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### Pharmacotherapy for treatment of fatigue in multiple sclerosis: A comprehensive systematic review

#### Abstract:

Multiple sclerosis (MS) is a demyelinating autoimmune inflammation of the central nervous system in which fatigue is commonly experienced. Due to conflicting evidence on medication efficacy, researchers conducted a systematic review to provide a clear conclusion on which drug most effectively manages fatigue in MS. Registered with PROSPERO (ID: CRD42024500165), the study encompassed a comprehensive search in multiple databases (PubMed, Embase, Cochrane, Web of Science, Scopus) for clinical trials and prospective/retrospective cohort studies evaluating fatigue treatments in MS. Risk of bias was assessed using the Cochrane RoB 2 tool. Eleven studies were included in the review. Amantadine's effects on fatigue was mixed—some studies found improvements in Fatigue Severity Scale (FSS) scores, while others did not. For modafinil, two studies reported decreases in FSS after treatment compared to baseline and placebo, but another study found no significant differences in Modified Fatigue Impact Scale (MFIS) scores versus placebo. A crossover study comparing methylphenidate, amantadine, modafinil, and placebo observed no statistically significant differences in MFIS scores. This study highlighted the complexity and variability in pharmacotherapy effectiveness for managing fatigue in MS. Amantadine was the most extensively studied, but its efficacy was inconsistent. Modafinil and acetyl-L-carnitine also demonstrated potential benefits, but findings were not consistently significant. Memantine showed a non-significant trend, while methylphenidate had limited supporting evidence. The heterogeneity in results was likely due to differences in study designs, fatigue assessment tools, patient populations, and outcome measures. Careful monitoring is needed, as adverse events were reported across all studied medications.

#### Biography

**Hala Emad A Danish** is 6th year medical student in King Saud Bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia. she have unrelenting curiosity and interest regarding improved patient quality of life and involving others in this endeavour by leading the Internal Medicine Club in my university. she like to explore this through both research and campaigns by hosting patient awareness activities in the latter where dire consequences ensue: covid-19 pandemic, bone marrow transplantation, common infectious disease in primary health care, and breast cancer.