Supplementary Materials

for the article

"What diet to recommend before pregnancy to reduce the risk of gestational diabetes and during pregnancy to affect its course and improve perinatal outcomes?"

Table S1. Extensive search strategy. When searching PubMed for four the main search terms, the search term and filters are presented in the Table and the resulting query in footnotes. When searching PubMed for additional terms and Cochrane Reviews for basic terms - only the search term and filters are presented in the Table for simplicity.

	Articles			
	Found	**Duplicates**	**Excluded**	**Included**
PubMed search (in All fields) **Filter:** Clinical Study, Clinical Trial, Meta-Analysis, Randomized Controlled Trial, Systematic Review, from 2014 - 2024				
Search terms				
diet and gestational diabetes *				
diet and risk of gestational diabetes †				
nutrition in gestational diabetes ‡				
treatment for GDM §				
PubMed search **Filter:** Systematic Review, from 2014 - 2024				
Search terms			Not diet centric topic: 666	
Mediterranean dietary patterns and gestational diabetes				
DASH diet and gestational diabetes	2,746	1,388		**192**
dietary patterns and gestational diabetes			Topic out of the review interest: 530	
risk of progression to type 2 diabetes and gestational diabetes				
carbohydrate intake and gestational diabetes				
diet acidity and gestational diabetes				
soft drink consumption and gestational diabetes				
fried foods and gestational diabetes				
polyphenols and flavonoids and gestational diabetes				
plant diets and gestational diabetes				
vegetarian diet and gestational diabetes				
vitamin D and gestational diabetes				
Cochrane Reviews search (in Title, Abstract, Keywords) **Filter:** Cochrane Reviews**,** from 2014 – 2024				
diet and gestational diabetes				
diet and risk of gestational diabetes	54			
nutrition in gestational diabetes				
treatment for GDM				

* **Resulting query:** (("diet"[MeSH Terms] OR "diet"[All Fields]) AND ("diabetes, gestational"[MeSH Terms] OR ("diabetes"[All Fields] AND "gestational"[All Fields]) OR "gestational diabetes"[All Fields] OR ("gestational"[All Fields] AND "diabetes"[All

Fields]))) AND ((clinicalstudy[Filter] OR clinicaltrial[Filter] OR meta-analysis[Filter] OR randomizedcontrolledtrial[Filter] OR systematicreview[Filter]) AND (2014:2024[pdat]))

† **Resulting query:** (("diet"[MeSH Terms] OR "diet"[All Fields]) AND ("risk"[MeSH Terms] OR "risk"[All Fields] OR "risk of"[All Fields]) AND ("diabetes, gestational"[MeSH Terms] OR ("diabetes"[All Fields] AND "gestational"[All Fields]) OR "gestational diabetes"[All Fields] OR ("gestational"[All Fields] AND "diabetes"[All Fields]))) AND ((clinicalstudy[Filter] OR clinicaltrial[Filter] OR meta-analysis[Filter] OR randomizedcontrolledtrial[Filter] OR systematicreview[Filter]) AND (2014:2024[pdat]))

‡ **Resulting query:** (("nutrition s"[All Fields] OR "nutritional status"[MeSH Terms] OR ("nutritional"[All Fields] AND "status"[All Fields]) OR "nutritional status"[All Fields] OR "nutrition"[All Fields] OR "nutritional sciences"[MeSH Terms] OR ("nutritional"[All Fields] AND "sciences"[All Fields]) OR "nutritional sciences"[All Fields] OR "nutritional"[All Fields] OR "nutritionals"[All Fields] OR "nutritions"[All Fields] OR "nutritive"[All Fields]) AND ("diabetes, gestational"[MeSH Terms] OR ("diabetes"[All Fields] AND "gestational"[All Fields]) OR "gestational diabetes"[All Fields] OR ("gestational"[All Fields] AND "diabetes"[All Fields]))) AND ((clinicalstudy[Filter] OR clinicaltrial[Filter] OR meta-analysis[Filter] OR randomizedcontrolledtrial[Filter] OR systematicreview[Filter]) AND (2014:2024[pdat]))

§ **Resulting query:** (("therapeutics"[MeSH Terms] OR "therapeutics"[All Fields] OR "treatments"[All Fields] OR "therapy"[MeSH Subheading] OR "therapy"[All Fields] OR "treatment"[All Fields] OR "treatment s"[All Fields]) AND "GDM"[All Fields]) AND ((clinicalstudy[Filter] OR clinicaltrial[Filter] OR meta-analysis[Filter] OR randomizedcontrolledtrial[Filter] OR systematicreview[Filter]) AND (2014:2024[pdat]))

Table S2. Evidence for dietary intervention to prevent the development of GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention effect
		Interv.	Control	
Paula *et al.*, 2022 [45]	SR & MA (61 studies)	698,803		The consumption of ultra-processed foods should be limited, especially during pregnancy
Mijatovic-Vukas *et al.*, 2018 [47]	SR & MA (40 studies)	30,871		Diets like MedDiet/DASH, as well as higher dietary and/or physical activity before or in early pregnancy, were associated with a lower risk or likelihood of GDM
Quan *et al.*, 2021 [44]	SR & MA of PCS	12,331		Subgroup analysis demonstrated that the consumption of red meat and processed red meat increased the risk of GDM more than either poultry or fish intake
Hassani Zadeh *et al.*, 2020 [46]	SR & MA of CS (13 studies)	From 168 To 24,111		Western dietary pattern could increase the risk of GDM
Tabaeifard *et al.*, 2024 [39]	SR of CS (8 studies) & MA of PCS (5 studies)	24,160 incl. 2,450 GDM		Consumption of animal protein and total protein before pregnancy is associated with an increased risk of GDM Plant protein intake is linked to a decreased risk of GDM, however, the results are not significant Further cohort studies are required to validate these findings
Hajhashemy *et al.,* 2024 [47]	SR & MA (13 studies)	31,005 incl. 3,451 GDM		A significant positive association between total protein intake and GDM was found The associations of animal and plant protein intake with GDM were dose-dependent
Talebi *et al.*, 2024 [41]	SR & MA (54 studies)	552,686		Both before to and during pregnancy, chronic and excessive intake of ultra-processed foods is associated with an increased risk of GDM and preeclampsia
Gao and Cui, 2022 [42]	MA of OS	3,237		Increased dietary cholesterol intake is associated with increased GDM risk
O'Reilly *et al.*, 2020 [43]	SR (38 studies)	12,509		The measuring tools were very heterogeneous, it is difficult to draw unambiguous conclusions
Schoenaker *et al.*, 2016 [35]	SR of OS (34 studies)	3,362		As part of a generally balanced diet, you should limit the intake of foods containing saturated fats and cholesterol, such as processed meats and eggs
Schiattarella *et al.*, 2021 [53]	SR (13 studies)	From 27 To 13,100		Healthy plant-based diet might favourably impact on the onset of GDM
Raghavan *et al.*, 2019 [54]	SR (378 studies)	N/A		8 of the 11 included studies found statistically significant associations between dietary patterns and GDM risk among healthy Caucasian women
Talebi *et al.*, 2024 [38]	SR of PCS (17 studies)	49,120		Consuming more animal protein-rich foods can increase the risk of GDM The results need to be validated by well-designed prospective studies
Marí-Sanchis *et al.*, 2018 [37]	OS	3,298		Higher prepregnancy consumption of total meat, especially red and processed meat, and heme iron intake, are significantly associated with an increased GDM risk
Li *et al.*, 2021 [55]	OS	2,987		Appropriate quantity of fruit and vegetable intakes throughout pregnancy may have a beneficial effect on preventing the development of GDM
Chen *et al.*, 2021 [51]	OS	846		Greater prepregnancy adherence to a healthful plant-based diet was associated with lower risk of GDM
Nicolì *et al.*, 2021 [50]	OS	376		Non-nutritive-sweetened soft drink consumption is common among pregnant women and is associated with an increased risk of GDM

Author, year, ref.	Design *	Study group		Outcomes Intervention effect
		Interv.	Control	
Gao *et al.*, 2021 [52]	FFQ	2,231		Higher dietary intake of total polyphenols and flavonoids and the intake from fruits was associated with lower GDM risk
Donazar-Ezcurra *et al.*, 2018 [49]	FFQ	172		Family history of diabetes, smoking, total energy intake, physical activity, parity, fast-food consumption, adherence to Mediterranean dietary pattern, alcohol intake, multiple pregnancy, cardiovascular disease/hypertension at baseline, fibre intake, following special diet and snacking, sugar-sweetened soft drink consumption was significantly associated with an increased risk of incident GDM
Osorio-Yáñez *et al.*, 2017 [48]	FFQ	169		Regular intake of fried fish and fried chicken are associated with elevated GDM risk
Yuste Gómez *et al.*, 2022 [36]	QNN	133		The results obtained showed that women who developed GDM had erroneous knowledge regarding nutrition

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial, PCS – prospective cohort study, CS – cohort study, OS – observational study, FFQ – food frequency questionnaire, QNN – questionnaire on nutritional knowledge

Table S3. Effects of supplements on preventing the development of GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention effect
		Interv.	Control	
Irwinda *et al.*, 2022 [59]	SR & MA (27 RCTs)	From 52 To 965		Vitamin D supplementation > 2000 IU/day might be important to reduce the risk of GDM
Wei *et al.*, 2022 [63]	SR & MA (7 RCTs)	1,321		Myo-inositol supplementation significantly decreased the plasma glucose levels. Decreased the need of insulin treatment, and reduced the incidence of preterm delivery and neonatal hypoglycaemia
Vitagliano *et al.*, 2019 [62]	SR & MA of RCTs	965		Inositol administration during pregnancy may improve the glycaemic homeostasis and may reduce GDM rate and preterm delivery rate
Masulli *et al.* 2020 [69]	SR & MA (17 RCTs)	From 56 To 454		Probiotics during pregnancy do not reduce the incidence of GDM, with a very little (statistically but not clinically significant) reduction of fasting plasma glucose
Chu *et al.*, 2022 [71]	SR & MA (5 studies)	1,400		Excessive probiotics supplementation might increase the risk of preeclampsia
Quotah *et al.*, 2024 [64]	SR & MA (2 RCTs at prepregnancy)	525		Diet and exercise interventions in women at risk of GDM may be an effective strategy for prevention Further studies to target high-risk women for intervention before and during pregnancy are warranted
Davidson *et al.*, 2021 [72]	MA (7 studies)	1,647		The effect of probiotics on the risk of gestational diabetes has not been clearly demonstrated (studies of poor quality)
Zhou *et al.*, 2023 [66]	MA (15 studies)	1,304		Low vitamin C exposure during pregnancy may increase the risk of GDM
Li *et al.*, 2024 [68]	MA (14 RCTs)	3,527		Probiotics significantly reduced the risk of GDM in women with BMI < 26 kg/m^2 and those younger than 30 years, but not in women with BMI ≥ 26 kg/m^2 and those aged ≥ 30 years
Li and Shi, 2023 [65]	MA (7 RCTs)	1,319		Inositol supplementation during pregnancy has the potential to prevent GDM, improve glycaemic control, and reduce preterm birth rates
Zhang *et al.*, 2018 [57]	SR (25 RCTs, 87 OSs)	2,445 in RCTs 55,859 in OSs		Blood vitamin D level for women with GDM were lower than in the control women. Blood vitamin D levels correlate with fasting plasma glucose levels (HOMA-IR)
Palacios *et al.*, 2019 [56]	SR (30 studies)	7,033		Supplementing pregnant women with vitamin D alone probably reduces the risk of pre-eclampsia,
Suárez-Varela *et al.*, 2022 [60]	SR (28 studies)	From 25 To 4,285		Appropriate levels of vitamin D during pregnancy are associated with less mobility during pregnancy
Griffith *et al.*, 2020 [61]	SR (4 studies)	446		Vitamin D supplementation versus placebo or control in pregnancy possibly reduced the risk of GDM
Shahriari *et al.*, 2021 [70]	RCT	271	271	Probiotics supplementation of pregnant women not reduce the risk of GDM
Callaway *et al.*, 2019 [67]	RCT	411		The probiotics did not prevent GDM in overweight and obese pregnant women
Bao *et al.*, 2018 [58]	OS	21,356		Prepregnancy supplemental vitamin D intake was significantly and inversely associated with risk of GDM

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial, OS – observational study

Table S4. Evidence regarding the impact of dietary acidity on the increased risk of developing GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Zhao *et al.*, 2022 [73]	OPS	1,327		A significant positive association between dietary acid load during early pregnancy and the risk of GDM was found
Saraf-Bank *et al.*, 2018 [75]	CCS	200	263	Women with higher scores of dietary acid load were more likely to have GDM

* OPS – observational prospective study, CCS – case–controlled observational study

Table S5. Evidence of the effectiveness of the Mediterranean Diet (MedDiet), Dietary Approaches to Stop Hypertension (DASH) and Alternative Healthy Eating Index (AHEI) diets in reducing the risk of developing GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention effect
		Interv.	Control	
Gao *et al.*, 2023 [86]	SR & MA (19 studies)	108,084		Poorer diet quality increased the risk of GDM
Hassani Zadeh *et al.*, 2020 [46]	SR & MA (13 CS)	From 168 To 24,111		Mediterranean, prudent, and vegetable dietary patterns could decrease the risk of GDM
Jafari Nasab *et al.*, 2024 [85]	SR & MA (10 RCTs)	N/A		Adhering to diets resembling MedDiet, before or in early pregnancy, lowers risks or odds of GDM
Zhang *et al.*, 2022 [78]	MA (4 RCTs)	2,277		Mediterranean diet was associated with reduced incidence of GDM
Zaragoza-Martí *et al.*, 2022 [81]	SR (14 studies)	From 45 To 1,5245		The MedDiet is optimal to ensure an adequate supply of nutrients during pregnancy
Assaf-Balu *et al.*, 2017 [77]	RCT	500	500	An early nutritional intervention with a supplemented MedDiet reduces the incidence of GDM
Assaf-Balut *et al.*, 2018 [83]	RCT	874		High adherence to defined dietary goals in the late first trimester of the MedDiet in pregnancy is associated with a reduced risk of GDM
Melero *et al.*, 2020 [80]	RCT	600		MedDiet-based intervention reduces the rate of GDM and several adverse maternal-foetal outcomes
Al Wattar *et al.*, 2019 [76]	MRT	593		A significant reduction in the likelihood of GDM was found
de la Torre *et al.*, 2019 [84]	CT	932		Early MedDiet nutritional intervention reduces GDM

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial, MCT – multicentre randomized trial, CT – clinical trial

Table S6. Evidence of the effectiveness of a low glycaemic index (low-GI) diet in reducing the risk of developing GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention effect
		Interv.	Control	
Zhang *et al.* 2024 [88]	SR & MA (13 studies)	39,720		No significant association between GI and GDM was found A relationship between glycaemic load and the risk of GDM was indicated
Tieu *et al.*, 2017 [89]	RA (3 studies)	777		Considering primary outcomes, no clear differences were shown in the risks of three trials between the low-GI and moderate- to high-GI dietary advice groups
Markovic *et al.*, 2016 [87]	RCT	139		A low-GI diet and a healthy diet produce similar pregnancy outcomes
Bruno *et al.*, 2017 [90]	RCT	69	62	Following a personalized, hypocaloric, low-glycaemic, low-saturated fat diet, started early in pregnancy, prevents the onset of GDM in women with a BMI of ≥ 25 kg/m^2

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial, OS – observational study

Table S7. Evidence of the effectiveness of a low-carbohydrate (low-CHO) diet in reducing the risk of developing GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention effect
		Interv.	Control	
Hernandez *et al.*, 2014 [74]	RCT	16		Isocaloric and complex carbohydrate liberalization and fat reduction diets continue to achieve glycemia below current treatment goals and lower postprandial FFAs
Hernandez *et al.*, 2016 [91]	RCT	6	6	The CHOICE diet can improve maternal insulin resistance and infant obesity
Zhou *et al.*, 2018 [93]	PCS	2,755		A diet characterized by a high protein intake and low CHO intake during pregnancy was associated with a higher risk of GDM
Dong *et al.*, 2021 [94]	PCS	1,455		A low-CHO dietary pattern characterized by high animal fat and protein during the first trimester is associated with an increased risk of GDM in Chinese women
Bao *et al.*, 2014 [92]	OS	867		A prepregnancy low-CHO dietary pattern with high protein and fat from animal-food sources is positively associated with GDM risk

* RCT – randomized controlled trial, PCS – prospective cohort study, OS – observational study

Table S8. Evidence of the effectiveness of prenatal lifestyle interventions, diet and exercise on the risk of developing GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Cui *et al.*, 2023 [97]	SR & MA	831,798		With regard to maternal outcomes, prepregnancy intake of fried food, fast food, red and processed meat, heme iron and a low-CHO dietary pattern was positively associated with the risk of GDM. A high dietary fibre intake and folic acid supplementation were negatively associated with GDM risk
Jorquera *et al.*, 2022 [109]	SR & MA	252,534		Analyses showed no association of GDM with polyphenol-rich food consumption during pregnancy
Najafi *et al.*, 2019 [95]	SR & MA (33 OSs)	42,211		GDM risk was increased by 4% per unit increase in BMI
He *et al.*, 2024 [112]	SR & MA (16 RCTs)	7,351		mHealth-based lifestyle interventions were effective in preventing GDM among overweight and obese pregnant women
Wu *et al.*, 2022 [99]	SR & NMA (23 studies)	8,877		There is a tendency that diet and physical activity are preventative factors of GDM
Giannakou *et al.*, 2019 [111]	RMA (31 OSs)	BMI 112,880	282,458	The compilation of results from synthesis of observational studies suggests that increased BMI and hypothyroidism show the strongest consistent evidence for an association with GDM
		Hypothyroidism 5,570	278,609	
Guo *et al.*, 2019 [108]	MA (47 RCTs)	15,745		The best strategy to prevent GDM is to target the high-risk population predicted by risk evaluation models and to control the GWG of women through intensified diet and exercise modifications early in their pregnancy
Song *et al.*, 2016 [98]	MA of RCTs	11,487		Lifestyle modifications during pregnancy, especially before 15 weeks of pregnancy, can reduce the risk of GDM
Pham *et al.*, 2019 [110]	MA (12 studies)	5,786		The results suggest that dietary patterns rich in polyphenols may reduce the risk of GDM despite inconclusive evidence for polyphenol-rich food groups
Lamminpää *et al.*, 2018 [106]	SR (12 RCTs, 3 CTs)	From 50 To 1,280		There is considerable variability in the strategies used to guide dietary interventions in studies aimed at reducing GWG and preventing gestational diabetes in overweight and obese women. Ten studies reported significant differences in the measured outcomes regarding GWG or the prevention of GDM between the intervention and the control groups
Shepherd *et al.*, 2017 [104]	SR (23 RCTs)	8,918		Moderate-quality evidence suggests reduced risks of GDM and caesarean section with combined diet and exercise interventions during pregnancy as well as reductions in gestational weight gain, compared with standard care
Bain *et al.*, 2015 [101]	SR (13 RCTs)	4,983		When comparing women receiving a diet and exercise intervention with those receiving no intervention, there was no clear difference in the risk of developing GDM
Poston *et al.*, 2015 [107]	RCT	629	651	A behavioral intervention addressing diet and physical activity in women with obesity during pregnancy is not adequate to prevent GDM or to reduce the incidence of LGA infants
Simmons *et al.*, 2017 [102]	RCT	436		The combined healthy eating and physical activity intervention was able to limit GWG but did not reduce fasting glycemia

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
				Lifestyle changes alone are unlikely to prevent GDM among women with a BMI of ≥29 kg/m^2
Sahrakorpi *et al.*, 2019 [100]	RCT	192	186	Combined diet and physical activity intervention did not provide health related quality of life benefits in the study
Koivusalo *et al.*, 2016 [105]	RCT	155	138	A moderate individualized lifestyle intervention reduced the incidence of GDM by 39% in high-risk pregnant women
Lin *et al.*, 2020 [103]	RCT	139	142	Lifestyle intervention was associated with lower risks of GDM and adverse maternal outcomes
Zhang *et al.* 2022 [96]	OS	6,751		Weight gain during pregnancy had a fetal sex-specific mediating effect between prepregnancy BMI and GDM

* SR – systematic review, MA – meta-analysis, NMA – network meta-analysis, RMA – review of meta-analyses, RCT – randomized controlled trial, OS – observational study

Table S9. Evidence of the effectiveness of dietary intervention for preventing excessive weight gain during pregnancy in women with GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Teede *et al.*, 2022 [125]	SR & MA (117 RTCs)	34,546		Adequate antenatal diet and lifestyle interventions were associated with reduced GWG and a lower risk of adverse outcomes in the mother and newborn The use of dietary treatment had a greater effect on reducing GWG than physical activity alone
i-WIP Collaborative Group, 2017 [120]	SR & MA 36 RCTs)	12,526		Results confirm that diet and physical activity based interventions in pregnancy reduce GWG No strong evidence was found that interventions had an effect on individual offspring outcomes
Muktabhant *et al.*, 2015 [118]	SR & MA (24 studies)	Excessive weight gain: 7,096		Diet or exercise, or both, reduced the risk of excessive GWG by an average of 20% overall
	SR & MA (11 studies)	Low weight gain: 4,422		This intervention resulted in pregnant women being more likely to experience low GWG than women in the control
Mitanchez *et al.*, 2020 [121]	SR & MA (4 studies)	3,168		Combined lifestyle interventions in pregnant women with GDM significantly reduced foetal growth and neonatal fat mass, variable decrease in GWG Individually, specific diets had controversial or no effect on foetal growth, except the DASH diet, which reduced the risk of macrosomia and birth weight
Bennett *et al.*, 2019 [130]	SR & MA 7 RCTs	2,401		Only a small reduction in infant birth weight and the risk of macrosomia and LGA can be achieved by interventions to reduce excessive GWG
Yamamoto *et al.*, 2018 [133]	SR & MA (18 RCTs)	Pregnant women outcomes: 1,151		A larger decrease in fasting and postprandial glucose was noted
	SR & MA (16 RCTs)	Neonatal outcomes: 841		Dietary interventions were associated with lower infant birth weight and less macrosomia
Ruifrok *et al.*, 2014 [129]	MA (23 RCTs)	4,990		The reduction in GWG due to lifestyle interventions during pregnancy had no statistical effect on the incidence of pregnancy complications
Rogozińska *et al.*, 2019 [122]	MA (33 RCTs)	4,429		Even moderate exceedances of GWG outside of the established IOM recommendations are associated with an increased risk of negative outcomes in mother and offspring
Feng *et al.*, 2021 [128]	MA (6 RCTs)	674	626	The energy-restricted diet has not been shown to be superior to the regular/standard GDM diet. It was found only that the women in the intervention group achieved slightly better glycaemic control
Peaceman *et al.*, 2018 [115]	MA (7 studies)	574	565	Despite reduced excessive weight gain in pregnancy, birth weights, low and high for gestational age, were not significantly different between the intervention group and control group
Vanstone *et al.*, 2017 [124]	QMS (42 studies)	1,339		Effective interventions to encourage healthy weight gain in pregnancy must take into account the social environment
Flynn *et al.*, 2016 [132]	SR (13 RCTs)	3,980		The review points to high methodological variability in dietary interventions aimed at controlling weight gain in pregnancy and improving clinical outcomes in overweight and obese pregnant women
Allehdan *et al.*, 2019 [126]	SR (8 RCTs)	592		There were no significant differences in total weight gain during pregnancy, caesarean section, birth weight of newborns, macrosomia between diet and exercise groups, and diet groups

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
				The interventions improved controls of postprandial blood glucose in women diagnosed with GDM, but these interventions did not change outcomes in either the mother or the newborn
Li *et al.*, 2021 [134]	RCT	410	410	An individualized nutritional intervention can effectively reduce the incidence of complications during pregnancy and childbirth and improve maternal and infant outcomes
Dodd *et al.*, 2019 [123]	RCT	316	313	Improvements in maternal diet quality did not improve intervention outcomes with respect to total GWG or other pregnancy and delivery outcomes
Egan *et al.*, 2014 [117]	OS	802		Excessive GWG confers a risk for LGA birth weight, macrosomia and gestational hypertension
Aiken *et al.*, 2019 [119]	OS	546		Higher total GWG was associated with caesarean section and LGA, and there were no significant associations between early GWG (0-28 weeks) and pregnancy outcomes
Conway *et al.*, 2022 [127]	OS	258	313	Consumption of a low-calorie sweetener resulted in slightly greater weight gain (no statistical significance)

* SR – systematic review, MA – meta-analysis, QMS – qualitative meta-synthesis, RCT – randomized controlled trial, OS – observational study

Table S10. Evidence of the effect of dietary treatment on low birth weight (LBW) and small for gestational age (SGA) in newborns of women with GDM.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Young *et al.*, 2019 [136]	SR & MA (95 studies)	N/A		Low maternal Hb (<110 g/L) was associated with poor birth outcomes (low birth weight, preterm birth, SGA, stillbirth, and perinatal and neonatal mortality, and adverse maternal outcomes
Martín-Calvo *et al.*, 2022 [137]	SR & MA (28 studies)	N/A		Compared with children or adolescents born with a size appropriate for gestational age, SGAs had a 2.33-fold higher risk of T2DM LBW and SGA were associated with higher HOMA-IR values
Bennett *et al.*, 2019 [130]	SR & MA (7 RCTs)	2,401		Only a small reduction in infant birth weight and the risk of macrosomia and LGA, can be achieved by interventions to reduce excessive GWG
Tan *et al.*, 2019 [135]	MA (19 studies)	770	1,675	The overall estimated relation between vegetarian diet in pregnancy and LBW was marginally significant

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial

Table S11. Evidence of the impact of total carbohydrate intake on the health outcomes of women with GDM and their children.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Lin *et al.*, 2023 [138]	SR & MA (27 RCTs)	1,923		Nutritional interventions during pregnancy reduce birth weight and the incidence of macrosomia, improve some labour outcomes and glycaemic parameters
Viana *et al.*, 2014 [139]	SR & MA (9 RCTs)	884		Total restriction and a low-carbohydrate diet do not affect the results in either the mother or the newborn A low-GI diet was associated with less frequent insulin use
Wong *et al.*, 2024 [140]	SR & MA (13 RCTs)	877		Low-glycaemic load diet may reduce macrosomia risk
Han *et al.*, 2017 [141]	SR (19 RCTs)	1,398		The impact of different types of dietary advice for women with GDM on the health outcomes of women and their children is unclear

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial

Table S12. Evidence of the effects of vitamins and probiotics used as dietary supplements on the health outcomes of women with GDM and their children.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Gallo *et al.*, 2020 [147]	SR & MA (20 RCTs)	2,756		Vitamin D supplementation significantly reduces the assessment of the homeostatic model of maternal insulin resistance and increases the birth weight of infants There was no effect of maternal supplementation on other maternal outcomes (preeclampsia, caesarean section) and infant (gestational age, length of delivery)
Pérez-López *et al.*, 2015 [145]	SR & MA (13 RCTs)	2,299		Vitamin D supplementation had an effect on higher birth weight and birth length, but no effect on the incidence of preeclampsia, SGA, low birth weight, preterm birth, and caesarean section
Wu *et al.*, 2023 [152]	SR & MA (20 RCTs)	837	845	Vitamin D supplementation in GDM increased HDL-C levels and decreased serum LDL-C, TG and total cholesterol levels Vitamin D supplementation reduced the risk of preterm birth, hyperbilirubinemia, and neonatal hospitalization
Wang *et al.*, 2021 [153]	SR & MA (19 RCTs)	1,550		Vitamin D supplementation in women with GDM reduced fasting plasma glucose, insulin concentration, and HOMA-IR in women with GDM, adverse maternal outcomes, including caesarean section, maternal hospitalization, postpartum haemorrhage, and a reduction in unfavourable maternal-neonatal outcomes was shown
Wang *et al.*, 2020 [169]	SR & MA (7 RCTs)	540	553	Probiotic supplements did not considerably affect newborn birth weight in pregnant women with GDM
Yefet *et al.*, 2023 [167]	SR & MA (14 RCTs)	430	424	Probiotic supplements in women with GDM improve glycaemic control and lipid profile and reduce neonatal birth weight
Pan *et al.*, 2019 [160]	SR & MA (6 RCTs)	830		Compared to the control intervention in GDM, probiotic supplementation was found to significantly reduce fasting insulin resistance (HOMA-IR) and serum insulin, but without affecting fasting plasma glucose, gestational age, and weight
Rodrigues *et al*., 2019 [154]	SR & MA (6 studies)	456		No reduction in the incidence of caesarean delivery after Vitamin D supplementation in pregnant women with GDM was found Vitamin D supplementation in women with GDM may reduce neonatal complications such as hyperbilirubinemia, polyhydramnios, and the need for maternal or infant hospitalization
Taylor *et al.*, 2017 [161]	SR & MA (4 RCTs)	288		Probiotic supplementation was not effective in decreasing fasting blood glucose or LDL-C in women with GDM A significant reduction in HOMA-IR was observed No significant differences in GWG, delivery method or neonatal outcomes between experimental and control groups, and no adverse effects of the probiotics were reported
Akbari *et al.*, 2017 [151]	SR & MA (6 RCTs)	187	184	There was no beneficial effect of vitamin D supplementation on FPG, insulin, HbA1c, total cholesterol, HDL and triglycerides Supplementation can lead to an improvement in HOMA-IR, QUICKI and LDL cholesterol levels, increase HOMA-β
Jin *et al.*, 2020 [150]	SR & NMA (2 RCTs)	75	76	Vitamin D supplementation significantly reduced fasting plasma glucose and regulated HOMA-IR
Morales-Suárez-Varela *et al.*, 2022 [142]	SR & MA (23 MAs of OSs)	N/A		Vitamin D supplementation has a protective effect on pregnant women, significantly affecting the incidence of preeclampsia

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
				and reducing the risk of premature birth, premature babies and infections in both the mother and infants
Yang *et al.*, 2024 [155]	SR & MA (66 studies)	17,276		Benefits of vitamin D supplementation in pregnancy remain uncertain because current evidence has high heterogeneity and high risk of bias
Zhao *et al.*, 2022 [144]	MA (26 studies)	Preeclampsia 4,518	55,203	An inverse association between 25(OH)D levels and the risk of preeclampsia and gestational hypertension was found
	MA (11 studies)	Gestational hypertension 2,572	50,685	
Palacios *et al.*, 2016 [143]	MA (15 studies)	1,162	1,147	Vitamin D supplementation in pregnant women leads to significantly higher levels of 25(OH)D compared to placebo/controls Vitamin D supplementation may be related to lower risk of preeclampsia
Zhou *et al.*, 2021 [166]	MA (12 RCTs)s	894		Probiotic/symbiotic-based interventions improve glucose and lipid metabolism, anti-inflammatory and antioxidant ability in diet-controlled GDM patients, and exert beneficial outcomes on foetal hyperbilirubinemia, foetal macrosomia, and newborn weight
Okesene-Gafa *et al.*, 2020 [159]	MA (9 RCTs)	695		There is no certain evidence on whether probiotics have any effect compared to placebo on hypertension in pregnancy, on the induction of labour No trials reported primary outcomes of: mode of birth as vaginal /assisted and subsequent development of T2DM Probiotics may be associated with a slight reduction in TGs and total cholesterol There was evidence of reduction in HOMA-IR and HOMA-β, and increase in QUICKI
Jiang *et al.*, 2022 [158]	MA (5 RCTs)	N/A		In women with GDM or prediabetes supplementation with omega-3 fatty acids in combination with vitamin D or E may improve glycaemic control, and lower TG level, but has no effect on total cholesterol, preterm birth, or macrosomia > 4000 g
Zhang *et al.*, 2018 [57]	SR (25 RCTs, 87 OSs)	OSs: 55,859 RCTs: 2445		Blood vitamin D level for women with GDM were lower than in the control women Blood vitamin D levels correlate with fasting plasma glucose levels (HOMA-IR)
Palacios *et al.*, 2019 [56]	SR (30 studies)	7,033		Supplementing pregnant women with vitamin D alone probably reduces the risk of preeclampsia
Palacios *et al.*, 2024 [148]	SR (10 studies)	N/A		Overall, it remains uncertain whether vitamin D supplementation alone (8 studies, 2,313 women) effectively prevents pregnancy-related hypertension, GDM, preterm birth, or kidney disease
Bialy *et al.*, 2020 [146]	SR (13 SRs)	From 16 To 12,861		RCTs have not shown significant benefits of vitamin D in relation to preterm birth, preeclampsia, stillbirth, low birth weight, caesarean section A significant difference was found for LGA
Asgharian *et al.* 2020 [164]	RCT	64	64	The probiotics supplementation has some beneficial effects on glucose metabolism (fasting plasma glucose, and 2-h OGTT) There were not statistically significant differences between the groups regarding the preterm delivery and other maternal and infant outcomes

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Lindsay *et al.*, 2015 [165]	RCT	48	52	There were no differences between the probiotic and placebo groups in postintervention fasting plasma glucose, requirement for pharmacological therapy or birth weigh
Jamilian *et al.*, 2019 [170]	RCT	87		Vitamin D and probiotic cosupplementation significantly reduced fasting plasma glucose, serum insulin levels, HOMA-IR Vitamin D and probiotic cosupplementation resulted in a significant reduction in TGs
Maktabi *et al.*, 2018 [156]	RCT	30	30	Magnesium and vitamin E supplements in women with GDM resulted in significantly lower fasting plasma glucose levels, serum insulin levels, and HOMA-IR It also results in a significant reduction in serum TGs, but does not affect HDL-C levels
Taghizadeh *et al.*, 2016 [157]	RCT	30	30	Concomitant supplementation with omega-3 fatty acids and vitamin E in GDM had a beneficial effect on glucose homeostasis, serum TGs, VLDL-C and HDL-C, but did not affect total cholesterol and LDL-C levels
Kijmanawat *et al.*, 2019 [163]	RCT	29	29	Four weeks of probiotic supplements in women with diet-controlled GDM in the late second and early third trimester lowered fasting -plasma glucose and increased insulin sensitivity
Dolatkhah *et al.*, 2015 [162]	RCT	29	27	The probiotic supplement appeared to affect glucose metabolism (decreased FPG, HOMA-IR) and weight gain among pregnant women with GDM
Hajifaraji *et al.*, 2018 [168]	RCT	27	29	In women with GDM, the levels of C-reactive protein and tumour necrosis factor, which were highly sensitive, improved in the probiotic group compared to the placebo group
Asemi *et al.*, 2015 [149]	RCT	22	23	Vitamin D supplementation for a short period (6 weeks) in pregnant women with GDM resulted in a reduction in maternal polyhydration and infant hyperbilirubinemia compared to placebo

* SR – systematic review, MA – meta-analysis, NMA – network meta-analysis, RCT – randomized controlled trial, OS – observational study

Table S13. Evidence of the effects of a low glycaemic index (low-GI) diet on the health outcomes of women with GDM and their children.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Ojo *et al.*, 2019 [173]	SR & MA (9 RCTs)	41	42	A low-GI diet significantly reduced interleukin-6 levels in patients with T2DM compared to a higher GI diet The effect of diet on lipid profiles in patients with GDM was not consistent
Wong *et al.*, 2024 [140]	SR & MA (13 RCTs)	877		Low-carbohydrate and low-GI diets do not differ from usual care for most maternal and foetal outcomes in GDM
Zhang *et al.*, 2018 [176]	MA (11 RCTs)	1,985		Compared to control diets, low-GI diets significantly reduced fasting blood glucose, 2-hour postprandial glucose levels Lower GWG and birth weight were also observed, but without significant statistical differences Low-GI diets did not affect other maternal and neonatal outcomes
Xu *et al.*, 2020 [172]	MA (RCTs)	532		Compared to the control intervention in GDM, a low-GI diet significantly lowers 2-hour postprandial glucose levels, with no effect on fasting plasma glucose, HbA1c, birth weight, macrosomia, and insulin requirements
Wei *et al.*, 2016 [175]	MA (5 RCTs)	302		Low-GI diets reduced the risk of macrosomia in patients with GDM, and low-GI diets with added dietary fibre further reduced the risk of macrosomia
Mohd Yusof *et al.*, 2014 [179]	SR (3 studies)	104	105	After following a low-GI diet, a tendency to lower birth weight was observed
Moses *et al.*, 2014 [178]	RCT	576		Comparison of a dietary intervention promoting a low-GI diet with a diet promoting healthy eating in pregnancy did not show any significant differences in birth weight or foetal percentile
Zhang *et al.*, 2019 [177]	RCT	200	200	Individualized low-GI dietary consultations do not have a significant effect on maternal or neonatal insulin resistance compared to standard nutritional consultations with overweight or obese pregnant women
Hu *et al.*, 2014 [171]	RCT	66	74	A low-GI diet significantly reduces postprandial glucose levels in women with GDM
Sanpawithayakul *et al.*, 2023 [174]	RCT	96		The use of rice with a low or moderate GI in GDM reduces the number of patients requiring insulin therapy

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial

Table S14. Evidence for the effects of the Mediterranean Diet (MedDiet) and Dietary Approaches to Stop Hypertension (DASH) on the health outcomes of women with GDM and their children.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Ha *et al.*, 2017 [182]	SR & MA (21 studies)	1,865		In the absence of advice on weight gain in pregnancy, a DASH-style diet appears to be optimal for fasting glucose
Li *et al.*, 2020 [181]	MA (6 RCTs)	300	298	The adherence of pregnant women with cardiometabolic disorders to DASH eating pattern has a significant effect on decreasing fasting plasma glucose levels, ponderal index, incidence of preeclampsia, foetal macrosomia, LGA, and newborn head circumference
Amati *et al.*, 2019 [184]	SR (22 studies)	From 50 To 9,885		The MedDiet in pregnancy and early infancy is safe and beneficial for a wide range of maternal and offspring outcomes
Han *et al.*, 2017 [141]	SR (3 studies)	136		No clear differences were observed for preeclampsia between patients on DASH diet compared to the control diet
	SR (2 studies)	86		There were fewer caesarean sections in the DASH group
Melero *et al.*, 2023 [185]	RCT	369	1,031	An intervention based on MedDiet principles and supplemented with extra virgin olive oil and nuts started early in pregnancy has metabolic benefits up to 3 years postpartum compared to a nutritional intervention started after delivery
Assaf-Balut *et al.*, 2018 [83]	RCT	874		High nutritional adherence to a MedDiet in the late first trimester of pregnancy is associated with a reduction in caesarean sections, perineal injuries, pregnancy-induced hypertension, preeclampsia, prematurity, LGA and/or SGA and urinary tract infections
Melero *et al.*, 2020 [80]	RCT	128	132	A MedDiet-based intervention reduces several adverse maternal-foetal outcomes in Hispanic women living in Spain
Asemi *et al.*, 2014 [180]	RCT	26	26	Infants born to mothers on the DASH diet had significantly lower body weight, head circumference, BMI, compared to children born to mothers on the control diet The proportion of subjects who had to start insulin therapy after the intervention differed significantly between the two groups
Al Wattar *et al.*, 2019 [76]	MRT	593	612	An individualized MedDiet in pregnancy does not reduce the overall risk of adverse complications for mother and offspring, but it may reduce weight gain in pregnancy

* SR – systematic review, MA – meta-analysis, RCT – randomized controlled trial, MRT – multicentre randomized trial

Table S15. Evidence of the effects of other diets (not covered in Tables S13 and S14) on the health outcomes of women with GDM and their children.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Papadopoulou *et al.*, 2025 [189]	SR & MA (8 studies)	72,284		Following a strict vegetarian diet during pregnancy was associated with an increased risk of SGA babies and LBW Dietary guidelines emphasizing adequate intake of critical nutrients should be developed to mitigate these risks
Tan *et al.*, 2019 [135]	MA (19 studies)	770	1,675	The overall estimated relation between vegetarian diet in pregnancy and LBW was marginally significant
Han *et al.*, 2017 [141]	SR (1 study)	27		Comparison of the effects of a diet rich in unsaturated fats with a diet low in unsaturated fats showed no clear differences with respect to: LGA, preeclampsia, prevalence of hypertension in pregnancy, and number of caesarean sections
Gadgil *et al.*, 2019 [188]	RCT	1,220		Higher dietary quality at GDM diagnosis is associated with optimal overall glycaemic control, especially postprandial glycaemic control
Wang *et al.*, 2015 [186]	RCT	41	43	Appropriately increasing the intake of polyunsaturated fatty acids may be beneficial for women with GDM Comparison of pregnancy outcomes, birth weight of the baby, incidence of macrosomia, and weight gain in pregnancy did not differ significantly between the groups
Hernandez *et al.*, 2014 [74]	RCT	16		This trial randomizing isocaloric diets and using continuous glucose monitoring found that complex CHO liberalization and fat reduction still achieve glycemia below current treatment goals and lower postprandial FFAs
Hernandez *et al.*, 2016 [91]	RCT	6	6	This pilot intervention demonstrated that women with GDM randomized to CHOICE diet compared with the conventional low-CHO/higher-fat diet have greater adipose tissue insulin sensitivity
Barbour *et al.*, 2018 [187]	CT	54		Women with obesity in early pregnancy (14-16 weeks) already have higher fasting and postprandial glucose and insulin, and 30-40% higher triglycerides than normal-weight women later (26-28 weeks) despite a controlled diet

* MA – meta-analysis, RCT – randomized controlled trial, CT – clinical trial

Table S16. Effectiveness of telemedicine support in patients with GDM.

Author, year, ref.	Design *	Objectives	Study group		Technology	Outcomes
			Interv.	Control		
Halligan *et al.*, 2021 [193]	SR &MA (14 RCTs in qualitative and 6 RCTs in quantitative analysis)	To analyse digital and telemedicine interventions targeting weight loss and reductions in BMI	3,764		Various systems: smartphone apps, wearable devices, Web-based programs plus standard education, SMS, telephone calls, emails, and printed materials	There was a clinically significant but statistically insignificant improvement in BMI and body weight compared to the control groups
Xie *et al.*, 2020 [203]	MA (32 RCTs)	To assess the effectiveness of telemedicine interventions on glycaemic control and pregnancy outcomes in GDM	5,108		Web-based systems (7), health devices (3), health apps (7), and WeChat (15)	Improvements in controlling HbA1c, fasting and 2-hour postprandial blood glucose were noted Lower incidences of caesarean section, neonatal hypoglycaemia, premature rupture of membranes macrosomia, pregnancy-induced hypertension or preeclampsia, preterm birth neonatal asphyxia were shown
Adesina *et al.*, 2021 [190]	SR (16 studies incl. 12 RCTs)	To assess the effectiveness of digital tools in promoting healthy diet, lifestyle changes, and monitoring blood glucose levels	1,707		Digital tools focusing on dietary and/or lifestyle management of GDM	Digital tools beneficially supported the improvement of lifestyles in terms of healthy eating and health behaviours
Eberle *et al.*, 2021 [200]	SR (6 RCTs, CCT)	To investigate clinical effectiveness of specific mHealth apps on clinical health-related short and long-term outcomes in mother and child	408	405	Support of medical procedures and health care measures through mobile devices such as smartphones	Compared to control groups, there was a trend of lower fasting and 2-hour postprandial blood glucose levels, and more vaginal births and fewer (emergency) caesarean sections
Eberle and Stichling, 2021 [201]	SR (4 SRs or MAs, 6 RCTs, 1 NRCT)	To assess clinical efficacy of telemetry interventions (glycemia, visits, satisfaction, adherence, maternal complications during pregnancy and delivery, as well as foetal and neonatal outcomes)	563		Real-time video communication, real-time audio communication, asynchronous communication via email, SMS text messaging, server or home gateway, and web-based platforms, and combined communication	Improved glycaemic control, decreased number of scheduled and unscheduled visits, and some foetal and neonatal short-term outcomes were revealed

Author, year, ref.	Design *	Objectives	Study group		Technology	Outcomes
			Interv.	Control		
Zhang *et al.*, 2019 [177]	RCT	To investigate the effectiveness of individualized Low-GI dietary consultations based on the assessment of glycaemic load in the diet and the impact of the applied program on maternal and neonatal insulin resistance	200	200	DietGI mobile phone app with food type assessment and GI and glycaemic load calculation	Individualized dietary consultations did not result in a significant difference in maternal or neonatal insulin levels compared to the control group
Yew *et al.*, 2021 [197]	RCT	To prevent excessive weight gain in pregnancy (EGWG) and improve glycaemic control and impact on maternal and neonatal outcomes	170	170	Smartphone app-based lifestyle coaching program	Improved maternal glycaemic control was noted Overall neonatal complications were significantly reduced in the intervention group, but no reduced EGWG was shown
Surendran *et al.*, 2021 [195]	RCT	To evaluate perceived usefulness with using a mobile health app	170	170	The app has three key components: interactive educational lessons, tracking tools (self-monitoring blood glucose, physical activity, diet, and weight), and coaching	A largely automated mHealth app has the potential to promote self-awareness of healthy lifestyle choices
Guo *et al.*, 2019 [192] and Tian *et al.*, 2021 [196]	RCT	To evaluate the blood glucose control and impact on pregnancy outcomes	147	162	Health education and lifestyle management delivered through WeChat	More effective blood glucose control in the intervention than in the control group (standard clinical prenatal care) Differences in pregnancy outcomes were not significant
Borgen *et al.*, 2019 [207]	RCT	To assess the effect of the Pregnant+ app on the 2-hour glucose levels of the routine postpartum OGTT among women with GDM	115	123	The Pregnant+ app was designed to provide information about GDM, and promote physical activity and a healthy diet	The Pregnant+ app had no effect on 2-hour glucose levels of OGTT No differences in birth weight and obstetric complications were noted
Garnweidner-Holme *et al.*, 2020 [191]	RCT	To determine whether the Pregnant+ app with targeted dietary information and blood glucose monitoring had an effect on the eating behaviour of women with GDM	115	123	The Pregnant+ app promoted 10 diet tips for GDM	The Pregnant+ app did not have a beneficial effect on the GDM women diet
Kytö *et al.*, 2024 [198]	RCT	To investigate if a periodic mobile application with wearable	76	72	eMOM system with a continuous glucose monitor, an activity	Self-tracking of lifestyle and glucaemia without additional guidance

Author, year, ref.	Design *	Objectives	Study group		Technology	Outcomes
			Interv.	Control		
		sensors improves maternal and neonatal outcomes among women with diet-controlled GDM without additional guidance from healthcare personnel			tracker, and a food diary 1 week/month until delivery	improves self-management and the treatment of GDM, which also benefits newborns
Miremberg *et al.*, 2018 [202]	RCT	To investigate the impact of a smartphone-based platform for daily feedback and communication between patients with GDM and their doctors on patient adherence, glycaemic control, pregnancy outcomes, and patient satisfaction	60	90	Daily feedback on patients' compliance and glycaemic control via an app installed on smartphones	The intervention group showed higher level of compliance, lower mean blood glucose, lower rates of off-target measurements both fasting and 1-hour postprandial, and lower rate of pregnancies requiring insulin treatment
Munda *et al.*, 2023 [194]	RCT	To compare the outcomes of telemedicine care and the standard care in women with GDM	54	52	Sending glucose readings via an app installed on a smartphone and monthly individual video calls replacing on-site visits	The intervention group showed less postprandial blood glucose results above the target and lower average postprandial glucose Percentage of caesarean section was lower in the intervention group
Rasekaba *et al.*, 2018 [206]	RCT	To explore the effects of telemedicine supported GDM care on health service utilization and costs as well as maternal and foetal outcomes	61	34	A web-based system was used by patients to share data with healthcare professionals. Nurses provided individualized feedback via the messaging feature	Telemedicine care showed no impact on service utilization and costs The intervention and control groups achieved similar clinical outcomes, but optimal glycemic control was reached faster in the intervention group

* SR – systematic review, CCT – clinical controlled trial, MA – meta-analysis, RCT – randomized controlled trial, NRCT – nonrandomized controlled trial

Table S17. Evidence for the risk of developing type 2 diabetes (T2DM) after GDM in relation to lifestyle interventions.

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Vounzoulaki *et al.*, 2020 [214]	SR & MA (20 studies)	67,956	1,264,417	Women with a history of GDM appear to have a nearly 10-fold higher risk of developing T2DM than those with a normoglycemic pregnancy
Juan *et al.*, 2022 [215]	SR & MA	21,978	39,954	Women with GDM had 3.69 times higher risk of developing prediabetes (including impaired fasting glucose and/or impaired glucose tolerance) than controls
Gilinsky *et al.*, 2015 [227]	SR & MA (11 studies)	2,736		There is minimal evidence for a change in physical activity following lifestyle intervention in women with prior GDM, with six out of eleven studies reporting favourable change Lifestyle interventions did not change fasting blood glucose
Tanase-Nakao *et al.*, 2017 [232]	SR & MA (9 studies)	From 122 To 1,035		Longer and exclusive lactation may be beneficial for T2DM prevention in women with previous GDM
Li *et al.*, 2021 [222]	SR & MA	1,733		Lifestyle intervention initiated within 3 years after delivery was highly effective in reducing the risk of postpartum diabetes
Bellou *et al.*, 2018 [224]	UR of MAs (86 studies)	From 2,892 To 17,782		Unhealthy dietary pattern (increased consumption of processed meat and sugar-sweetened beverages, decreased intake of whole grains, coffee and heme iron, and low adherence to a healthy dietary pattern), low level of education and conscientiousness, decreased physical activity, high sedentary time and duration of television watching, low alcohol drinking, smoking, air pollution, and some medical conditions (high systolic blood pressure, late menarche age, gestational diabetes, metabolic syndrome, preterm birth) presented robust evidence for increased risk of T2DM
Guo *et al.*, 2021 [230]	MA (6 studies)	1,516		Study suggests that higher potato intake is associated with higher T2DM risk
O'Reilly *et al.*, 2020 [43]	SR (38 studies)	12,509		Interventional studies on lifestyle and postpartum diabetes in women with GDM showed that health status was the predominant risk factor for diabetes
Winkler Pedersen *et al.*, 2017 [226]	SR (10 studies)	3,642		This study indicates that intervention is superior to no intervention in prevention of T2DM among women with previous GDM (no specific intervention or intervention components were found superior)
Dennison *et al.*, 2019 [216]	SR (21 studies)	N/A		Six themes of interacting factors were identified, influencing postpartum behaviour Many factors hinder healthy lifestyles after gestational diabetes, yet how women interpret them can motivate or prevent changes that reduce diabetes risk
D'Arcy *et al.*, 2020 [225]	SR (5 studies)	194	189	Findings from two cross-sectional and one prospective study indicated poorer diabetes outcomes for women with higher intakes of branched-chain amino acids, total and heme iron, and a diet relatively low in CHOs and high in animal fat and protein, and better outcomes among those consuming diets rich in fruit, vegetables, nuts, fish, and legumes, and low in red and processed meats and sugar-sweetened beverages, after adjustment for confounders, including BMI
Ferrara *et al.*, 2016 [218]	RCT	1,193	1,087	A Diabetes Prevention Program (DPP)-derived lifestyle intervention modestly reduced postpartum weight retention and increased vigorous-intensity physical activity

Author, year, ref.	Design *	Study group		Outcomes Intervention Effect
		Interv.	Control	
Tandon *et al.*, 2022 [210]	RCT	800	801	The lifestyle intervention, compared with usual care, did not reduce worsening subsequent glycaemic status
Hu *et al.*, 2012 [220]	RCT	568	594	The Tianjin GDM Prevention Program with lifestyle intervention resulted in larger body weight decrease in the intervention group. Improved behaviours including increased leisure time activity and dietary fibre and fat intake were noted
Lee *et al.*, 2022 [228]	RCT	130	168	Two years after delivery incidence of T2DM was 20% in the intervention arm (system-based intervention) compared to 17% in the control arm (not statistically significant)
Pérez-Ferre *et al.*, 2015 [223]	RCT	126	111	Lifestyle intervention was effective for the prevention of glucose disorders in women with prior GDM Body weight gain and an unhealthy fat intake pattern were found to be the most predictive factors for the development of glucose disorders
Ferrara *et al.*, 2016 [219]	RCT	96	101	Implementing a lifestyle intervention during pregnancy and extending it into the postpartum period is feasible and may help prevent pregnancy-related weight retention while supporting weight loss in overweight women
Chen *et al.*, 2021 [221]	CS	1,450		Women with GDM have a higher risk of T2DM 4-6 years after indicator pregnancy Prepregnancy overweight and obesity and prepregnancy overweight and obesity increase the risk of postpartum dysglycaemia

* SR – systematic review, UR – umbrella review, MA – meta-analysis, RCT – randomized controlled trial, CS – cohort study