Background:
- Currently, no FDA approved medication exists to treat cocaine dependence.
- Studies conducted with various drugs, including antipsychotics, antidepressants, anticonvulsants, and others, revealed inconsistent results.
- Modafinil: most widely studied and showed trend of significance.

Aim:
- To meta-analytically investigate the efficacy and safety of modafinil in the treatment of cocaine dependence.

Method:
- Randomized, double-blind, controlled trials with ≥20 subjects, comparing the numerical therapeutic outcomes of modafinil with placebo included.
- Literatures searched in databases, such as PUBMED, psychINFO, EMBASE, clinicaltrials.gov & relevant references.
- Relevant data on efficacy and safety were extracted.
- Relative Risk (RR) & Standardized Mean Difference (SMD) were applied for reporting dichotomous outcomes and continuous outcomes respectively.
- Random effects, subgroup & meta-regression analyses.

CONCLUSION & LIMITATIONS:
- Overall, no evidence to conclude modafinil's superiority in increasing cocaine abstinence and treatment retention rate.
- Promising result in subgroup analysis of cocaine abstinence, secondary outcomes, and good safety profile.
- Larger studies needed to derive more conclusive results.
- If used with behavioral therapy, possibly be safe and beneficial in selected cocaine dependent individuals with other modafinil's indication, such as narcolepsy and work shifts/sleep apnea-related sleep disorders.
- Limitations: variability and divergence of the outcome results reported in different studies, insufficient reported data in many studies for analysis, small sample size of most of the RCTs.

Result:
- Total: Studies, N= 11, Participants, n=896, Duration=6.7±1.9wk
- Treatment retention rate: Modafinil non superior than PBO (N=11, n=891, RR=1.030, 95% CI=0.918-1.156, p=0.613).
- Cocaine abstinence rate: Modafinil non superior than PBO (N=7, n=696, RR=1.259, 95% CI=0.813-1.949, p=0.302).
- Subgroup analysis for USA studies: Modafinil's superiority in cocaine abstinence rate (N=6, n=669, 95%CI=1.027-2.020, p=0.035).
- Additionally, no evidence suggested modafinil-related discontinuation or specific adverse events than placebo.

References: