**Photobiomodulation Therapies in the treatment of osteonecrosis – A systematic Review.**

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Osteonecrosis is a condition resulting from a partial or complete interruption in the supply of oxygen and/or nutrients to bone tissue, resulting in tissue necrosis. It can be caused by trauma, radiation, and also continued use of drugs such as the bisphosphonate class, corticosteroids, or drugs that act on bone remodeling and antiangiogenesis. The standard treatment for osteonecrosis is conservative or extensive surgery, usually associated with antibiotic therapy. However, many patients do not improve symptoms. Therefore, other therapies are being studied, such as hyperbaric oxygen therapy and photobiomodulation showing favorable results. Thus, this PRISMA systematic review aims to evaluate the effect of photobiomodulation therapies on the treatment of medication or radiation-induced osteonecrosis, regardless location of necrosis. In this regard, prior to data extraction, our PRISMA protocol will be sent to properly register on the PROSPERO website, and it will include searches on PUBMED, EMBASE, LILACS, Open Gray, Proquest, and LIVIVO databases using a P.I.C.O. strategy. Clinical trials, case reports, and observational studies evaluating the use of PBM in adult patients with radiation or medication-induced osteonecrosis will be analyzed. All available data about the quality of life and all outcomes analyzed by the authors of the included studies will be reported. Moreover, all photobiomodulation protocol used by authors will be included and reported. The chosen tools to quality analysis of the included studies depend on the design of data founded. We intend to use the Cochrane risk-of-bias tool (RoB 2) for randomized trials; Cochrane Robins-I for non-randomized trials and the CARE Tool for case reports. In addition, we will use the LLLT/photomedicine Guideline published by Jenkins and Caroll and WALT recommendations to analyze the PBM parameters founded. A qualitative descriptive analysis of the collected data is planned, but once the number of patients in published studies is in general limited, to come to a more accurate assertion if a minimum of two studies with the same material, same condition, therapy, and results are found, we plan to perform a quantitative synthesis (meta-analysis) of the subgroups of symptoms and quality of life outcomes.

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