# PEDIATRICS/ADOLESCENTS SYSTEMATIC REVIEW FOR IFSO/ASMBS GUIDELINES

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IFSO
NAPOLI
2023

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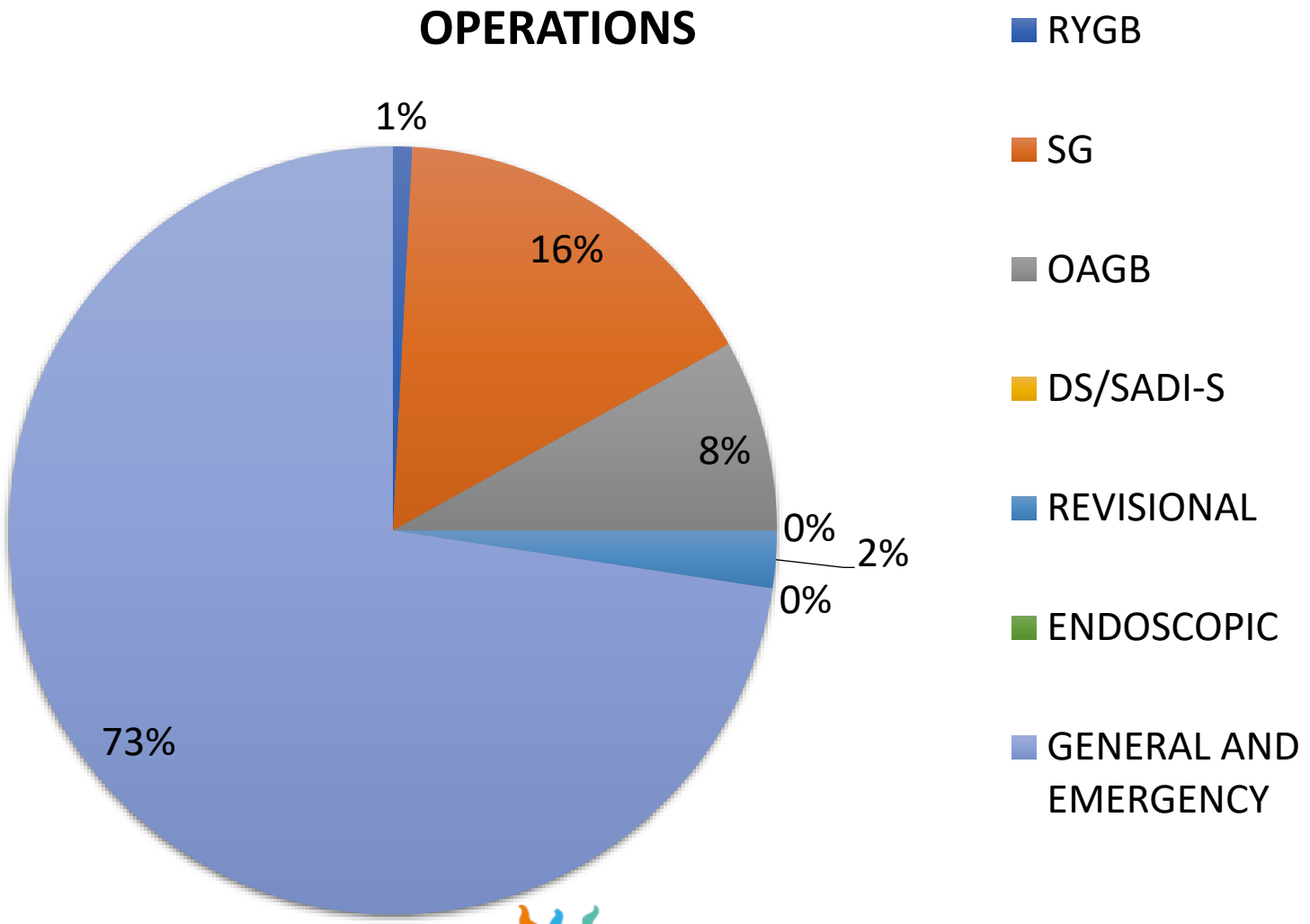


- 100 SG, 50 OAGB, 5 RYGB, 15 REVISIONAL
- (> 500 GENERAL AND EMERGENCY SURGERY PROCEDURES)

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*Obesity Surgery*, **1**, 257–265

# National Institutes of Health Consensus Development Conference Draft Statement on

# Gastrointestinal Surgery for Severe Obesity

# 25–27 March 1991

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ELSEVIER

Check for updates

SURGERY FOR OBESITY AND RELATED DISEASES

Surgery for Obesity and Related Diseases 18 (2022) 1345–1356

Original article

# 2022 American Society for Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO): Indications for Metabolic and Bariatric Surgery

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**Major updates to 1991 National Institutes of Health guidelines for bariatric surgery**

- Metabolic and bariatric surgery (MBS) is recommended for individuals with a body mass index (BMI) $\geq$35 kg/m$^2$, regardless of presence, absence, or severity of co-morbidities.
- MBS should be considered for individuals with metabolic disease and BMI of 30-34.9 kg/m$^2$.
- BMI thresholds should be adjusted in the Asian population such that a BMI $\geq$25 kg/m$^2$ suggests clinical obesity, and individuals with BMI $\geq$27.5 kg/m$^2$ should be offered MBS.
- Long-term results of MBS consistently demonstrate safety and efficacy.
- Appropriately selected children and adolescents should be considered for MBS.

(Surg Obes Relat Dis 2022;18:1345–1356.) 

*Keywords:* Obesity; Metabolic and bariatric surgery; IFSO; ASMBS; Criteria; Indications

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- Children and adolescents with BMI >120% of the 95th percentile and a major co-morbidity, or a BMI >140% of the 95th percentile, should be considered for MBS after evaluation by a multidisciplinary team in a specialty center.

*Dan Eisenberg et al. / Surgery for Obesity and Related Diseases 18 (2022) 1345–1356*

# PEDIATRICS/ADOLESCENTS SYSTEMATIC REVIEW FOR IFSO/ASMBS GUIDELINES

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TWO INTERNATIONAL TEAMS TO **METHODOLOGICALLY SUPPORT** NEW IFSO/ASMBS INDICATIONS

- TEAM ONE: SYSTEMATIC REVIEW OF LITERATURE ACCORDING TO **PRISMA**
- TEAM TWO: **DELPHI** CONSENSUS TO RESOLVE ISSUES NOT RESOLVED BY SYS REV

# PEDIATRICS/ADOLESCENTS SYSTEMATIC REVIEW FOR IFSO/ASMBS GUIDELINES

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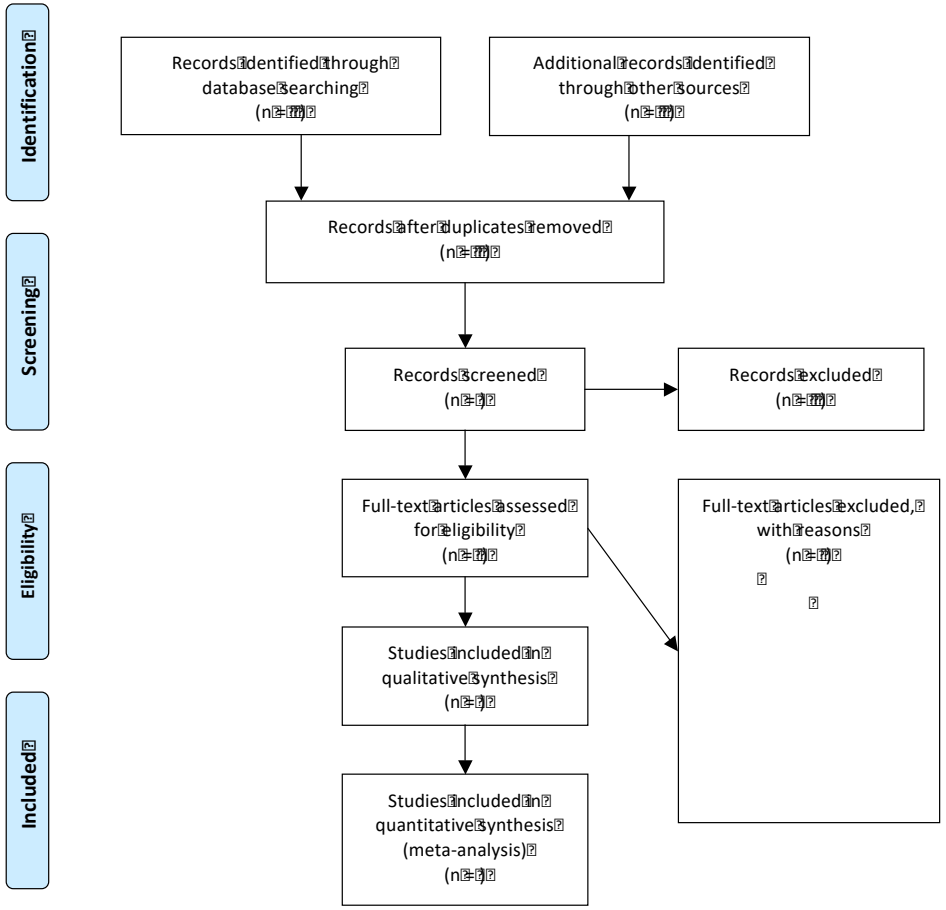
| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a systematic review. | |
| **ABSTRACT** | | | |
| Abstract | 2 | See the PRISMA 2020 for Abstracts checklist. | |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of existing knowledge. | |
| Objectives | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | |
| **METHODS** | | | |
| Eligibility criteria | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | |
| 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. | |
| Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | |
| 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. | |
| 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. | |
| 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. | |
| | 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. | |
| 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. | |
| 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. | |
| 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)). | |
| | 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | |
| | 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | |
| | 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. | |
| | 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | |
| | 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | |
| 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. | |
| | 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | |
| Study characteristics | 17 | Cite each included study and present its characteristics. | |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | |
| 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. | |
| Results of syntheses | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | |
| | 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. | |
| | 20c | Present results of all investigations of possible causes of heterogeneity among study results. | |
| | 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | |
| 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. | |
| | 23b | Discuss any limitations of the evidence included in the review. | |
| | 23c | Discuss any limitations of the review processes used. | |
| | 23d | Discuss implications of the results for practice, policy, and future research. | |
| **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. | |
| | 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | |
| | 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. | |
| Competing interests | 26 | Declare any competing interests of review authors. | |
| 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. | |

*From:* Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

**PRISMA 2009 Flow Diagram**




*From:* Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

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IFSO NAPOLI 2023

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## EXCLUSION CRITERIA

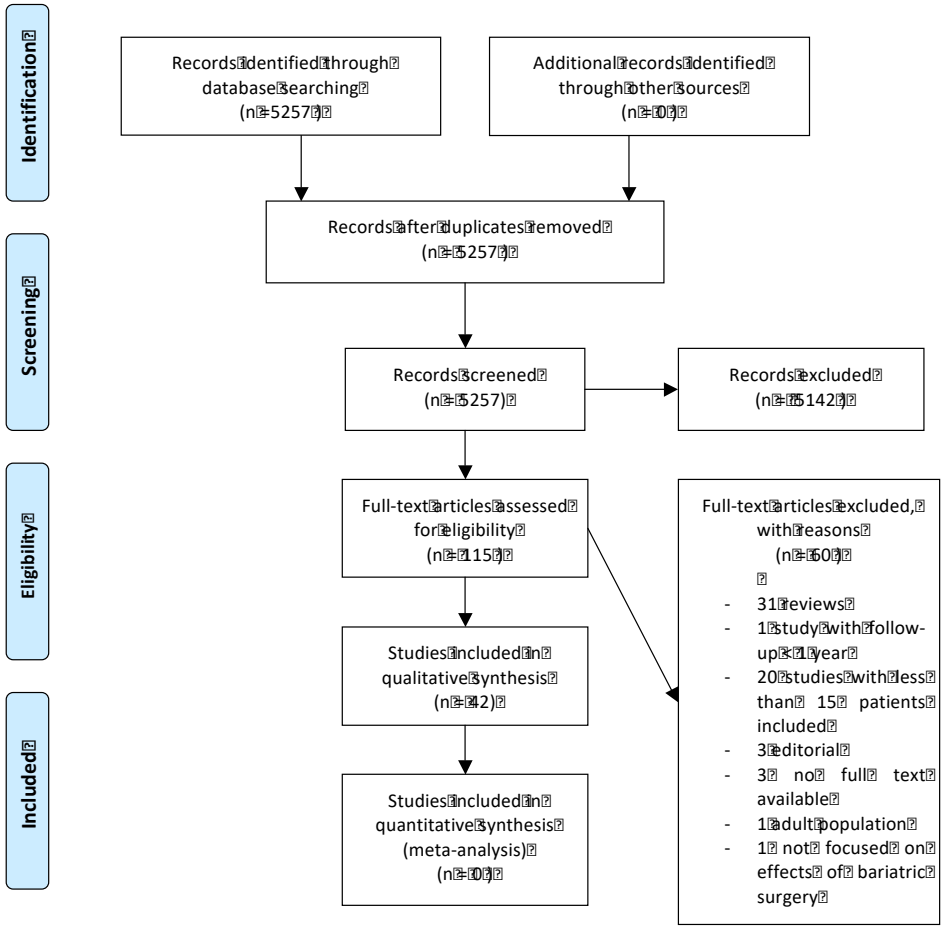
a) Paper not in english language
b) Not available full text
c) Letter to the Editor
d) Follow up less than 12 months
e) Number of patients less than 15
f) Descriptive article
g) Articles before year 2000

## SEARCH STRATEGY

((pediatrics OR adolescents OR childhood OR teenagers) AND (bariatric surgery OR metabolic surgery OR sleeve OR gastric bypass OR gastric banding OR gastric balloon)) NOT (adults)

**PRISMA 2009 Flow Diagram**

**Bariatric/metabolic surgery in paediatrics/adolescents**

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# PEDIATRICS/ADOLESCENTS SYSTEMATIC REVIEW FOR IFSO/ASMBS GUIDELINES

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- **42 PAPERS** (quality assesment: JADAD/MINORS scale)
- ONE RCT
- 7 COMPARATIVE: MBS VS LIFESTYLE MODIFICATIONS
- 10 COMPARATIVE: LAGB VS SG VS RYGB
- ONE COMPARATIVE: LSG IN PRADER-WILLI SYNDROME (PWS) VS NON PWS
- ONE CASE SERIES: OAGB IN PEDIATRICS/ADOLESCENTS

| Grade of Recommendation | Level of Evidence | Type of Study |
|---|---|---|
| A | 1a | Systematic review of (homogeneous) randomized controlled trials |
| A | 1b | Individual randomized controlled trials (with narrow confidence intervals) |
| B | 2a | Systematic review of (homogeneous) cohort studies of "exposed" and "unexposed" subjects |
| B | 2b | Individual cohort study / low-quality randomized control studies |
| B | 3a | Systematic review of (homogeneous) case-control studies |
| B | 3b | Individual case-control studies |
| C | 4 | Case series, low-quality cohort or case-control studies |
| D | 5 | Expert opinions based on non-systematic reviews of results or mechanistic studies |

Evidence-Based Medicine, Stony Brook University Libraries, 14 March 2023

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# RESULTS (1)

- 3749 PATIENTS (+ 2504 Alqahtani prospective cohort)
- MEAN AGE: 16.26 years (SD 1.13)
- MEAN FOLLOW-UP: 29.9 months (SD 19.8)
- MEAN PREOPERATIVE BMI: 48.6 (SD 4.8, RANGE 40.3-63.5)
- PRESENCE OF COMORBIDITIES: DM 30.38% (SD 29.21), HT 28% (SD 21.7), DL 42.9% (SD 27.55) , OSA 33.5% (SD 27), NAFLD 52.35% (SD 30.13)

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# RESULTS (2)

- MEAN **Δ** BMI: 15.15 (SD 3.97)
- MEAN %EWL: 63.65 (SD 29.47)
- COMORBIDITES RESOLUTION: DM 91.5% (SD 14.41), HT 82.2% (SD 21.23), DL 71.4% (SD 26.6) , OSA 69.9% (SD 27.9), NAFLD 100%
- EARLY COMPLICATIONS RATE: 0.8% (re-operation rate 0.28%; leak rate 0.22%).
- LATE COMPLICATIONS RATE: NUTRITIONAL DEFICIENCIES 4.11%, REOPERATION RATE 1.8% (91% LAGB- slippage/removal)
- MORTALITY: 0.11% (2/1748: ONE PNEUMONIA, ONE CARDIAC FAILURE). NO MORTALITY RELATED TO MBS.

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# DISCUSSION

- REILLY 2011 SYS REV: overweight and obesity in childhood and adolescence → premature mortality and physical morbidity in adulthood.
- 7 PAPERS: surgical approach seems to be more and lasting effective than lifestyle modification especially in terms of EWL% - TWL% and comorbidity resolutions, despite an increased risk of post-operative complications.
- 10 PAPERS: teen-LABS (Longitudinal Assessment of Bariatric Surgery) database, comparing different laparoscopic bariatric procedures (LAGB – LRYGB – LSG) → acceptable lasting EWL% with a good resolution of obesity related comorbidities
- 16 PAPERS: RYGB in pediatrics/adolescents: good weight loss outcome, a good improvement and or resolution of comorbidities with an acceptable complications rate.
- 1 PAPER : LSG effective in PWS
- 1 PAPER: OAGB effective, no malnutrition and no affection of normal growth in pediatrics/adolescents with 60 months f-up.
- 1 PAPER: ten years follow-up on more than 2500 patients, MBS does not negatively impact pubertal development or linear growth

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# CONCLUSION…

DATA FROM SYSTEMATIC REVIEW SUPPORT IFSO/ASMSBS INDICATIONS FOR MBS IN PEDIATRICS/ADOLESCENTS.

*RECOMMENDATIONS:*

- *MBS IS SAFE IN THE POPULATION YOUNGER THAN 18 YEARS AND PRODUCE DURABLE WEIGHT LOSS AND IMPROVEMENT IN CO-MORBID CONDITIONS.*
- *MBS SEEMS TO BE MORE EFFECTIVE THAN LIFESTYLE MODIFICATIONS IN TERMS OF WEIGHT LOSS AND RESOLUTION OF COMORBIDITIES IN THE LONG TERM, WITH ACCEPTABLE RISKS OF COMPLICATIONS.*
- *MBS DOES NOT NEGATIVELY IMPACT ON PUBERTAL DEVELOPMENT OR LINEAR GROWTH.*

*GRADE B, LEVEL OF EVIDENCE 2B/3B*

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**…BUT**

- OVERALL POPULATION 6253
- ONLY ONE RCT WITH 25 ADOLESCENTS, F-UP 24 MONTHS, LAGB VS LIFESTYLE
- ONLY ONE LONG TERM FOLLOW-UP, FOCUSED ON IMPACT ON PUBERTAL DEVELOPMENT (10 YEARS, BUT AT 7-10 YEARS ONLY 632/2504)
- LSG AND RYGB BETTER LONG TERM RESULTS THAN LAGB (HIGH RISK OF FAILURE), BUT HIGHER MORBIDITY
- FAMILY ENVIRONMENT → PARENTS PSYCHOLOGICAL/PSYCHIATRIC EVALUATION?
- **STRONG NEED OF RCTS INVOLVING DEDICATED ETHIC COMMITTEE WITH PROLONGED FOLLOW-UP FOR PROPER INDICATIONS, THRESHOLDS AND PROGRAMS FOR MBS IN PEDIATRICS AND ADOLESCENTS (RECOMMENDATION)**.

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# THANKS FOR YOUR ATTENTION!