

# INPLASY PROTOCOL

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## The Effect of Bariatric Surgery on Bone Mineral Density: A Meta-analysis

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**Support:** None.

**Review Stage at time of this submission:** Data analysis.

**Conflicts of interest:**  
None declared.

**Review question / Objective:** We would conduct a systematic review and meta-analysis of participants undergoing bariatric surgery comparing with the non-surgical to investigate the effect of bariatric surgery on bone density.

**Condition being studied:** Some researchers have reported that bariatric surgery has a certain impact on bone density. Therefore, it is necessary to combine these results and use a meta-analysis to investigate the association between bariatric surgery and bone density.

**Information sources:** PubMed, Embase, and the Cochrane Library.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 March 2021 and was last updated on 10 March 2021 (registration number INPLASY202130033).

### INTRODUCTION

**Review question / Objective:** We would conduct a systematic review and meta-analysis of participants undergoing bariatric surgery comparing with the non-

surgical to investigate the effect of bariatric surgery on bone density.

**Condition being studied:** Some researchers have reported that bariatric surgery has a

certain impact on bone density[12-14]. Therefore, it is necessary to combine these results and use a meta-analysis to investigate the association between bariatric surgery and bone density.

## METHODS

**Participant or population:** All age groups ranging from 18 to 80 years, and both genders.

**Intervention:** Bariatric surgery, without limitations of surgical approaches.

**Comparator:** No bariatric surgery (exercise, diet, medication)

**Study designs to be included:** Randomized controlled trials (RCT), observational studies.

**Eligibility criteria:** (1) Study design: randomized controlled trials (RCT), observational studies (2) Study subjects: all age groups ranging from 18 to 80 years, and both genders (3) Study intervention: bariatric surgery, without limitations of surgical approaches (4) Study controls: no bariatric surgery (exercise, diet, medication) (5) Outcomes: Our primary outcome was the BMD of the femoral neck and lumbar spine; the secondary outcome was BMD of the total body and the hip.

**Information sources:** PubMed, Embase, and the Cochrane Library.

**Main outcome(s):** The BMD of the femoral neck and lumbar spine

**Quality assessment / Risk of bias analysis:** A score of 0–9 points was used to assess their quality. The Cochrane methodology was used to evaluate the quality of the included RCTs.

**Strategy of data synthesis:** Statistical analysis was performed using RevMan5.3. Data were expressed as mean difference (MD) or standardized mean difference (SMD), and 95% confidence intervals (CI).

**Subgroup analysis:** Subgroup analyses were performed for different ages, time points after surgery, and surgical approaches.

**Sensitivity analysis:** Funnel plots were used for sensitivity analysis

**Country(ies) involved:** China.

**Keywords:** Bariatric surgery; Bone mineral density; Osteoporosis.

## Contributions of each author:

Author 1 - Xiaodan Ou.

Author 2 - Lizhen Xu.

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