International Platform of Registered Systematic Review and Meta-analysis Protocols

INPLASY

# Periodontal status of osteoporotic postmenopausal women receiving oral bisphosphonates: A systematic literature review

INPLASY202650031
doi: 10.37766/inplasy2026.5.0031
Received: 6 May 2026
Published: 6 May 2026

Essadeq, Z; Mikou, S; Gharibi, A; Kissa, J.

**Corresponding author:**
Zineb Essadeq

zinebessadeq21@gmail.com

**Author Affiliation:**
Faculty of Dental Medicine of Casablanca, university of hassan II

**ADMINISTRATIVE INFORMATION**

**Support -** No support.

**Review Stage at time of this submission -** Completed but not published.

**Conflicts of interest -** None declared.

**INPLASY registration number:** INPLASY202650031

**Amendments -** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 6 May 2026 and was last updated on 6 May 2026.

## INTRODUCTION

**Review question / Objective** In postmenopausal women, does oral bisphosphonate therapy influence clinical and radiographic periodontal parameters compared with untreated women?
The main objective of this systematic review is to analyze periodontal parameters affected by bisphosphonate therapy, compare and critically appraise the methodological quality of available studies, and derive implications for future research and clinical practice.

**Rationale** This systematic review aims to evaluate the potential effect of oral bisphosphonates on periodontal health in osteoporotic postmenopausal women.
From a scientific perspective, it explores the impact of systemic anti-resorptive therapy on dental supporting tissues.
From a clinical perspective, it contributes to a better understanding of the management of osteoporotic patients in the context of oral health.
From a public health perspective, it addresses the prevention of conditions affecting a high-risk female population prone to both osteoporosis and periodontal diseases.

**Condition being studied** Postmenopausal women are at increased risk of osteoporosis due to hormonal changes, leading to reduced bone mineral density and increased fracture risk.
Periodontal disease is a chronic inflammatory condition affecting the supporting tissues of the teeth, leading to progressive alveolar bone loss and clinical attachment loss.
Bisphosphonates are anti-resorptive agents widely used in the treatment of osteoporosis to reduce bone resorption and preserve bone mineral density.

## METHODS

**Search strategy** A comprehensive electronic and manual literature search will be performed.

Databases:

PubMed
ScienceDirect
Google Scholar
Keywords:

Bisphosphonates, periodontal diseases, postmenopausal osteoporosis, periodontal status, bone remodeling markers, alveolar bone loss.

Boolean equations:
Diphosphonate AND periodontal disease AND postmenopausal osteoporosis
Diphosphonate AND periodontal status AND postmenopausal osteoporosis
Diphosphonate AND bone remodeling markers AND postmenopausal osteoporosis
Diphosphonate AND alveolar bone loss AND postmenopausal osteoporosis
Manual search:

Reference lists of included studies will also be screened.

**Participant or population** Postmenopausal women aged between 45 and 80 years diagnosed with osteoporosis or osteopenia, with or without oral bisphosphonate therapy.

**Intervention** Oral bisphosphonate therapy, including:

Alendronate
Risedronate
Ibandronate
Other bisphosphonates depending on included studies

Treatment duration varies from several months to more than 3 years.

**Comparator** Postmenopausal women not receiving bisphosphonates
or
Women without osteoporosis (control groups depending on studies).

**Study designs to be included** Observational analytical studiesCross-sectional comparative studiesProspective studiesLongitudinal studiesCase-control studies.

**Eligibility criteria** Inclusion criteria:
Studies published between 2015 and 2025
Human studies only
Articles written in English
Studies addressing the review objectives
Exclusion criteria:
Studies published before 2015
Animal studies
Case reports
Narrative reviews
Systematic reviews
Studies not relevant after full-text screening.

**Information sources**
PubMed
ScienceDirect
Google Scholar
Manual search through reference lists.

**Main outcome(s)** Periodontal parameters:

Plaque Index (PI)
Gingival Index (GI)
Bleeding on Probing (BOP)
Probing Pocket Depth (PPD)
Clinical Attachment Loss (CAL)
Gingival recession (GR)

Radiographic and bone-related parameters:

Alveolar bone level
Bone Mineral Density (BMD)
T-score
Mandibular radiomorphometric indices

Biological markers:

RANKL
OPG
RANKL/OPG ratio.

**Quality assessment / Risk of bias analysis** Risk of bias will be assessed according to the Cochrane Collaboration guidelines.

The following domains will be evaluated:

Selection bias
Performance bias
Detection bias
Attrition bias
Reporting bias

Studies will be classified as:

Low risk of bias
Moderate risk of bias
High risk of bias

Additionally, methodological quality will be assessed using the AMSTAR tool (12 items).

**Strategy of data synthesis** Data will be extracted and synthesized descriptively.

Studies will be grouped according to:

Study design
Periodontal parameters
Type of bisphosphonate therapy
Methodological quality

A qualitative comparative analysis will be performed due to heterogeneity across studies.

**Subgroup analysis** Planned subgroup analyses include:

Type of bisphosphonate (alendronate, ibandronate, risedronate)
Duration of therapy
Osteoporosis status (treated vs untreated)
Presence or absence of periodontal disease.

**Sensitivity analysis** Not performed due to the limited number of included studies and significant methodological heterogeneity.

**Language restriction** Bisphosphonates; postmenopausal osteoporosis; periodontal disease; periodontal status; alveolar bone loss; RANKL; OPG; bone mineral density; periodontal indices.

**Country(ies) involved** Morocco.

**Keywords** Bisphosphonates; postmenopausal osteoporosis; periodontal disease; periodontal status; alveolar bone loss; RANKL; OPG; bone mineral density; periodontal indices.

**Contributions of each author**

Author 1 - Zineb Essadeq.
Email: zinebessadeq21@gmail.com
Author 2 - Salwa Mikou.
Email: mikousalwa12@gmail.com
Author 3 - Amina Gharibi.
Email: gharibiamina@gmail.com
Author 4 - Jamila Kissa.
Email: jamilakissa@yahoo.fr