| Author (Year) | | exp(b) (95% CI) | Weight% |
|---|---|---|---|
| Suliga, E. (2018) | | 0.47 (0.23, 0.97) | 0.28 |
| Hadia Radwan(LMD score) (2021) | | 0.40 (0.16, 0.99) | 0.18 |
| Silva-del Valle, M. A. (2013) | | 0.74 (0.55, 1.00) | 1.56 |
| Hillesund, E. R. (2014) | | 0.93 (0.87, 0.99) | 15.40 |
| Hillesund, E. R. (2014) | | 1.11 (1.00, 1.23) | 9.17 |
| Shin, D. (2016) | | 2.60 (0.49, 13.81) | 0.05 |
| Tielemans, M. J. (2015) | | 1.11 (0.80, 1.54) | 1.34 |
| Jiajin Hu (2022) | | 1.05 (0.71, 1.55) | 0.95 |
| Monica Ancira-Moreno (2019) | | 0.24 (0.06, 0.97) | 0.08 |
| Ahmad Jayedi (2023) | | 0.91 (0.66, 1.26) | 1.32 |
| Emily F . Liu (2023) | | 0.97 (0.94, 1.00) | 23.15 |
| Emily F . Liu (2023) | | 0.98 (0.95, 1.01) | 23.22 |
| Emily F . Liu (2023) | | 0.99 (0.96, 1.02) | 23.29 |
| Overall, DL ($I^2$ = 54.1%, p = 0.010) | | 0.98 (0.94, 1.01) | 100.00  $P$ = 0.219 |

.0625    1    16

NOTE: Weights are from random-effects model

**Figure S1.**Association between healthy dietary pattern and excessive gestational weight gain in overall analysis.
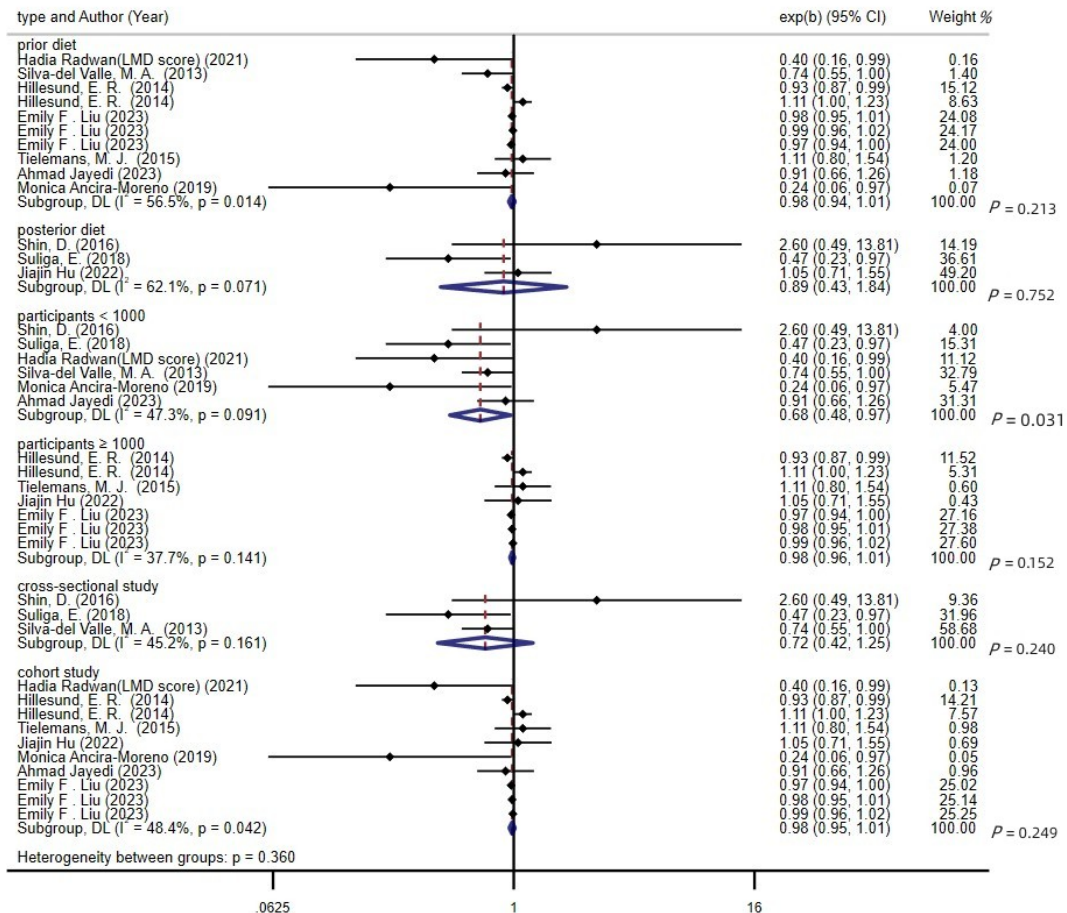
**Figure S2.** Subgroups analysis of association between healthy dietary pattern and excessive gestational weight gain according to diet assessment, sample size and study design.
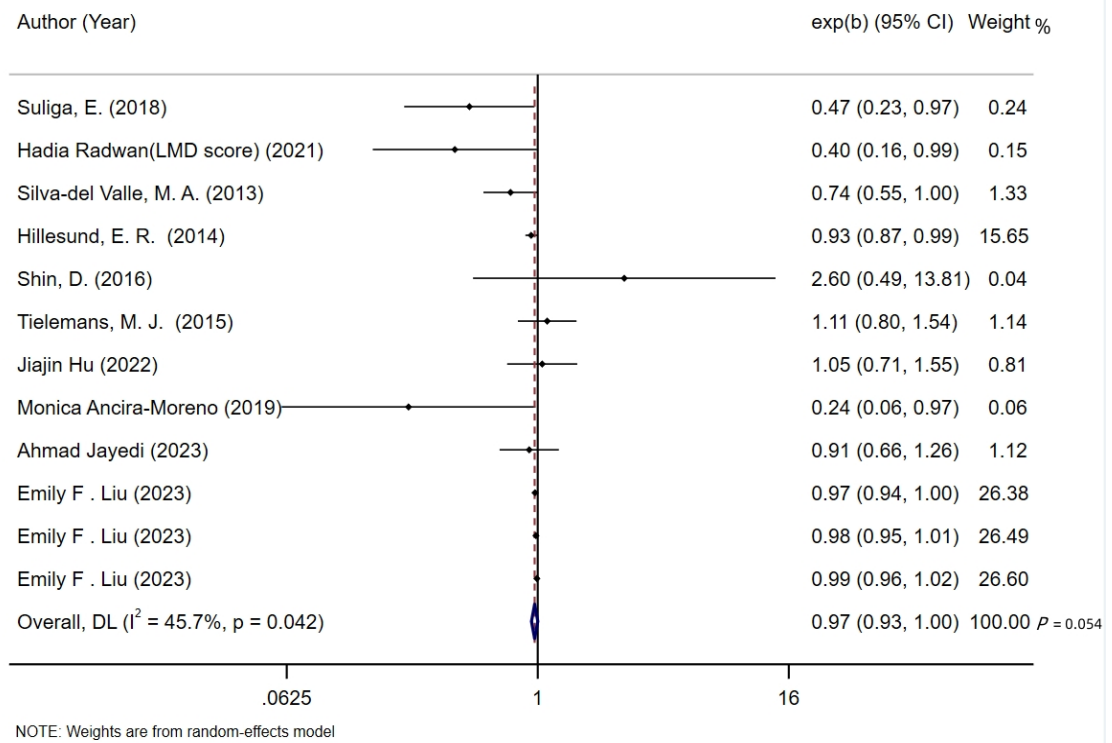
| Author (Year) | exp(b) (95% CI) | Weight % |
|---|---|---|
| Suliga, E. (2018) | 0.47 (0.23, 0.97) | 0.24 |
| Hadia Radwan(LMD score) (2021) | 0.40 (0.16, 0.99) | 0.15 |
| Silva-del Valle, M. A. (2013) | 0.74 (0.55, 1.00) | 1.33 |
| Hillesund, E. R. (2014) | 0.93 (0.87, 0.99) | 15.65 |
| Shin, D. (2016) | 2.60 (0.49, 13.81) | 0.04 |
| Tielemans, M. J. (2015) | 1.11 (0.80, 1.54) | 1.14 |
| Jiajin Hu (2022) | 1.05 (0.71, 1.55) | 0.81 |
| Monica Ancira-Moreno (2019) | 0.24 (0.06, 0.97) | 0.06 |
| Ahmad Jayedi (2023) | 0.91 (0.66, 1.26) | 1.12 |
| Emily F . Liu (2023) | 0.97 (0.94, 1.00) | 26.38 |
| Emily F . Liu (2023) | 0.98 (0.95, 1.01) | 26.49 |
| Emily F . Liu (2023) | 0.99 (0.96, 1.02) | 26.60 |
| Overall, DL ($I^2$ = 45.7%, p = 0.042) | 0.97 (0.93, 1.00) | 100.00 $P = 0.054$ |

.0625   1   16

NOTE: Weights are from random-effects model

**Figure S3.**Sensitive analysis of association between healthy dietary pattern and excessive gestational weight gain in overall analysis after excluding one record in overweight participants.
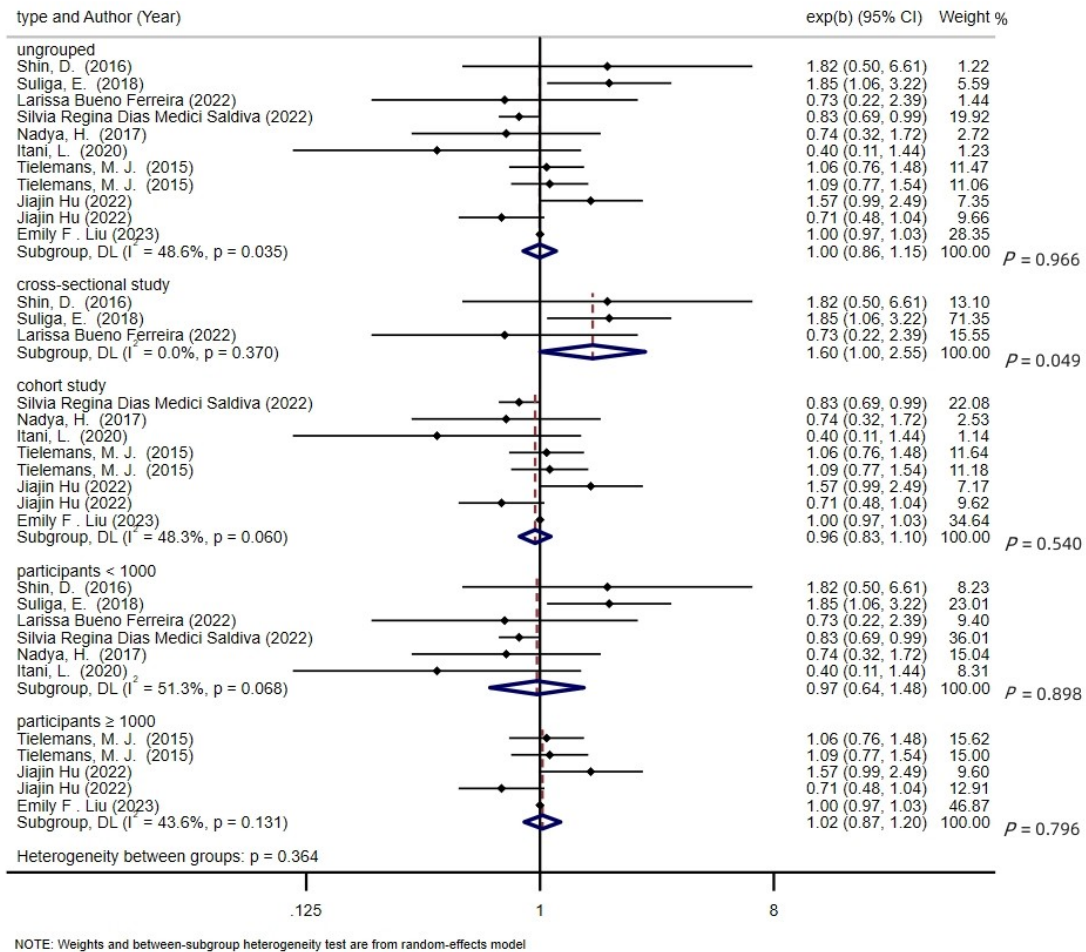
**Figure S4.** Association between mixed dietary pattern and excessive gestational weight gain according to study design and sample size.
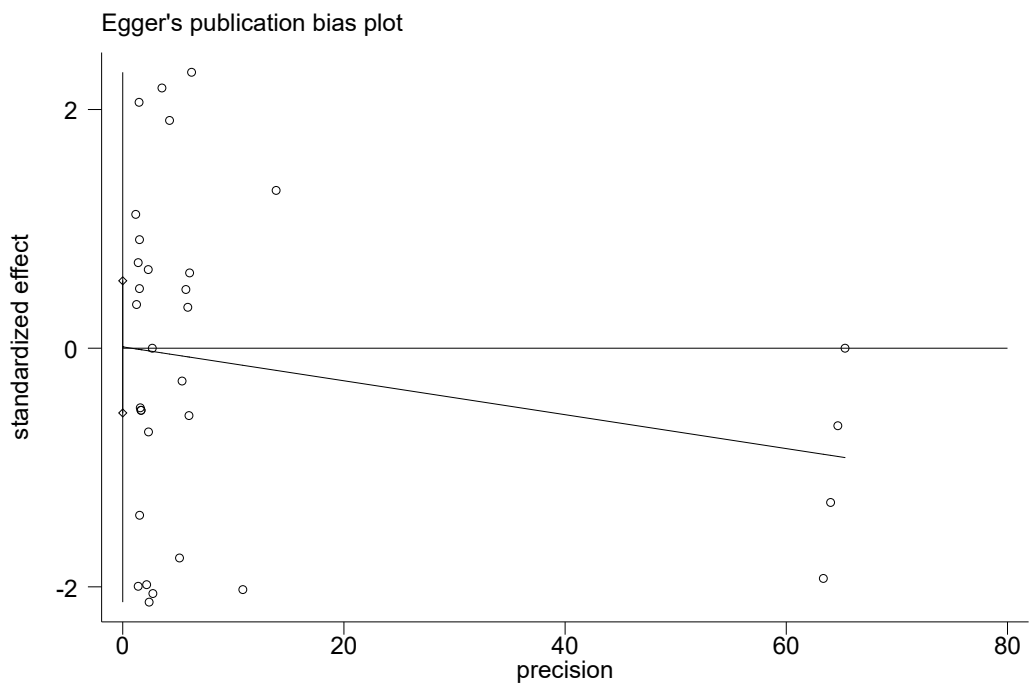
**Figure S5.** Publication bias using Egger's test.

**Table S1.Classification of dietary patterns of 12 studies included in the meta-analysis.**

| Study | Category | Dietary pattern | Food |
|---|---|---|---|
| Shin, D. et al[18] | Mixed | Mixed | Butter, cold breakfast cereals, cured meat, dairy products, fruit drinks, fruits, high-energy drinks, margarine, meat, nuts and seeds, pizza, potatoes, refined grains, salad dressings, snacks, soups, sweets, tomatoes, whole grain, cheese, other vegetables, and poultry |
| | Healthy | Healthy | Dairy products, dark green vegetables, other vegetables eggs, fruits, legumes, nuts and seeds, oils, poultry, seafood, and tomatoes |
| | Unhealthy | Western | Added sugar, beer, butter, cheese, cured meat, fruit drinks, liquor, margarine, meat, pizza, salad dressing, and solid fats |
| Silva-del Valle, M. A. et al[16] | Healthy | Mediterranean diet | Vegetables, whole cereals, nuts, potatoes, olive oil and meat products |
| Suliga, E. et al[22] | Mixed | Varied | Fruit, fat in total, cereals in total, snacking between meals, vegetables, milk and dairy products, fruit juice, and meat and meat-based products |
| | Healthy | Prudent | Whole grains, vegetables, legumes, sea fish, milk, dairy products, more drinks in total |
| | Unhealthy | Unhealthy | Fast food, alcohol, sugary fizzy drinks, cake, sweets, and coffee |
| Itani, L. et al[20] | Mixed | Diverse | Fruits, vegetables, mixed dishes, meat, dairy, grains, legumes and nuts, fats and oils, hot beverages, and fast food |
| | Unhealthy | Western | sweets, sweetened beverages, added sugars, fast food, eggs and offal |
| Hillesund, E. R. et al[24] | Healthy | New Nordic Diet | Free-range livestock, rapeseed oil, legumes, nuts and seeds, fresh herbs, seaweeds, wild plants and mushrooms |
| Tielemans, M. J. et al[19] | Mixed | Vegetable, oil and fish | vegetables, fish and shellfish, vegetable oils, alcoholic beverages and legumes |
| | Mixed | Nuts, high-fiber cereals and soy | Fruits, cereals—high fiber, coffee and tea, nuts, seeds and olives and soy products |
| | Healthy | Dutch Healthy Diet Index | Vegetable, fruit, dietary fiber, fish, saturated fatty acids and sodium |
| | Unhealthy | Margarine, sugar and snacks | Cereals—high fiber, meat and meat products, margarine and butter, sugar and confectionary and cakes, snacks, condiments and sauces, nuts, seeds and olives |
| Hadia Radwan. et al[17] | Healthy | Mediterranean diet | Beans, rice and lower intakes of fast food/snacks, candies/table sugar and processed meats/bacon. |

| | | | |
|---|---|---|---|
| Larissa Bueno Ferreira. *et al*[28] | Mixed | Pattern 1 | Meats and egg, vegetables, olive oil, and processed meat |
| | Unhealthy | Pattern 2 | Sweets, snacks and cookies, |
| | Unhealthy | Pattern 3 | Cereals and breads, processed fats, coffee and tea |
| | Unhealthy | Pattern 4 | Tubers, soft drinks, and instant noodles |
| Jiajin Hu. *et al*[21] | Mixed | Traditional pattern | Tubers, vegetables, fruits, red meat, and rice |
| | Mixed | High protein pattern | Fried foods, beans and bean products, dairy products, and fruits |
| | Healthy | Milk-nut–seafood pattern | Milk, nuts, shrimps, crabs and mussels, fruits, dairy products, eggs and egg products, pastry and candy, and sweet beverages |
| | Unhealthy | Sweet foods pattern | Sweet beverages, pastry and candy, shrimps, crabs and mussels, and fruits |
| Nadya, H. et al[29] | Unhealthy | Common-Brazilian | Higher intakes of beans, rice and lower intakes of fast food, snacks, candies/table sugar, and processed meats/bacon. |
| | Mixed | Western | Higher intakes of fast food/snacks, processed meat/bacon, lower intakes of noodles/ pasta/ roots/ tubers, and sodas |
| Ancira-Moreno, M. et al[25] | Healthy | Maternal Diet Quality Score | Polyunsaturated fats, added sugars, fruits and vegetables, red meat, low fat dairy products, legumes, and foods high in saturated fat and/or added sugar. |
| Silvia Regina Dias Medici Saldiva. et al[30] | Mixed | Brazilian Traditional | Vinaigrette, French bread, butter and margarine, white rice, beans and lentils, fried beef, chicken, eggs, oil, and salad dressing. |
| Ahmad Jayedi. et al[26] | Healthy | Healthy plant-based diet | Higher intake of fruits, lower intake  of energy, carbohydrate, total protein, total fat, SFA, MUFA, PUFA, magnesium, calcium, total grains, dairy, red and processed meats, poultry, and egg. |
| | Unhealthy | Unhealthy plant-based diet | Individuals in the highest quartile had lower intake of energy, carbohydrate, total protein, total fat, dietary fiber, SFA, MUFA, PUFA, vitamin C, magnesium, calcium, dairy, fruit, vegetable, legumes and nuts, red and processed meats, poultry, and egg than those in the lowest quartile. |
| Emily F . Liu. et al[27] | Healthy | Healthy Eating Index 2010 | Total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, fatty acids; and three moderation components (i.e., recommended decreased intake): refined grains, sodium, and empty calories. |

| | | |
|---|---|---|
| Healthy | DietaryApproaches to StopHypertension | Adequacy components are fruits, vegetables, nuts and legumes, low-fat dairy products, and whole grains, moderation components are sodium, red and processed meats, and sweetened beverages. |
| Healthy | alternate Mediterranean Diet | Components include alcohol, red and processed meat, fish, whole grains, legumes, nuts, fruits, vegetables, and monounsaturated to saturated fat ratios. |
| MIxed | Empirical Dietary Inflammatory Pattern | Components are considered inflammatory, including processed meat, red meat, organ meat, other fish, other vegetables, refined grains, high-energy beverages, low-energy beverages, and tomatoes; and nine are considered anti-inflammatory, including beer, wine, tea, coffee, dark yellow vegetables, leafy green vegetables, snacks, fruit juice, and pizza. |

# NOS

| First author | Publisher year | Selection | Comparability | Outcome | Total |
|---|---|---|---|---|---|
| Itani, L. | 2020 | ** | * | ** | ***** |
| Hillesund, E. R. | 2014 | ** | ** | ** | ****** |
| Tielemans, M. J. | 2015 | ** | ** | ** | ****** |
| Nadya, H. | 2017 | ** | ** | ** | ****** |
| Hadia Radwan. | 2021 | ** | * | ** | ***** |
| Jiajin Hu. | 2022 | ** | ** | ** | ****** |
| Saldiva, Srdm | 2022 | ** | - | ** | **** |
| Ancira-Moreno, M. | 2019 | ** | ** | ** | ****** |
| Silvia Regina Dias Medici Saldiva. | 2022 | ** | ** | ** | ****** |
| Ahmad Jayedi. | 2023 | ** | * | ** | ***** |
| Emily F . Liu | 2023 | ** | ** | ** | ****** |

**Table S2.Dietary patterns and gestational weight gain: Assessment of Cohort Study Quality**

# AHQR

| Item | First author | Publisher year | Score | Total |
|---|---|---|---|---|
| Define the source of information (survey, record review) | Shin, D. | 2016 | 1 | |
| | Silva-del Valle, M. A. | 2013 | 1 | |
| | Suliga, E. | 2018 | 1 | |
| | Larissa Bueno Ferreira. | 2022 | 1 | |
| List inclusion and exclusion criteria for exposed and unexposed subjects (cases and controls) or refer to previous publications | Shin, D. | 2016 | 0 | |
| | Silva-del Valle, M. A. | 2013 | 0 | |
| | Suliga, E. | 2018 | 0 | |
| | Larissa Bueno Ferreira. | 2022 | 0 | |
| Indicate time period used for identifying patients | Shin, D. | 2016 | 1 | |
| | Silva-del Valle, M. A. | 2013 | 1 | |
| | Suliga, E. | 2018 | 1 | |
| | Larissa Bueno Ferreira. | 2022 | 1 | |
| Indicate whether or not subjects were consecutive if not population-based | Shin, D. | 2016 | 1 | |
| | Silva-del Valle, M. A. | 2013 | 1 | |
| | Suliga, E. | 2018 | 1 | |
| | Larissa Bueno Ferreira. | 2022 | 1 | |
| Indicate if evaluator of subjective components of study were masked to other aspects of the status of the participants | Shin, D. | 2016 | 1 | |
| | Silva-del Valle, M. A. | 2013 | 1 | |
| | Suliga, E. | 2018 | 1 | |
| | Larissa Bueno Ferreira. | 2022 | 1 | |
| Describe any assessments undertaken for quality assurance purposes (e.g., test/retest of primary outcome measurements) | Shin, D. | 2016 | 1 | Shin, D. 7 |
| | Silva-del Valle, M. A. | 2013 | 1 | Silva-del Valle, M. A. 7 |
| | Suliga, E. | 2018 | 1 | Suliga, E. 7 |
| | Larissa Bueno Ferreira. | 2022 | 1 | Larissa Bueno Ferreira. 7 |
| Explain any patients exclusions from analysis | Shin, D. | 2016 | 1 | |
| | Silva-del Valle, M. A. | 2013 | 1 | |
| | Suliga, E. | 2018 | 1 | |
| | Larissa Bueno Ferreira. | 2022 | 1 | |
| Describe how confounding was assessed and/or controlled | Shin, D. | 2016 | 1 | |
| | Silva-del Valle, M. A. | 2013 | 1 | |
| | Suliga, E. | 2018 | 1 | |
| | Larissa Bueno Ferreira. | 2022 | 1 | |
| If applicable, explain how missing data were handled in the analysis | Shin, D. | 2016 | 0 | |
| | Silva-del Valle, M. A. | 2013 | 0 | |
| | Suliga, E. | 2018 | 0 | |
| | Larissa Bueno Ferreira. | 2022 | 0 | |

| | | | | |
|---|---|---|---|---|
| Summarize patient response rates and completeness of data collection | Shin, D. | 2016 | 0 | |
| | Silva-del Valle, M. A. | 2013 | 0 | |
| | Suliga, E. | 2018 | 0 | |
| | Larissa Bueno Ferreira. | 2022 | 0 | |
| Clarity what follow-up, if any, was expected and the percentage of patients for which incomplete data or follow-up was obtained | Shin, D. | 2016 | 0 | |
| | Silva-del Valle, M. A. | 2013 | 0 | |
| | Suliga, E. | 2018 | 0 | |
| | Larissa Bueno Ferreira. | 2022 | 0 | |

**Table S3.Dietary patterns and gestational weight gain: Assessment of Cross-Sectional Study Quality**

**Table S4. The PRISMA2020 statement: An updated guideline for reporting systematic reviews checklist**

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a systematic review. | Line 1-2, page 1 |
| **ABSTRACT** | | | |
| Abstract | 2 | See the PRISMA 2020 for Abstracts checklist. | Line 27-48, page 2 |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of existing knowledge. | Line 99-103 and 129-130, page 5 |
| Objectives | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | Line 130-134, page 5 |
| **METHODS** | | | |
| Eligibility criteria | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | Line 163-172, page 6 |
| Information sources | 6 | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | Line 156-158, page 6 |
| Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | Line 158-161, page 6 |
| Selection process | 8 | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | Line 164-167, page 6 |

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| Data collection process | 9 | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | Line 175-176, page 6-7 |
| Data items | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | Line 176-178, page 7 |
| | 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | Line 183-194. page 7 |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | Line 215-216, page 8 |
| Effect measures | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | Line 197, page 7 |
| Synthesis methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | Line 183-185, page 7 |
| | 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | Line 214-216, page 8 |
| | 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | Line 213, page 8 |
| | 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | Line 195-201, page 7-8 |
| | 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | Line 216-219, page 8 |

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| | 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | Line 219-223, page 8-9 |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | Line 215-216, page 8 |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | - |
| **RESULTS** | | | |
| Study selection | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | Figure 1 |
| | 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | Line 231-239, page 9 |
| Study characteristics | 17 | Cite each included study and present its characteristics. | Table 1 |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | Line 308-310, page 12, Table S2 and S3 |
| Results of individual studies | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | Figure 2-6 |
| Results of syntheses | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | Line 258-260, 278-280, and |

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| | | | 295-297, page 10-12 |
| | 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | Line 258-304 , page 10-12 |
| | 20c | Present results of all investigations of possible causes of heterogeneity among study results. | Figure 3, 5-6 |
| | 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | Line 263-275, page 10-11 |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | Line 306-308, page 12 |
| Certainty of evidence | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | - |
| **DISCUSSION** | | | |
| Discussion | 23a | Provide a general interpretation of the results in the context of other evidence. | Line 320-373, page 13-15 |
| | 23b | Discuss any limitations of the evidence included in the review. | Line 376-379, page 16 |
| | 23c | Discuss any limitations of the review processes used. | Line 379-390, page 16 |
| | 23d | Discuss implications of the results for practice, policy, and future research. | Line 392-396, page 16 |

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| **OTHER INFORMATION** | | | |
| Registration and protocol | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | Line 138, page 6 |
| | 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | Line 403-404, page 17 |
| | 24c | Describe and explain any amendments to information provided at registration or in the protocol. | - |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | Line 403-407, page 17 |
| Competing interests | 26 | Declare any competing interests of review authors. | Line 408-409, page 17 |
| Availability of data, code and other materials | 27 | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | Line 411-413, page 17 |

**Table S5. The PRISMA2020 statement: An updated guideline for reporting systematic reviews checklist of abstract.**

| Section and Topic | Item # | Checklist item | Reported (Yes/No) |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a systematic review. | Yes |
| **BACKGROUND** | | | |
| Objectives | 2 | Provide an explicit statement of the main objective(s) or question(s) the review addresses. | Yes |
| **METHODS** | | | |
| Eligibility criteria | 3 | Specify the inclusion and exclusion criteria for the review. | Yes |
| Information sources | 4 | Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched. | Yes |
| Risk of bias | 5 | Specify the methods used to assess risk of bias in the included studies. | Yes |
| Synthesis of results | 6 | Specify the methods used to present and synthesise results. | Yes |
| **RESULTS** | | | |
| Included studies | 7 | Give the total number of included studies and participants and summarise relevant characteristics of studies. | Yes |
| Synthesis of results | 8 | Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured). | Yes |
| **DISCUSSION** | | | |
| Limitations of evidence | 9 | Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision). | Yes |
| Interpretation | 10 | Provide a general interpretation of the results and important implications. | No |

| Section and Topic | Item # | Checklist item | Reported (Yes/No) |
|---|---|---|---|
| **OTHER** | | | |
| Funding | 11 | Specify the primary source of funding for the review. | Yes |
| Registration | 12 | Provide the register name and registration number. | Yes |