評価対象論文リスト（要因：過剰飲酒（多量飲酒）、アウトカム：糖尿病）

評価判定日：2024/1/25

既存の系統的レビュー・メタ解析・統合解析

1	Baliunas DO, Taylor BJ, Irving H, et al. Alcohol as a risk factor for type 2 diabetes: A systematic review and meta-analysis. Diabetes Care. 2009;32(11):2123-2132. doi:10.2337/dc09-0227
2	Bellou V, Belbasis L, Tzoulaki I, Evangelou E. Risk factors for type 2 diabetes mellitus: An exposure-wide umbrella review of meta-analyses. PLoS One. 2018;13(3):e0194127. Published 2018 Mar 20. doi:10.1371/journal.pone.0194127
3	Carlsson S, Hammar N, Grill V. Alcohol consumption and type 2 diabetes Meta-analysis of epidemiological studies indicates a U-shaped relationship. Diabetologia. 2005;48(6):1051-1054. doi:10.1007/s00125-005-1768-5
4	Han M. The Dose-Response Relationship between Alcohol Consumption and the Risk of Type 2 Diabetes among Asian Men: A Systematic Review and Meta-Analysis of Prospective Cohort Studies. J Diabetes Res. 2020;2020:1032049. Published 2020 Aug 24. doi:10.1155/2020/1032049
5	Huang J, Wang X, Zhang Y. Specific types of alcoholic beverage consumption and risk of type 2 diabetes: A systematic review and meta-analysis. J Diabetes Investig. 2017;8(1):56-68.
6	Knott C, Bell S, Britton A. Alcohol Consumption and the Risk of Type 2 Diabetes: A Systematic Review and Dose-Response Meta-analysis of More Than 1.9 Million Individuals From 38 Observational Studies. Diabetes Care. 2015;38(9):1804-1812. doi:10.2337/dc15-0710
7	Li XH, Yu FF, Zhou YH, He J. Association between alcohol consumption and the risk of incident type 2 diabetes: a systematic review and dose-response meta-analysis. Am J Clin Nutr. 2016;103(3):818-829. doi:10.3945/ajcn.115.114389
8	Neuenschwander M, Ballon A, Weber KS, et al. Role of diet in type 2 diabetes incidence: umbrella review of meta-analyses of prospective observational studies. BMJ. 2019;366:l2368. Published 2019 Jul 3. doi:10.1136/bmj.l2368

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10	Heianza Y, Arase Y, Saito K, et al. Role of alcohol drinking pattern in type 2 diabetes in Japanese men: the Toranomon Hospital Health Management Center Study 11 (TOPICS 11). Am J Clin Nutr. 2013;97(3):561-568. doi:10.3945/ajcn.112.043364
11	Hozawa A, Okamura T, Tanaka T, et al. Relation of Gamma-Glutamyltransferase and Alcohol Drinking with Incident Diabetes: the HIPOP-OHP Study. J Atheroscler Thromb. 17(2):195-202. doi: 10.5551/jat.3202.
12	Kiyohara Y, Shinohara A, Kato I, et al. Dietary factors and development of impaired glucose tolerance and diabetes in a general Japanese population: the hisayama study. J Epidemiol. 2003;13(5):251-8. doi: 10.2188/jea.13.251.
13	Nakanishi N, Suzuki K, Tatara K. Alcohol consumption and risk for development of impaired fasting glucose or type 2 diabetes in middle-aged Japanese men. Diabetes Care. 2003;26(1):48-54. doi:10.2337/diacare.26.1.48
14	Saijo Y, Okada H, Hamaguchi M, et al. The Risk Factors for Development of Type 2 Diabetes: Panasonic Cohort Study 4. Int J Environ Res Public Health. 2022;19(1):571. Published 2022 Jan 5. doi:10.3390/ijerph19010571
15	Sato KK, Hayashi T, Nakamura Y, et al. Liver enzymes compared with alcohol consumption in predicting the risk of type 2 diabetes: the Kansai Healthcare Study. Diabetes Care. 2008;31(6):1230-1236. doi:10.2337/dc07-2184
16	Teratani T, Morimoto H, Sakata K, et al. Dose-response relationship between tobacco or alcohol consumption and the development of diabetes mellitus in Japanese male workers. Drug Alcohol Depend. 2012;125(3):276-282. doi:10.1016/j.drugalcdep.2012.03.002
17	Tsumura K, Hayashi T, Suematsu C, Endo G, Fujii S, Okada K. Daily alcohol consumption and the risk of type 2 diabetes in Japanese men: the Osaka Health Survey. Diabetes Care. 1999;22(9):1432-1437. doi:10.2337/diacare.22.9.1432
18	Ueda N, Yamamoto M, Nakamura M, et al. Alcohol-induced impaired insulin secretion in a Japanese population: 5-year follow up in the Gifu Diabetes Study. J Diabetes Investig. 2020;11(5):1207-1214. doi:10.1111/jdi.13260
19	Waki K, Noda M, Sasaki S, et al. Alcohol consumption and other risk factors for self-reported diabetes among middle-aged Japanese: a population-based prospective study in the JPHC study cohort I [published correction appears in Diabet Med. 2005 Jun;22(6):818]. Diabet Med. 2005;22(3):323-331. doi:10.1111/j.1464-5491.2004.01403.x
20	Watanabe M, Barzi F, Neal B, et al. Alcohol consumption and the risk of diabetes by body mass index levels in a cohort of 5,636 Japanese. Diabetes Res Clin Pract. 2002;57(3):191-197. doi:10.1016/s0168-8227(02)00083-9
21	Yatsuya H, Li Y, Hirakawa Y, et al. A Point System for Predicting 10-Year Risk of Developing Type 2 Diabetes Mellitus in Japanese Men: Aichi Workers' Cohort Study. J Epidemiol. 2018;28(8):347-352. doi: 10.2188/jea.JE20170048.

■系統的レビュー・メタ解析・統合解析

No	Author	Title	Year	Study location	Category	Relative risk (95% CI)	Magnitude of association
1	Baliunas, DO., et al	Alcohol as a Risk Factor for Type 2 Diabetes: A systematic review and meta-analysis	2009	US, Netherlands, Finland, Australia, Korea, Germany, Japan, and UK	Men Lifetime abstainers 22g/day 60g/day Women Lifetime abstainers 24g/day 50g/day	 Ref. 0.87 (0.76–1.00) 1.01 (0.71–1.44) Ref. 0.60 (0.52–0.69) 1.02 (0.83–1.26)	 ↓ – ↓↓ –
2	Bellou, V., et al	Risk factors for type 2 diabetes mellitus: An exposure-wide umbrella review of metaanalyses	2018	This is a review of 86 meta-analysis.	None Alcohol consumption	Ref. 0.74 (0.67–0.82)	 ↓
3	Carlsson, S., et al	Alcohol consumption and type 2 diabetes: Meta-analysis of epidemiological studies indicates a U-shaped relationship	2005	Caucasian, Japanese, African-American,	Low alcohol consumption (<5 g/day) Moderate alcohol consumption (5-30 g/day)	Ref. 0.72 (0.67–0.77)	 ↓
4	Han, M., et al	The Dose-Response Relationship between Alcohol Consumption and the Risk of Type 2 Diabetes among Asian Men: A Systematic	2020	Japan, Korea, China	Lowest alcohol consumption Highest alcohol consumption	Ref. 1.16 (1.04–1.29)	 ↑
5	Huang, J., et al	Specific types of alcoholic beverage consumption and risk of type 2 diabetes: A systematic review and meta-analysis	2016	US, Sweden, France, China, Norway, European, and Australia	No/rare alcohol consumption Wine consumption <10 g/day 10-20 g/day >20 g/day No/rare alcohol consumption Beer consumption <10 g/day 10-20 g/day >20 g/day No/rare alcohol consumption Spirits consumption <10 g/day 10-20 g/day >20 g/day	Ref. 0.85 (0.80–0.89) 0.86 (0.80–0.92) 0.83 (0.76–0.91) 0.83 (0.76–0.91) Ref. 0.96 (0.92–1.00) 0.95 (0.89–1.01) 0.93 (0.87–1.00) 1.01 (0.88–1.16) Ref. 0.95 (0.89–1.03) 0.94 (0.84–1.05) 0.95 (0.84–1.08) 1.24 (0.87–1.77)	 ↓ ↓ ↓ ↓ – – – – – – – –

6	Knott, C., et al	Alcohol Consumption and the Risk of Type 2 Diabetes: A Systematic Review and Dose-Response Meta-analysis of More Than 1.9 Million Individuals From 38 Observational Studies	2015	US, Japan, Germany, UK, Finland, Korea, Australia, Turkey, France, Sweden, Spain, Netherland, Italy, Denmark, Norway, China	Categories were not defined, and 95%CI was not reported. Relative to combined abstainers, reductions in the risk of type 2 diabetes were present at all levels of alcohol intake <63 g/day, with risks increasing above this threshold. Peak risk reduction was present between 10–14 g/day at an 18% decrease in hazards.		
7	Li, XH., et al	Association between alcohol consumption and the risk of incident type 2 diabetes: a systematic review and dose-response meta-analysis1	2016	USA, Netherland, Australia, Korea, Germany, Japan, Swizerland, Greece,	Minimal category of alcohol consumption Light alcohol consumption Moderate alcohol consumption Heavy alcohol consumption	Ref. 0.83 (0.73–0.95) 0.74 (0.67–0.82) 0.95 (0.83–1.09)	 ↓ ↓ –
8	Neuenschwander, M., et al	Role of diet in type 2 diabetes incidence: umbrella review of meta-analyses of prospective observational studies	2019	USA, Netherlands, Australia, Korea, Germany, Japan,	Light alcohol consumption Moderate alcohol consumption Heavy alcohol consumption	0.82 (0.71–0.94) 0.75 (0.67–0.83) 0.95 (0.83–1.09)	↓ ↓ –

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No	Author	Title	Year	Study period	Number of subjects	Source of subjects	Event followed	Number of incident cases or	Participant's race	Category	Number among cases	Relative risk (95%CI)	P for trend	Confounding variables considered	Magnitude of association
9	Heianza, Y., et al	Role of alcohol drinking pattern in type 2 diabetes in Japanese men: the Toranomon Hospital Health Management Center Study 11 (TOPICS 11)	2013	1997/2002-8- to 13-y follow-up	1,650	individuals underwent annual health checkups at the Health Management Center, Toranomon Hospital, Tokyo	Incidence	216	Japanese	Lifetime abstainers Past drinkers 8-54 g/week 55-98 g/week 99-160 g/week 161-229 g/week 230-287 g/week 288-748 g/week Usual quantity (drinks per occasion) <1 drink 1-2 drinks ≥3–5 drinks Frequency of alcohol consumption 1 or 0 times/wk 2-3 times/wk 4-5 times/wk ≥6 times/wk	15 10 35 31 23 30 37 35 NA NA 	Ref. 3.26 1.85 1.65 1.05 (0.55–2.03) 1.38 1.71 (0.92–3.19) 2.05 (1.09–3.87) Ref. 1.46 (1.02–2.10) 1.79 (1.17–2.74) Ref. 0.68 (0.43–1.08) 0.67 (0.43–1.03) 0.67 (0.44–1.03)	NA 0.012 0.142 	age, parental diabetes, smoking status(never, former, or current), physical activity habit, hypertension (systolic blood pressure >=140 mm Hg, diastolic blood pressure >=90 mm Hg, or medical treatment), BMI, HDL cholesterol, log-transformed triglycerides, white blood cell count, and alanine transaminase concentration. age, parental diabetes and smoking habit, physical activity habit, BMI, hypertension, log-transformed triglycerides, and HDL cholesterol,blood cell count and alanine transaminase concentration	– ↑ ↑↑↑ ↑ ↑↑ – – –
10	Hozawa, A., et al	Relation of Gamma-Glutamyltransferase and Alcohol Drinking with Incident Diabetes: the HIPOP-OHP Study	2010	1999/2000-2004	3,095	employees in Japan	Incidence	118	Japanese	Never drinker Ex-drinker Current drinker -0.9 drinks/day 1-1.9 drinks/day 2-3.9 drinks/day 4- drinks/day	36 10 7 15 29 21	Ref. 1.26 (0.63–2.55) 0.46 (0.20–1.03) 0.86 (0.47–1.59) 1.43 (0.87–2.35) 0.96 (0.55–1.66)	NA	age, body mass index, current smoking, intervention group, walking time, and family history of DM	– ↓↓ – – –
11	Kiyohara, Y., et al	Dietary factors and development of impaired glucose tolerance and diabetes in a general Japanese population: the hisayama study	2003	1988-1993/1994	1,075	community-dwelling	Incidence	143	Japanese	Ethanol intake (10g)	NA	1.19(1.08-1.33)	NA	dietary cholesterol, total energy, complex carbohydrates, polyunsaturated/ saturated fatty acids (P/S) ratio,change in P/S ratio, Change in animal fat, Change in protein, age, fasting insulin, physically active on leisure time, body mass	↑
12	Nakanishi, N., et al	Alcohol consumption and risk for development of impaired fasting glucose or type 2 diabetes in middle-aged Japanese men	2003	1994-2001	2,953	Japanese male office workers	Incidence	370	Japanese	0g/day 0.1-22.9g/day 23.0-45.9g/day 46.0-68.9g/day ≥69g/day	63 67 66 107 67	1.51 (1.07–2.13) 1.31 (0.93–1.84) Ref. 1.18 (0.87–1.61) 1.43(1.01–2.02)	0.016	age, family history of diabetes, BMI, cigarette smoking, and regular physical activity at study entry	↑↑ – – ↑
13	Saijo, Y., et al	The Risk Factors for Development of Type 2 Diabetes: Panasonic Cohort Study 4	2022	2008-2018	46,001	corporate employees	Incidence	3,208	Japanese	BMI<22.0 kg/m2 None Daily consumption 22.0 kg/m2 ≤BMI < 25.0 kg/m2 None Daily consumption BMI ≥ 25.0 kg/m2 None Daily consumption	 NA 	 Ref. 1.04 (0.83–1.30) Ref. 0.75 (0.65–0.87) Ref. 0.73 (0.64–0.83)	 	age, sex, BMI, the change in BMI from 2008 to 2018, systolic blood pressure (SBP), low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, triglycerides, uric acid, smoking status, eating speed, snack after dinner, skipping breakfast,and physical exercise	 – ↓ ↓

14	Sato, KK., et al	Liver enzymes compared with alcohol consumption in predicting the risk of type 2 diabetes: the Kansai Healthcare Study	2008	2000/2001-2004/2005	8,576	male employees of a company in	Incidence	878	Japanese	0 g/day 0.1-16.3 g/day 16.4-42.6 g/day ≥69g/day	142 164 291 281	Ref. 0.93 (0.71–1.22) 0.69 (0.53–0.89) 0.71 (0.54–0.93)	NA	age (40–44, 45–49, and 50–55 years), BMI, FPG level (□100, 100–109, and 110–125 mg/dl), smoking habit (nonsmokers, past smokers, and current smokers), parental history of diabetes, walk to	– ↓ ↓
15	Teratani, T., et al	Dose–response relationship between tobacco or alcohol consumption and the development of diabetes mellitus in Japanese male workers	2012	2002-2010	8,423	male workers at a Japanese steel company	Incidence	464	Japanese	Abstainer 0.1–3.4 gou (1–76 g/week) 3.5–6.9 gou (77–153 g/week) 7.0–13.9 gou (154–307 g/week) More than 14.0 gou (308 g/week)	NA	Ref. 0.93 (0.70–1.24) 0.87 (0.65–1.17) 0.73 (0.55–0.97) 0.75 (0.57–0.98)	NA	Drinking and smoking habits, job schedule type, and habitual exercise w	– – ↓ ↓
16	Tsumura, K., et al	Daily alcohol consumption and the risk of type 2 diabetes in Japanese men: the Osaka Health Survey	1999	1981/1991 up to 16-year follow-up	6,362	male employees of a gas company in Osaka	Incidence	456	Japanese	Nondrinkers 0.1-19.0 ml/day 19.1-29.0 ml/day 29.1-50.0 ml/day ≥50.1 ml/day	76 95 120 60 105	Ref. 0.99 (0.73–1.36) 1.00 (0.74–1.34) 0.67 (0.47–0.94) 1.10 (0.81–1.51)	0.87	age, BMI, smoking habits (<20 cigarettes daily, >=20 cigarettes daily, past smokers, nonsmokers), leisure-time physical activity (regular physical activity at least once a week), parental history of diabetes (yes or no), and FPG level.	– – ↓ –
17	Ueda, N., et al	Alcohol-induced impaired insulin secretion in a Japanese population: 5-year follow up in the Gifu Diabetes Study	2020	2005/2007-2010/2012	603	community-dwelling	Prevalence	NA	Japanese	Male Non-drinkers 0-19.9 g/day 20.0-39.9 g/day ≥40.0 g/day Famale Non-drinkers 0-19.9 g/day 20.0-39.9 g/day	NA	Ref. 1.37 (0.13–30.10) 3.36 (0.30–75.55) 4.81 (0.50–109.34) Ref. 1.75 (0.48–7.10) 3.76 (0.18–29.53)	NA	sex (female as reference), age and calorie intake per day	– ↑↑ ↑↑ ↑ ↑↑
18	Waki, K., et al	Alcohol consumption and other risk factors for self-reported diabetes among middle-aged Japanese: a population-based prospective study in the JPHC study cohort I	2005	1990-2000	Men:12,913; Women:15,980	community-dwelling	Prevalence	Men:703; Women:482	Japanese	Men Non-drinkers and infrequent occasional drinkers >0-≤23.0g/day >23.0-≤46.0g/day >46.0g/day Women Non-drinkers and infrequent occasional drinkers >0-≤4.9g/day >4.9-≤11.5g/day >11.5g/day	NA NA	Ref. 1.08 (0.87–1.34) 1.26 (1.02–1.56) 1.25 (1.00–1.56) Ref. 1.15 (0.68–1.95) 0.81 (0.48–1.35) 0.78 (0.44–1.40)	0.019 NA	age, BMI, cigarette smoking, exercise, family history of diabetes and prevalent hypertension	– ↑ ↑ – – –
19	Watanabe, M., et al	Alcohol consumption and the risk of diabetes by body mass index levels in a cohort of 5,636 Japanese	2002	1991-1999	5,636	employees of	Incidence	264	Japanese	None Current	43 221	Ref. 0.79 (0.55–1.13)	NA	age, gender, BMI, baseline fasting plasma glucose level, and current tobacco use	–
20	Yatsuya, H., et al.	A Point System for Predicting 10-Year Risk of Developing Type 2 Diabetes Mellitus in Japanese Men: Aichi Workers' Cohort Study	2018	2002-2005 to 12-year follow-up	3540	employees of a Japanese company	Incidence	342	Japanese	0 <23.0 23.0-<46.0 >=46.0	NA	Ref. 1.07 (0.80–1.43) 1.18 (0.86–1.62) 1.34 (0.93–1.91)	NA	NA	– – –