評価対象論文リスト（要因：睡眠時間、アウトカム：糖尿病）
評価判定日：2023/9/29

①既存の系統的レビュー・メタ解析・統合解析

1	Shan Z, Ma H, Xie M, et al. Sleep duration and risk of type 2 diabetes: a meta-analysis of prospective studies. Diabetes Care. 2015;38(3):529-537. doi:10.2337/dc14-2073
2	Xu YH, Shi L, Bao YP, et al. Association between sleep duration during pregnancy and gestational diabetes mellitus: a meta-analysis. Sleep Med. 2018;52:67-74. doi:10.1016/j.sleep.2018.07.021
3	Cappuccio FP, D'Elia L, Strazzullo P, Miller MA. Quantity and quality of sleep and incidence of type 2 diabetes: a systematic review and meta-analysis. Diabetes Care. 2010;33(2):414-420. doi:10.2337/dc09-1124
4	Lu H, Yang Q, Tian F, et al. A Meta-Analysis of a Cohort Study on the Association between Sleep Duration and Type 2 Diabetes Mellitus. J Diabetes Res. 2021;2021:8861038. Published 2021 Mar 24. doi:10.1155/2021/8861038
5	Holliday EG, Magee CA, Kritharides L, Banks E, Attia J. Short sleep duration is associated with risk of future diabetes but not cardiovascular disease: a prospective study and meta-analysis. PLoS One. 2013;8(11):e82305. Published 2013 Nov 25. doi:10.1371/journal.pone.0082305

②日本人集団の個別疫学研究

6	Okada R, Teramoto M, Muraki I, Tamakoshi A, Iso H. Sleep Duration and Daytime Napping and Risk of Type 2 Diabetes Among Japanese Men and Women: The Japan Collaborative Cohort Study for Evaluation of Cancer Risk. J Epidemiol. 2023;33(11):562-568. doi:10.2188/jea.JE20220118
7	Myoga M, Tsuji M, Tanaka R, et al. Impact of sleep duration during pregnancy on the risk of gestational diabetes in the Japan environmental and Children's study (JECS). BMC Pregnancy Childbirth. 2019;19(1):483. Published 2019 Dec 9. doi:10.1186/s12884-019-2632-9
8	Kita T, Yoshioka E, Satoh H, et al. Short sleep duration and poor sleep quality increase the risk of diabetes in Japanese workers with no family history of diabetes. Diabetes Care. 2012;35(2):313-318. doi:10.2337/dc11-1455
9	Hayashino Y, Fukuhara S, Suzukamo Y, et al. Relation between sleep quality and quantity, quality of life, and risk of developing diabetes in healthy workers in Japan: the High-risk and Population Strategy for Occupational Health Promotion (HIPOP-OHP) Study. BMC Public Health. 2007;7:129. Published 2007 Jun 28. doi:10.1186/1471-2458-7-129
10	Heianza Y, Kato K, Fujihara K, et al. Role of sleep duration as a risk factor for Type 2 diabetes among adults of different ages in Japan: the Niigata Wellness Study. Diabet Med. 2014;31(11):1363-1367. doi:10.1111/dme.12555

■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	Shan, Z., et al.	Sleep duration and risk of type 2 diabetes: a meta-analysis of prospective studies.	2015	U.S., Europe, Asia, and Australia	Short sleep hours vs. Ref. Long sleep hours vs. Ref.	1.09 (1.04–1.15) 1.14 (1.03–1.26)	↑ ↑
2	Xu, YH., et al.	Association between sleep duration during pregnancy and gestational diabetes mellitus: a meta-analysis.	2018	U.S., Singapore, and China	Extreme sleep duration vs Ref	1.43(1.16-1.75)	↑
3	Cappuccio, FP., et al.	Quantity and quality of sleep and incidence of type 2 diabetes: a systematic review and meta-analysis.	2010	U.S., Sweden and Japan	Short sleep vs Ref Long sleep vs Ref	1.28 (1.03–1.60) 1.48 (1.13–1.96)	↑ ↑
4	Lu, H., et al.	A Meta-Analysis of a Cohort Study on the Association between Sleep Duration and Type 2 Diabetes Mellitus.	2021	Norway, U.S., Korea, China,	Short sleep (≤6h) vs normal sleep duration (6h< to <9h) Long sleep (≥9 h) vs normal sleep duration (6h< to <9h)	1.22 (1.15–1.29) 1.26 (1.15–1.39)	↑ ↑
5	Holliday, EG., et al.	Short sleep duration is associated with risk of future diabetes but not cardiovascular disease: a prospective study and meta-analysis.	2013	U.S., Japan, Australia, Sweden, and Germany	<6 h 6 h 7 h 8 h 9 h ≥10	1.28 (1.10–1.49) 1.03 (0.93–1.13) Ref. 1.01 (0.93–1.08) 1.00 (0.91–1.11) 1.09 (0.97–1.23)	↑ − − − −

No	Author	Title	Year	Study period	Number of subjects	Source of subjects	Event followed	Number of incident cases or deaths	Participant's race	Category	Number among cases	Relative risk (95% CI)	P for trend	Confounding variables considered	Magnitude of association
6	Okada, R., et al.	Sleep Duration and Daytime Napping and Risk of Type 2 Diabetes among Japanese Men and Women: the Japan Collaborative Cohort Study for Evaluation of Cancer Risk.	2022	baseline (1988–1990) + 5 years follow up	20,318 participants (7,597 men, 12,721 women)	The Japan Collaborative Cohort Study for Evaluation of Cancer Risk (JACC)	Incidence	531 new cases of T2DM (266 men and 265 women)	Japanese	Sleep duration (hours/day), Total			NA	adjusted for age, sex, daytime napping, history of hypertension, body mass index, smoking status, alcohol consumption, hours of exercise, hours of walking, educational level, perceived mental stress, regular employment, coffee intake, green tea intake, dietary intakes of vegetable, fish, fruits and soybeans and family history of diabetes.	
										≤5	23	1.11 (0.71–1.74)			–
										6	83	0.92 (0.71–1.20)			–
										7	193	Ref.			
										8	167	0.87 (0.70–1.07)			–
										9	37	1.05 (0.73–1.53)			–
										≥10	28	1.99 (1.28–3.08)			↑↑
										Men					
										≤5	11	1.63 (0.84–3.19)			↑
										6	40	1.26 (0.85–1.86)			–
										7	84	Ref.			
										8	91	0.85 (0.63–1.16)			–
										9	24	1.08 (0.67–1.74)			–
										≥10	16	1.85 (1.03–3.34)			↑↑
										Women					
										≤5	12	0.86 (0.47–1.59)			–
										6	43	0.73 (0.51–1.05)			–
										7	109	Ref.			
										8	76	0.90 (0.66–1.22)			–
										9	13	1.09 (0.60–2.00)			–
										≥10	12	2.60 (1.33–5.09)			↑↑↑
										Daytime napping, Total					
										Non-nappers	331	Ref.			
										Nappers	200	1.14 (0.95–1.38)			–
										Daytime napping, Men					
										Non-nappers	159	Ref.			
										Nappers	107	1.10 (0.84–1.43)			–
										Daytime napping, Women					
										Non-nappers	172	Ref.			
										Nappers	93	1.20 (0.92–1.58)			–
										Daytime napping + sleep duration, total					
										Non-nappers + <10hrs of sleep	321	Ref.			
										Nappers + <10hrs of sleep	182	1.13 (0.93–1.36)			–
										Non-nappers + ≥10hrs of sleep	10	1.87 (0.96–3.65)			↑
										Nappers + ≥10hrs of sleep	18	2.62 (1.55–4.43)			↑↑↑
										Daytime napping + sleep duration, men					
										Non-nappers + <10hrs of sleep	154	Ref.			
										Nappers + <10hrs of sleep	96	1.04 (0.79–1.37)			–
										Non-nappers + ≥10hrs of sleep	5	1.27 (0.49–3.26)			–
										Nappers + ≥10hrs of sleep	11	2.51 (1.27–5.00)			↑↑↑
										Daytime napping + sleep duration, women					
										Non-nappers + <10hrs of sleep	167	Ref.			
										Nappers + <10hrs of sleep	86	1.22 (0.93–1.61)			–
										Non-nappers + ≥10hrs of sleep	5	3.26 (1.25–8.49)			↑↑↑
										Nappers + ≥10hrs of sleep	7	3.23 (1.39–7.50)			↑↑↑
7	Myoga, M., et al.	Impact of sleep duration during pregnancy on the risk of gestational diabetes in the Japan environmental and Children's study (JECS).	2019	2011-2014	48,787	Japan environmental and Children's study (JECS)	Prevalence	1,000	Japanese	<5	14	1.31 (0.74-2.30)	NA	age, pre-pregnancy BMI, gestational weight gain, steroid use during pregnancy and previous GDM	–
										5-<7	194	1.03 (0.87-1.22)			–
										7-<10	740	Ref.			
										≥10	52	1.21 (0.90-1.63)			–

No.	Author	Title	Year	Period	Participants	Setting	Type	Cases	Ethnicity	Exposure	N	OR (95% CI)	p	Adjustments	Dir.
8	Kita, T., et al.	Short sleep duration and poor sleep quality increase the risk of diabetes in Japanese workers with no family history of diabetes.	2012	2003-2004	3,570 nondiabetic participants	local government employees in Sapporo, Japan	Incidence	121	Japanese	Sleep duration (hr) (participants without family history of diabetes) >7 / 6-7 / 5-6 / ≤5	NA	Ref. / 1.57 (0.64–3.83) / 1.38 (0.50–3.79) / 5.37 (1.38–20.91)		age, sex, FPG level, BMI, smoking, alcohol intake, and physical exercise, education, working hours, shift work, rate of sedentary work, and occupational stress.	– / – / ↑↑↑
										Sleep duration (hr) (participants with family history of diabetes) >7 / 6-7 / 5-6 / ≤5		Ref. / 0.74 (0.29–1.90) / 1.18 (0.43–3.24) / 0.25 (0.03–2.42)			– / – / ↓↓
9	Hayashino, Y., et al.	Relation between sleep quality and quantity, quality of life, and risk of developing diabetes in healthy workers in Japan: the High-risk and Population Strategy for Occupational Health Promotion (HIPOP-OHP) Study.	2007	1999-2004	6,509	High-risk and Population Strategy for Occupational Health Promotion (HIPOP-OHP) Study	Incidence	230	Japanese	sleep duration < 6 hours / 6–7 hours / 7–8 hours / > 8 hours	NA	1.15 (0.76–1.74) / Ref. / 1.15 (0.84–1.59) / 1.03 (0.62–1.70)	0.72	age, gender, history of smoking, history of hypertension, history of high cholesterol, potential history of diabetes, exercise (MET-h/week) quartiles, assigned intervention (health promotion), and BMI(kg/m2, quartiles)	– / – / –
										difficulty initiating sleeping None / Sometimes / Often		Ref. / 1.42 (1.05–1.91) / 1.61 (1.00–2.58)	0.005	age, gender, history of smoking, history of hypertension, history of high cholesterol, potential history of diabetes, exercise (MET-h/week) quartiles, assigned intervention (health promotion), and sleep duration categories	↑ / ↑↑
										difficulty maintaining sleeping None / Sometimes / Often		Ref. / 1.31 (0.97–1.76) / 1.37 (0.87–2.16)	0.063	age, gender, history of smoking, history of hypertension, history of high cholesterol, potential history of diabetes, exercise (MET-h/week) quartiles, assigned intervention (health promotion), and sleep duration categories	– / –
10	Heianza, Y., et al.	Role of sleep duration as a risk factor for Type 2 diabetes among adults of different ages in Japan: the Niigata Wellness Study.	2014	April 1999 to March 2004	38 987 individuals aged 18–83 years	The Niigata Association of Occupational Health in Niigata, Japan	Incidence	2085 new cases of T2D	Japanese	< 5.5 h / 5.5 to < 6.5 h / 6.5 to < 7.0 h / 7.0–7.5 h / > 7.5–8.0 h / > 8.0 h	85 / 449 / 203 / 812 / 442 / 94	1.53 (1.19, 1.97) / 1.25 (1.10, 1.42) / 1.13 (0.96, 1.34) / Ref. / 1.06 (0.93, 1.20) / 1.03 (0.81, 1.30)		Adjusted for sex, physical activity (yes or no), smoking habit (never, former or current), current drinking habit (yes or no), working condition [no data, rotating shift (with night shift) work, rotating shift (without night shift) work, day time work, BMI (<23.0, 23.0 to <25.0, or ?25.0 kg/m2), dyslipidaemia, hypertension, and impaired fasting glucose.	↑↑ / ↑ / – / – / –