 2020(106)	Cohort	Japan	89729	Residents of 11 regions in Japan/Both gender/ Aged 45–74 years	1995-1998 2012-2013	5 years	Alcohol consumption of <150 g/week of and alcohol consumption of ≥150 g/week of	No significant association between alcohol intake and the risk of pancreatic cancer P (for trend (Alcohol consumption of <150 g/week)) = 0.20 P (for trend (Alcohol consumption of ≥150 g/week)) = 0.19
Naudin 2020 (107)	Cohort	Denmark, Italy, Netherlands, Spain, Sweden, United Kingdom, France, Germany and Greece	521324	Participants from 10 European countries/ Both gender/ 35-70	2008-2012	5 years	Not reported	Reducing alcohol consumption is associated with a reduced risk of pancreatic cancer

Sandhu 2020 (108)	Case-control	Canada	315	Patients with ontario Pancreas Cancer/ Both gender/ <60 and 70>=	2011-2013	None	Former drinker: 1– 20 drinks/week Current drinker: > 21 drinks/week	No significant association between alcohol intake and the risk of pancreatic cancer Never drinker: (OR: 1.00) Former drinker: (OR: 1.14, 95% CI (0.69- 1.86)) Current: (OR: 0.92, 95% CI (0.69-1.21))
Sheikh 2020 (109)	Cohort	Iran	461	Patients with diagnosis of pancreatic ductal adenocarcinoma/ Both gender	2011-2018	7 years	Regular drinker: Drinking alcohol at least once per month for six consecutive months	No significant association between alcohol intake and the risk of pancreatic cancer Never drinker: - Former drinker: (HR: 0.85, 95% CI (0.54- 1.36)) P= 0.52 Current: (OR: 0.81, 95% CI (0.51-1.28)) P= 0.38

Aoki 2021 (110)	Cohort	Brazil	78	Patients with diagnosis of pancreatic cancer/ Both gender/ median age was 62	2018-2019	1 years	Not reported	No significant association between alcohol intake and the risk of pancreatic cancer P= 0.7774
Bang 2021 (111)	Cohort	Cameroon	105	Patients with a diagnosis of pancreatic head cancer/ Both gender/ mean age of 55.61 years	2012-2017	6 years	Not reported	Alcohol consumption is associated with pancreatic cancer
Loftfield 2021 (112)	Cohort	23 European centers	864	Patients with diagnosis of pancreatic cancer and male Finnish smokers/ Both gender	1992-2000	8 years	10.0 g/day, 6.6 g/day and 11.5 g/day	No significant association between alcohol intake and the risk of pancreatic cancer (OR: 1.03, 95% CI (0.77-1.39))
Nasser-Ghodsi 2021 (113)	Cohort	Austria	98679	Patients undergoing multiorgan transplantation/ Both gender/ 18=<	1997-2017	20 years	Not reported	No significant association between alcohol intake and the risk of pancreatic cancer
Shan 2021 (22)	Case-control	China	419	Patients with diagnosis of pancreatic cancer/ Both gender	1990-2017	None	High level of alcohol	No significant association between alcohol drinking and

							<p>consumption: ≥ 24 g/day</p> <p>Moderate: 12–23.9 g/day</p> <p>Low: < 12 g/day</p>	<p>an increased pancreatic cancer risk, even at high levels of alcohol consumption</p> <p>Occasional: (OR: 0.82, CI: 95% CI (0.60-1.11))</p> <p>Former regular: (OR:0.74, 95% CI (0.42–1.31))</p> <p>Current regular: (OR: 1.03, 95% CI (0.63-1.68))</p>
Van Tran 2021(114)	Case-control	Vietnam	196	Patient with diagnosed with primary pancreatic cancer.	2017- 2019	None	Alcohol intake at least 30 g/day or 150 g/week	<p>No significant association between alcohol intake and the risk of pancreatic cancer</p> <p>(OR:1.48, 95% CI (0.91-2.42))</p> <p>P= 0.242</p>
Yang 2021 (115)	Cohort	China and USA	114 670	Patients with diagnosis of pancreatic cancer/ Both gender	1976-2015	39 years	Not reported	Alcohol consumption is associated with pancreatic cancer

Khanlarzadeh 2022 (15)	Case-control	Iran	409	Patients with diagnosis of pancreatic cancer/ Both gender.	2008-2018	None	Not reported	No significant association between daily alcohol intake and the risk of pancreatic cancer P= 0.06
Luu 2022 (116)	Cohort	Singapore and China	63257	Chinese patient/ Both gender/ 45–74 years	1993-1998	5 yeras	Not reported	No significant association between daily alcohol intake and the risk of pancreatic cancer
Peila 2022 (117)	Cohort	USA	136945	Postmenopausal women/ aged 50–79 years	1993-1998 2005–2010 and 2010–2020	20 years	< 6.0, 6.0– < 12.0, 12.0– < 24.0, 24.0– < 60.0, and 60.0 g/day	Alcohol consumption in a dose greater than 6 grams per day significantly increases the risk of pancreatic cancer
Tverdal 2022 (118)	Case-control	Norway	991	Patients with diagnosis of pancreatic cancer/ Both gender/ 20–79 years	1994–2002	None	5.5 times/week, 2.5 times/week, 1 time/week, 0.625 times/week, 0.25 times/week, 0.077 times/week	The hazard ratio for pancreatic cancer did not increase with increasing alcohol consumption in never smokers (HR: 0.92, 95% CI (0.59-1.45))

								The hazard ratios for current smokers were higher than for non-smokers and showed an increasing trend with higher alcohol consumption (HR: 1.49, 95% CI (1.11-2.01))
Munigala 2023 (119)	Cohort	USA	7147859	Veteran's Administration patients/ Median age was 62 years	1999-2015	16 years	Not reported	Alcohol intake is associated with higher risk of pancreatic cancer (HR: 1.22, 95% CI (1.17-1.28)) P < 0.001
Nodari 2023 (120)	Case-control	Greece, Italy, Germany, the Netherlands, Denmark, Czech Republic, Hungary, Poland, Ukraine, Lithuania, United	11134	Patients with early-onset pancreatic cancer and nonearly onset pancreatic cancer/ both gender	2018-2021	None	Not Reported	Alcohol consumption was not associated with increased early-onset pancreatic cancer Drinker: (OR:1.10, 95% CI (0.61-1.98)) P= 0.762 Current drinker: (OR: 1.05, 95% CI (0.58-1.89)) P= 0.882

		Kingdom, Japan and Brazil						
Steel 2023 (121)	Cohort	USA	1779	Patients with diagnosis of pancreatic cancer/ Both gender	1998-2017	19.3 years	<14g, 14g to 28g and 28 g/day	No significant association between daily alcohol intake and the risk of pancreatic cancer

OR: Odds ratio, RR: Relative risk, CI: Confidence Interval, HPFS: Health Professionals Follow-Up Study, NHS: National Health Service, HR: Hazard ratio, P: P-value.

References

1. Lu PY, Shu L, Shen SS, et al. Dietary Patterns and Pancreatic Cancer Risk: A Meta-Analysis. *Nutrients* 2017;9:38.
2. Walling A, Freelove R. Pancreatitis and Pancreatic Cancer. *Prim Care* 2017;44:609-20.
3. Bray F, Ferlay J, Soerjomataram I, et al. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018;68:394-424.
4. Capasso M, Franceschi M, Rodriguez-Castro KI, et al. Epidemiology and risk factors of pancreatic cancer. *Acta Biomed* 2018;89:141-6.
5. Pourhoseingholi MA, Fazeli Z, Ashtari S, et al. Mortality trends of gastrointestinal cancers in Iranian population. *Gastroenterol Hepatol Bed Bench* 2013;6:S52-7.
6. Zahir ST, Arjmand A, Kargar S, et al. Incidence and trends of malignant and benign pancreatic lesions in Yazd, Iran between 2001 and 2011. *Asian Pac J Cancer Prev* 2013;14:2631-5.

7. Korc M, Jeon CY, Edderkaoui M, et al. Tobacco and alcohol as risk factors for pancreatic cancer. *Best Pract Res Clin Gastroenterol* 2017;31:529-36.
8. Hidalgo M, Cascinu S, Kleeff J, et al. Addressing the challenges of pancreatic cancer: future directions for improving outcomes. *Pancreatology* 2015;15:8-18.
9. Kuroczycki-Saniutycz S, Grzeszczuk A, Zwierz ZW, et al. Prevention of pancreatic cancer. *Contemp Oncol (Pozn)* 2017;21:30-4.
10. De La Cruz MS, Young AP, Ruffin MT. Diagnosis and management of pancreatic cancer. *Am Fam Physician* 2014;89:626-32.
11. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2018. *CA Cancer J Clin* 2018;68:7-30.
12. Cai J, Chen H, Lu M, et al. Advances in the epidemiology of pancreatic cancer: Trends, risk factors, screening, and prognosis. *Cancer letters*. 2021;520:1-11.
13. Milajerdi A, Larijani B, Esmailzadeh A. Sweetened Beverages Consumption and Pancreatic Cancer: A Meta-Analysis. *Nutr Cancer* 2019;71:375-84.
14. Rawla P, Sunkara T, Gaduputi V. Epidemiology of Pancreatic Cancer: Global Trends, Etiology and Risk Factors. *World J Oncol* 2019;10:10-27.
15. Khanlarzadeh E, Nazari S, Ghobakhlou M, et al. Epidemiologic and Pathologic Study of Pancreatic Cancer in Hamadan, Iran (2008 to 2018). *J Gastrointest Cancer* 2022;53:725-9.
16. Tramacere I, Scotti L, Jenab M, et al. Alcohol drinking and pancreatic cancer risk: a meta-analysis of the dose-risk relation. *Int J Cancer* 2010;126:1474-86.
17. Poman DS, Motwani L, Asif N, et al. Pancreatic Cancer and the Obesity Epidemic: A Narrative Review. *Cureus* 2022;14:e26654.
18. Mueller NT, Odegaard A, Anderson K, et al. Soft drink and juice consumption and risk of pancreatic cancer: the Singapore Chinese Health Study. *Cancer Epidemiol Biomarkers Prev* 2010;19:447-55.

19. Genkinger JM, Li R, Spiegelman D, et al. Coffee, tea, and sugar-sweetened carbonated soft drink intake and pancreatic cancer risk: a pooled analysis of 14 cohort studies. *Cancer Epidemiol Biomarkers Prev* 2012;21:305-18.
20. West R. European monitoring centre of drugs and drug addiction (EMCDDA), insights. models of addiction. EMCDDA Luxembourg: Publications Office of the European Union, Lisbon, Portugal. 2013.
21. Alsamarrai A, Das SL, Windsor JA, et al. Factors that affect risk for pancreatic disease in the general population: a systematic review and meta-analysis of prospective cohort studies. *Clin Gastroenterol Hepatol* 2014;12:1635-44.e5; quiz e103.
22. Shan YS, Chen LT, Wu CH, et al. No association between alcohol consumption and pancreatic cancer even among individuals genetically susceptible to the carcinogenicity of alcohol. *Sci Rep* 2021;11:14567.
23. Zare R, Haghshenas H, Moghaddam S, et al. The Survival Rate of Leukemia Patients in Asian Regions: A Systematic Review and Meta-Analysis Study. *Iranian Journal of Pediatric Hematology and Oncology*. 2025;15(1):386-410.
24. Heuch I, Kvåle G, Jacobsen BK, et al. Use of alcohol, tobacco and coffee, and risk of pancreatic cancer. *Br J Cancer* 1983;48:637-43.
25. Zheng W, McLaughlin JK, Gridley G, et al. A cohort study of smoking, alcohol consumption, and dietary factors for pancreatic cancer (United States). *Cancer Causes Control* 1993;4:477-82.
26. Porta M, Malats N, Piñol JL, et al. Diagnostic certainty and potential for misclassification in exocrine pancreatic cancer. *Journal of Clinical Epidemiology*. 1994;47(9):1069-79.
27. Hiatt RA, Klatsky AL, Armstrong MA. Pancreatic cancer, blood glucose and beverage consumption. *Int J Cancer* 1988;41:794-7.
28. Cuzick J, Babiker AG. Pancreatic cancer, alcohol, diabetes mellitus and gall - bladder disease. *International journal of cancer*. 1989;43(3):415-21.
29. Olsen GW, Mandel JS, Gibson RW, et al. A case-control study of pancreatic cancer and cigarettes, alcohol, coffee and diet. *Am J Public Health* 1989;79:1016-9.

30. Meza V, Arnold J, Díaz LA, et al. Alcohol Consumption: Medical Implications, the Liver and Beyond. *Alcohol Alcohol* 2022;57:283-91.
31. Åberg F, Byrne CD, Pirola CJ, et al. Alcohol consumption and metabolic syndrome: Clinical and epidemiological impact on liver disease. *J Hepatol* 2023;78:191-206.
32. Population-level risks of alcohol consumption by amount, geography, age, sex, and year: a systematic analysis for the Global Burden of Disease Study 2020. *Lancet* 2022;400:185-235.
33. Hassan MM, Bondy ML, Wolff RA, et al. Risk factors for pancreatic cancer: case-control study. *Am J Gastroenterol* 2007;102:2696-707.
34. Gapstur SM, Jacobs EJ, Deka A, et al. Association of alcohol intake with pancreatic cancer mortality in never smokers. *Arch Intern Med* 2011;171:444-51.
35. Talamini R, Polesel J, Gallus S, et al. Tobacco smoking, alcohol consumption and pancreatic cancer risk: a case-control study in Italy. *Eur J Cancer* 2010;46:370-6.
36. Lucenteforte E, La Vecchia C, Silverman D, et al. Alcohol consumption and pancreatic cancer: a pooled analysis in the International Pancreatic Cancer Case-Control Consortium (PanC4). *Ann Oncol* 2012;23:374-82.
37. Haugvik SP, Hedenström P, Korsæth E, et al. Diabetes, smoking, alcohol use, and family history of cancer as risk factors for pancreatic neuroendocrine tumors: a systematic review and meta-analysis. *Neuroendocrinology* 2015;101:133-42.
38. Zhao Z, Liu W. Pancreatic Cancer: A Review of Risk Factors, Diagnosis, and Treatment. *Technol Cancer Res Treat* 2020;19:1533033820962117.
39. Qin X, Chen J, Jia G, et al. Dietary Factors and Pancreatic Cancer Risk: An Umbrella Review of Meta-Analyses of Prospective Observational Studies. *Adv Nutr* 2023;14:451-64.
40. Wang YT, Gou YW, Jin WW, et al. Association between alcohol intake and the risk of pancreatic cancer: a dose-response meta-analysis of cohort studies. *BMC Cancer* 2016;16:212.

41. Zanini S, Renzi S, Limongi AR, et al. A review of lifestyle and environment risk factors for pancreatic cancer. *Eur J Cancer* 2021;145:53-70.
42. Go VL, Gukovskaya A, Pandol SJ. Alcohol and pancreatic cancer. *Alcohol* 2005;35:205-11.
43. Grigor'eva IN. [Pancreatic cancer risk: alcoholic and non-alcoholic beverages]. *Terapevticheskii arkhiv*. 2022;94(2):265-70.
44. Yu W, Ma Y, Shankar S, et al. Chronic ethanol exposure of human pancreatic normal ductal epithelial cells induces cancer stem cell phenotype through SATB2. *J Cell Mol Med* 2018;22:3920-8.
45. Yu W, Ma Y, Roy SK, et al. Ethanol exposure of human pancreatic normal ductal epithelial cells induces EMT phenotype and enhances pancreatic cancer development in KC (Pdx1-Cre and LSL-Kras(G12D)) mice. *J Cell Mol Med* 2022;26:399-409.
46. Gupta S, Wang F, Holly EA, et al. Risk of pancreatic cancer by alcohol dose, duration, and pattern of consumption, including binge drinking: a population-based study. *Cancer Causes Control* 2010;21:1047-59.
47. Naudin S, Li K, Jaouen T, et al. Lifetime and baseline alcohol intakes and risk of pancreatic cancer in the European Prospective Investigation into Cancer and Nutrition study. *Int J Cancer* 2018;143:801-12.
48. Michaud DS, Vrieling A, Jiao L, et al. Alcohol intake and pancreatic cancer: a pooled analysis from the pancreatic cancer cohort consortium (PanScan). *Cancer Causes Control* 2010;21:1213-25.
49. Silverman DT, Brown LM, Hoover RN, et al. Alcohol and pancreatic cancer in blacks and whites in the United States. *Cancer Res* 1995;55:4899-905.
50. Silverman DT. Risk factors for pancreatic cancer: a case-control study based on direct interviews. *Teratog Carcinog Mutagen* 2001;21:7-25.
51. Norell SE, Ahlbom A, Erwald R, et al. Diet and pancreatic cancer: a case-control study. *Am J Epidemiol* 1986;124:894-902.
52. Shibata A, Mack TM, Paganini-Hill A, et al. A prospective study of pancreatic cancer in the elderly. *Int J Cancer* 1994;58:46-9.
53. Afsar CU, Karabulut M, Karabulut S, et al. Clinical Significance of Serum NEDD9 Levels in Patients with Pancreatic Cancer. *Biomolecules* 2018;8:169.

54. Hart AR, Kennedy H, Harvey I. Pancreatic cancer: a review of the evidence on causation. *Clin Gastroenterol Hepatol* 2008;6:275-82.
55. Singh S, Arcaroli J, Thompson DC, et al. Acetaldehyde and retinaldehyde-metabolizing enzymes in colon and pancreatic cancers. *Adv Exp Med Biol* 2015;815:281-94.
56. Zakhari S. Chronic alcohol drinking: Liver and pancreatic cancer? *Clin Res Hepatol Gastroenterol* 2015;39 Suppl 1:S86-91.
57. Tsai HJ, Chang JS. Environmental Risk Factors of Pancreatic Cancer. *J Clin Med* 2019;8:1427.
58. Apte MV, Pirola RC, Wilson JS. Mechanisms of alcoholic pancreatitis. *J Gastroenterol Hepatol* 2010;25:1816-26.
59. Genkinger JM, Spiegelman D, Anderson KE, et al. Alcohol intake and pancreatic cancer risk: a pooled analysis of fourteen cohort studies. *Cancer Epidemiol Biomarkers Prev* 2009;18:765-76.
60. Jiao L, Silverman DT, Schairer C, et al. Alcohol use and risk of pancreatic cancer: the NIH-AARP Diet and Health Study. *Am J Epidemiol* 2009;169:1043-51.
61. Mizuno S, Watanabe S, Nakamura K, et al. A multi-institute case-control study on the risk factors of developing pancreatic cancer. *Jpn J Clin Oncol* 1992;22:286-91.
62. Sciallero S, Bonelli L, Saccomanno S, et al. Socioeconomic characteristics, life style, diabetes, family history of cancer and risk of pancreatic cancer. *European Journal of Gastroenterology and Hepatology*. 1993;5(5):367-71.
63. Fernandez E, La Vecchia C, Porta M, et al. Pancreatitis and the risk of pancreatic cancer. *Pancreas* 1995;11:185-9.
64. Ji BT, Chow WH, Dai Q, et al. Cigarette smoking and alcohol consumption and the risk of pancreatic cancer: a case-control study in Shanghai, China. *Cancer Causes Control* 1995;6:369-76.
65. Lee CT, Chang FY, Lee SD. Risk factors for pancreatic cancer in orientals. *J Gastroenterol Hepatol* 1996;11:491-5.
66. Tavani A, Pregonolato A, Negri E, et al. Alcohol consumption and risk of pancreatic cancer. *Nutr Cancer* 1997;27:157-61.
67. Talamini G, Bassi C, Falconi M, et al. Alcohol and smoking as risk factors in chronic pancreatitis and pancreatic cancer. *Dig Dis Sci* 1999;44:1303-11.

68. Villeneuve PJ, Johnson KC, Hanley AJG, et al. Alcohol, tobacco and coffee consumption and the risk of pancreatic cancer: Results from the Canadian Enhanced Surveillance System case-control project. *European Journal of Cancer Prevention*. 2000;9(1):49-58.
69. Michaud DS, Giovannucci E, Willett WC, et al. Coffee and alcohol consumption and the risk of pancreatic cancer in two prospective United States cohorts. *Cancer Epidemiol Biomarkers Prev* 2001;10:429-37.
70. Stolzenberg-Solomon RZ, Pietinen P, Barrett MJ, et al. Dietary and other methyl-group availability factors and pancreatic cancer risk in a cohort of male smokers. *Am J Epidemiol* 2001;153:680-7.
71. Lin Y, Tamakoshi A, Kawamura T, et al. Risk of pancreatic cancer in relation to alcohol drinking, coffee consumption and medical history: findings from the Japan collaborative cohort study for evaluation of cancer risk. *Int J Cancer* 2002;99:742-6.
72. Ye W, Lagergren J, Weiderpass E, et al. Alcohol abuse and the risk of pancreatic cancer. *Gut* 2002;51:236-9.
73. Inoue M, Tajima K, Takezaki T, et al. Epidemiology of pancreatic cancer in Japan: a nested case-control study from the Hospital-based Epidemiologic Research Program at Aichi Cancer Center (HERPACC). *Int J Epidemiol* 2003;32:257-62.
74. Anderson LN, Cotterchio M, Gallinger S. Lifestyle, dietary, and medical history factors associated with pancreatic cancer risk in Ontario, Canada. *Cancer Causes Control* 2009;20:825-34.
75. Heinen MM, Verhage BA, Ambergen TA, et al. Alcohol consumption and risk of pancreatic cancer in the Netherlands cohort study. *Am J Epidemiol* 2009;169:1233-42.
76. Jiao L, Mitrou PN, Reedy J, et al. A combined healthy lifestyle score and risk of pancreatic cancer in a large cohort study. *Arch Intern Med* 2009;169:764-70.
77. Johansen D, Borgström A, Lindkvist B, et al. Different markers of alcohol consumption, smoking and body mass index in relation to risk of pancreatic cancer. A prospective cohort study within the Malmö Preventive Project. *Pancreatology* 2009;9:677-86.
78. Stevens RJ, Roddam AW, Spencer EA, et al. Factors associated with incident and fatal pancreatic cancer in a cohort of middle-aged women. *Int J Cancer* 2009;124:2400-5.

79. Miyasaka K, Hosoya H, Tanaka Y, et al. Association of aldehyde dehydrogenase 2 gene polymorphism with pancreatic cancer but not colon cancer. *Geriatr Gerontol Int* 2010;10 Suppl 1:S120-6.
80. Nakamura K, Nagata C, Wada K, et al. Cigarette smoking and other lifestyle factors in relation to the risk of pancreatic cancer death: a prospective cohort study in Japan. *Jpn J Clin Oncol* 2011;41:225-31.
81. Sonoyama T, Sakai A, Mita Y, et al. TP53 codon 72 polymorphism is associated with pancreatic cancer risk in males, smokers and drinkers. *Mol Med Rep* 2011;4:489-95.
82. Kuzmickiene I, Everatt R, Virviciute D, et al. Smoking and other risk factors for pancreatic cancer: a cohort study in men in Lithuania. *Cancer Epidemiol* 2013;37:133-9.
83. Ueda J, Tanaka M, Ohtsuka T, et al. Surgery for chronic pancreatitis decreases the risk for pancreatic cancer: a multicenter retrospective analysis. *Surgery* 2013;153:357-64.
84. La Torre G, Sferrazza A, Gualano MR, et al. Investigating the synergistic interaction of diabetes, tobacco smoking, alcohol consumption, and hypercholesterolemia on the risk of pancreatic cancer: a case-control study in Italy. *Biomed Res Int* 2014;2014:481019.
85. Mizuno S, Nakai Y, Isayama H, et al. Smoking, family history of cancer, and diabetes mellitus are associated with the age of onset of pancreatic cancer in Japanese patients. *Pancreas* 2014;43:1014-7.
86. Ding Y, Li LN. Association between single nucleotide polymorphisms of X-ray repair cross-complementing protein 4 gene and development of pancreatic cancer. *Genet Mol Res* 2015;14:9626-32.
87. Piciocchi M, Capurso G, Valente R, et al. Early onset pancreatic cancer: risk factors, presentation and outcome. *Pancreatology* 2015;15:151-5.
88. Rahman F, Cotterchio M, Cleary SP, et al. Association between alcohol consumption and pancreatic cancer risk: a case-control study. *PLoS One* 2015;10:e0124489.

89. Andersson G, Wennersten C, Borgquist S, et al. Pancreatic cancer risk in relation to sex, lifestyle factors, and pre-diagnostic anthropometry in the Malmö Diet and Cancer Study. *Biol Sex Differ* 2016;7:66.
90. Shakeri R, Kamangar F, Mohamadnejad M, et al. Opium use, cigarette smoking, and alcohol consumption in relation to pancreatic cancer. *Medicine (Baltimore)* 2016;95:e3922.
91. Yallew W, Bamlet WR, Oberg AL, et al. Association between Alcohol Consumption, Folate Intake, and Risk of Pancreatic Cancer: A Case-Control Study. *Nutrients* 2017;9:448.
92. Jiang QL, Zhang SS, Chen YT, et al. Risk factors for early-onset pancreatic cancer patients, and survival analysis. *International Journal of Clinical and Experimental Medicine*. 2017;10(6):9416-23.
93. Kearns MD, Boursi B, Yang YX. Proton pump inhibitors on pancreatic cancer risk and survival. *Cancer Epidemiol* 2017;46:80-4.
94. Molina-Montes E, Sánchez MJ, Buckland G, et al. Mediterranean diet and risk of pancreatic cancer in the European Prospective Investigation into Cancer and Nutrition cohort. *Br J Cancer* 2017;116:811-20.
95. Huang BZ, Le Marchand L, Haiman CA, et al. Atopic allergic conditions and pancreatic cancer risk: Results from the Multiethnic Cohort Study. *Int J Cancer* 2018;142:2019-27.
96. Murakami M, Nagai Y, Tenjin A, et al. Proposed cut-off value of CA19-9 for detecting pancreatic cancer in patients with diabetes: a case-control study. *Endocr J* 2018;65:639-43.
97. Pang Y, Holmes MV, Guo Y, et al. Smoking, alcohol, and diet in relation to risk of pancreatic cancer in China: a prospective study of 0.5 million people. *Cancer Med* 2018;7:229-39.
98. Arriaga ME, Vajdic CM, MacInnis RJ, et al. The burden of pancreatic cancer in Australia attributable to smoking. *Med J Aust* 2019;210:213-20.
99. Gono W, Okuma H, Hayashi TY, et al. Development of pancreatic cancer during observation for hepatocellular carcinoma: A retrospective cohort study. *Saudi J Gastroenterol* 2019;25:390-6.

100. Jayasekara H, English DR, Hodge AM, et al. Lifetime alcohol intake and pancreatic cancer incidence and survival: findings from the Melbourne Collaborative Cohort Study. *Cancer Causes Control* 2019;30:323-31.
101. Schulp M, Peeters PH, van den Brandt PA. Mediterranean diet adherence and risk of pancreatic cancer: A pooled analysis of two Dutch cohorts. *Int J Cancer* 2019;144:1550-60.
102. Bagni K, Chen IM, Johansen AZ, et al. Prognostic impact of Charlson's Age-Comorbidity Index and other risk factors in patients with pancreatic cancer. *Eur J Cancer Care (Engl)* 2020;29:e13219.
103. Gentiluomo M, Katzke VA, Kaaks R, et al. Mitochondrial DNA Copy-Number Variation and Pancreatic Cancer Risk in the Prospective EPIC Cohort. *Cancer Epidemiol Biomarkers Prev* 2020;29:681-6.
104. Jeon CY, Chen Q, Yu W, et al. Identification of Individuals at Increased Risk for Pancreatic Cancer in a Community-Based Cohort of Patients With Suspected Chronic Pancreatitis. *Clin Transl Gastroenterol* 2020;11:e00147.
105. Kirkegård J, Mortensen FV, Heide-Jørgensen U, et al. Predictors of underlying pancreatic cancer in patients with acute pancreatitis: a Danish nationwide cohort study. *HPB (Oxford)* 2020;22:553-62.
106. Kito K, Ishihara J, Kotemori A, et al. Dietary Acrylamide Intake and the Risk of Pancreatic Cancer: The Japan Public Health Center-Based Prospective Study. *Nutrients* 2020;12:3584.
107. Naudin S, Viallon V, Hashim D, et al. Healthy lifestyle and the risk of pancreatic cancer in the EPIC study. *Eur J Epidemiol* 2020;35:975-86.
108. Sandhu J, De Rubeis V, Cotterchio M, et al. Trajectories of physical activity, from young adulthood to older adulthood, and pancreatic cancer risk; a population-based case-control study in Ontario, Canada. *BMC Cancer* 2020;20:139.
109. Sheikh M, Masoudi S, Bakhshandeh R, et al. Survival features, prognostic factors, and determinants of diagnosis and treatment among Iranian patients with pancreatic cancer, a prospective study. *PLoS One* 2020;15:e0243511.
110. Aoki MN, Stein A, de Oliveira JC, et al. Susceptibility loci for pancreatic cancer in the Brazilian population. *BMC Med Genomics* 2021;14:111.

111. Bang GA, Savom EP, Bwelle Moto G, et al. Pancreatic head cancer in Cameroon: clinical epidemiology and survival. A retrospective study of 105 cases. *Surgical Chronicles*. 2021;26(3):274-8.
112. Loftfield E, Stepien M, Viallon V, et al. Novel Biomarkers of Habitual Alcohol Intake and Associations With Risk of Pancreatic and Liver Cancers and Liver Disease Mortality. *J Natl Cancer Inst* 2021;113:1542-50.
113. Nasser-Ghodsi N, Mara K, Watt KD. De Novo Colorectal and Pancreatic Cancer in Liver-Transplant Recipients: Identifying the Higher-Risk Populations. *Hepatology* 2021;74:1003-13.
114. Van Tran T, Van Dao T, Nguyen KD, et al. Risk factors of Pancreatic Cancer in Vietnam: A Matched Case-Control Hospital-Based Study. *Cancer Control* 2021;28:1073274821989320.
115. Yang S, Yeoh KW, Wong MC, et al. Disparities of birth cohort effects on pancreatic cancer incidence between the United States and urban China. *ESMO Open* 2021;6:100240.
116. Luu HN, Paragomi P, Wang R, et al. Composite Score of Healthy Lifestyle Factors and the Risk of Pancreatic Cancer in a Prospective Cohort Study. *Cancer Prev Res (Phila)* 2022;15:29-36.
117. Peila R, Coday M, Crane TE, et al. Healthy lifestyle index and risk of pancreatic cancer in the Women's Health Initiative. *Cancer Causes Control* 2022;33:737-47.
118. Tverdal A, Selmer R, Thelle DS. Alcohol consumption and incidence of pancreatic cancer. *Glob Epidemiol* 2022;4:100078.
119. Munigala S, Almaskeen S, Subramaniam DS, et al. Acute Pancreatitis Recurrences Augment Long-Term Pancreatic Cancer Risk. *Am J Gastroenterol* 2023;118:727-37.
120. Nodari Y, Gentiluomo M, Mohelnikova-Duchonova B, et al. Genetic and non-genetic risk factors for early-onset pancreatic cancer. *Dig Liver Dis* 2023;55:1417-25.
121. Steel H, Park SY, Lim T, et al. Diet Quality and Pancreatic Cancer Incidence in the Multiethnic Cohort. *Cancer Epidemiol Biomarkers Prev* 2023;32:123-31.