

評価対象論文リスト(要因:授乳、アウトカム:糖尿病)

評価判定日:2025/2/26

①既存の系統的レビュー・メタ解析・統合解析

1	Owen CG, Martin RM, Whincup PH, Smith GD, Cook DG. Does breastfeeding influence risk of type 2 diabetes in later life? A quantitative analysis of published evidence [published correction appears in Am J Clin Nutr. 2012 Mar;95(3):779]. Am J Clin Nutr. 2006;84(5):1043-1054. doi:10.1093/ajcn/84.5.1043
2	Aune D, Norat T, Romundstad P, Vatten LJ. Breastfeeding and the maternal risk of type 2 diabetes: a systematic review and dose-response meta-analysis of cohort studies. Nutr Metab Cardiovasc Dis. 2014;24(2):107-115. doi:10.1016/j.numecd.2013.10.028
3	Jäger S, Jacobs S, Kröger J, et al. Breast-feeding and maternal risk of type 2 diabetes: a prospective study and meta-analysis. Diabetologia. 2014;57(7):1355-1365. doi:10.1007/s00125-014-3247-3
4	Horta BL, Loret de Mola C, Victora CG. Long-term consequences of breastfeeding on cholesterol, obesity, systolic blood pressure and type 2 diabetes: a systematic review and meta-analysis. Acta Paediatr. 2015;104(467):30-37. doi:10.1111/apa.13133
5	Tanase-Nakao K, Arata N, Kawasaki M, et al. Potential protective effect of lactation against incidence of type 2 diabetes mellitus in women with previous gestational diabetes mellitus: A systematic review and meta-analysis. Diabetes Metab Res Rev. 2017;33(4):e2875. doi:10.1002/dmrr.2875
6	Feng L, Xu Q, Hu Z, Pan H. Lactation and progression to type 2 diabetes in patients with gestational diabetes mellitus: A systematic review and meta-analysis of cohort studies. J Diabetes Investig. 2018;9(6):1360-1369. doi:10.1111/jdi.12838
7	Horta BL, de Lima NP. Breastfeeding and Type 2 Diabetes: Systematic Review and Meta-Analysis. Curr Diab Rep. 2019;19(1):1. Published 2019 Jan 14. doi:10.1007/s11892-019-1121-x
8	Rameez RM, Sadana D, Kaur S, et al. Association of Maternal Lactation With Diabetes and Hypertension: A Systematic Review and Meta-analysis. JAMA Netw Open. 2019;2(10):e1913401. Published 2019 Oct 2. doi:10.1001/jamanetworkopen.2019.13401
9	Ma S, Hu S, Liang H, Xiao Y, Tan H. Metabolic effects of breastfeed in women with prior gestational diabetes mellitus: A systematic review and meta-analysis. Diabetes Metab Res Rev. 2019;35(3):e3108. doi:10.1002/dmrr.3108
10	Pinho-Gomes AC, Morelli G, Jones A, Woodward M. Association of lactation with maternal risk of type 2 diabetes: A systematic review and meta-analysis of observational studies. Diabetes Obes Metab. 2021;23(8):1902-1916. doi:10.1111/dom.14417

②日本人集団の個別疫学研究

11	Yasui I, Soda T, Yamashita H, et al. The effect of high-intensity breastfeeding on postpartum glucose tolerance in women with recent gestational diabetes. Int Breastfeed J. 2017;12:32. Published 2017 Jul 14. doi:10.1186/s13006-017-0123-z
12	Nanri A, Mizoue T, Noda M, et al. Menstrual and reproductive factors and type 2 diabetes risk: The Japan Public Health Center-based Prospective Study. J Diabetes Investig. 2019;10(1):147-153. doi:10.1111/jdi.12853

■系統的レビュー・メタ解析・統合解析

No	Author	Title	Year	Study design included	Exposure	Outcomes	Category	Relative risk (95% CI)	Magnitude of association	Studies included from
1	Owen, CG., et al	Does breastfeeding influence risk of type 2 diabetes in later life? A quantitative analysis of published evidence.	2006	mix	Breastfeeding	T2DM among breastfed subjects	Breast feeding vs. Formula feeding	OR=0.61 (0.44–0.85)	↓↓	USA, Holland, Canada, UK
2	Aune, D., et al	Breastfeeding and the maternal risk of type 2 diabetes: a systematic review and dose-response meta-analysis of cohort studies.	2014	only cohort study	Duration of breastfeeding	T2DM among mother	Highest vs lowest duration Per 12-months increase in lifetime duration Per 3-months increase in lifetime	RR=0.68 (0.57–0.82) RR=0.91 (0.86–0.96) RR=0.89 (0.77–1.04)	↓ ↓ –	Germany, USA, Australia, China
3	Jäger, S., et al	Breast-feeding and maternal risk of type 2 diabetes: a prospective study and meta-analysis.	2014	only cohort study	Duration of breastfeeding	T2DM among mother	breast-feeding vs non-breast-feeding >0 to 3 months >3 to 6 months >6 to 11 months >11 to 23 months per additional year	RR=0.95 (0.90–1.00) RR=0.97 (0.91–1.04) RR=1.00 (0.92–1.09) RR=0.89 (0.82–0.97) RR=0.88 (0.81–0.96) RR=0.93 (0.90–0.96)	– – – ↓ ↓ ↓	USA, China, Germany
4	Horta, BL., et al	Long-term consequences of breastfeeding on cholesterol, obesity, systolic blood pressure and type 2 diabetes: a systematic review and meta-analysis.	2015	mix	Breastfeeding	T2DM among breastfed subjects	Breastfed vs non-breastfed subjects	OR=0.65 (0.49–0.86)	↓↓	NA
5	Tanase-Nakao, K., et al	Potential protective effect of lactation against incidence of type 2 diabetes mellitus in women with previous gestational diabetes mellitus: A systematic review and meta-analysis of cohort studies.	2017	mix	Lactation	T2DM among mother with GDM	Longer vs shorter lactation	RR=0.29 (0.14–0.58)	↓↓↓	USA, Germany, Korea
6	Feng, L., et al	Lactation and progression to type 2 diabetes in patients with gestational diabetes mellitus: A systematic review and meta-analysis of cohort studies.	2018	only cohort study	Lactation	T2DM among mother with GDM	Women with previous GDM and lactation vs those without lactation	RR=0.66 (0.48–0.90)	↓↓	USA, Ireland, Germany, Korea, Australia, Belgium, Italian
7	Horta, BL., et al	Breastfeeding and Type 2 Diabetes: Systematic Review and Meta-Analysis.	2019	mix	Breastfeeding	T2DM among breastfed subjects	Breastfed vs non-breastfed subjects	OR=0.67 (0.56–0.80)	↓	Canada, Iran, USA, Brazil, Guatemala, India, Philippines, South Africa, Italy, Netherlands,
8	Rameez, RM., et al	Association of Maternal Lactation With Diabetes and Hypertension: A Systematic Review and Meta-analysis.	2019	mix	Breastfeeding for more than 12 months	DM among mother	Women who had breastfed for more than 12 months vs those who had breastfed for less than 12 months	OR=0.70 (0.62–0.78)	↓	USA, Australia, China, Korea
9	Ma, S., et al	Metabolic effects of breastfeed in women with prior gestational diabetes mellitus: A systematic review and meta-analysis.	2019	mix	Breastfeeding	T2DM among mother with GDM	Women with longer BF of any intensity after GDM vs those without longer BF of any intensity after GDM	OR=0.79 (0.68–0.92)	↓	Mexico, Italy, Korea, USA, Canada, Australia, Germany,
10	Pinho-Gomes, AC., et al	Association of lactation with maternal risk of type 2 diabetes: A systematic review and meta-analysis of observational studies.	2021	mix	Lactation	T2DM among mother	Women with ever lactation vs those with never lactation	RR=0.73 (0.65–0.83)	↓	USA, Canada, Germany, Australia, Belgium, South Korea, Ireland, China,

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No	Author	Title	Year	Study design	Study period	Number of subjects for analysis	Source of subjects	Event followed	Definitions	Number of incident cases	Participant's race	Category	Number among cases	Relative risk (95%CI)	P for trend	Magnitude of association	Confounding variable considered
11	Yasui, I., et al	The effect of high-intensity breastfeeding on postpartum glucose tolerance in women with recent gestational diabetes	2017	Retrospective study	2009-2011	88	Women with GDM who gave birth at Nagasaki Medical Center	~14 months postpartum	Abnormal glucose tolerance (75gOGTT, WHO) among mother	46 (52%)	Japanese	Non-high-intensity breast feeding	14 (78 %)	Ref.			age, prepregnancy BMI, family history of diabetes, 2-h plasma glucose at diagnostic OGTT during pregnancy, diagnostic criteria, weight gain during pregnancy and weight change during postpartum
												Breast feeding (all)	32 (46 %)	OR=0.20 (0.0040-0.80)	0.022	↓↓↓	
												6-8 weeks breast feeding	7 (50 %)	OR=0.25 (0.036-1.44)	0.12	↓↓	
												6 months breast feeding	7 (44 %)	OR=0.15 (0.022-0.89)	0.036	↓↓↓	
												12 months breast feeding	18 (45 %)	OR=0.15 (0.029-0.63)	0.0084	↓↓↓	
12	Nanri, A., et al	Menstrual and reproductive factors and type 2 diabetes risk: The Japan Public Health Center-based Prospective Study.	2019	Prospective cohort study	1990-2003	37,511	40-69 years old female JPHC study	5 years	T2DM among mother	513	Japanese	Non breast-feeding	65	Ref.			age, study area, smoking status, alcohol consumption, family history of diabetes mellitus, total physical activity, history of hypertension, total energy intake, coffee consumption, energy-adjusted daily intake of foods or nutrients, and BMI.
												Breast-feeding	402	OR=0.83 (0.63-1.09)	0.18	-	