

# Cannabis and cannabinoids for the treatment of mental health disorders and symptoms: Systematic review and meta-analysis

Nicola Black<sup>1\*</sup>, Emily Stockings<sup>1\*</sup>, Lucy Thi Tran<sup>1</sup>, Gabrielle Campbell<sup>1</sup>, Dino Zagic<sup>1</sup>, Wayne Dennis Hall<sup>2,3</sup>, Michael Farrell<sup>1</sup>, Louisa Degenhardt<sup>1</sup>

<sup>1</sup> National Drug and Alcohol Research Centre, UNSW Sydney; <sup>2</sup> Centre for Youth Substance Abuse Research, University of Queensland; <sup>3</sup> National Addiction Centre, Kings College London; \* Joint first authors  
Presenter's email: thi.b.tran@unsw.edu.au

## TAKE HOME MESSAGE

Though the use of cannabinoids is increasing for medical purposes, there is a lack of studies that indicate their beneficial effect for mental health conditions. The current low quality of available evidence for benefit should be considered in conjunction with the evidence for harm when patients and clinicians are considering cannabinoids as a treatment option. More research on their effectiveness is needed, particularly amongst those with depression and anxiety.

## INTRODUCTION

Increasing numbers of individuals are using cannabinoids for medicinal purposes, particularly for mental health problems. Previous reviews on the effectiveness of cannabinoids have reached conflicting conclusions and have been limited in their coverage of mental health conditions and trial designs other than randomised controlled trials (RCTs).

## AIMS

The aim of these studies was to examine evidence for cannabinoids for the treatment of:

- Depression
- Anxiety
- ADHD
- Tic/Tourette's syndrome (TS)
- PTSD
- Psychosis

## METHODS

Medline, Embase, PsycINFO, Cochrane Central Register of Controlled Clinical Trials (CENTRAL) Cochrane Database of Systematic Reviews, and previous reviews were searched for experimental and observational studies published from 1980.

These reviews included:

- Experimental or observational studies
- Examined the effect of cannabis or cannabinoids
- Reported on depression, anxiety, ADHD, TS, PTSD or psychosis-related outcomes

## RESULTS

Overall, 80 studies were included, of which 37 were RCTs (23 depression, 17 anxiety, 1 ADHD, 2 Tic disorder, 1 PTSD, and 6 psychosis). There was only 1 study where depression was the primary outcome and only 4 out of 17 RCTs on anxiety had anxiety as a primary outcome.

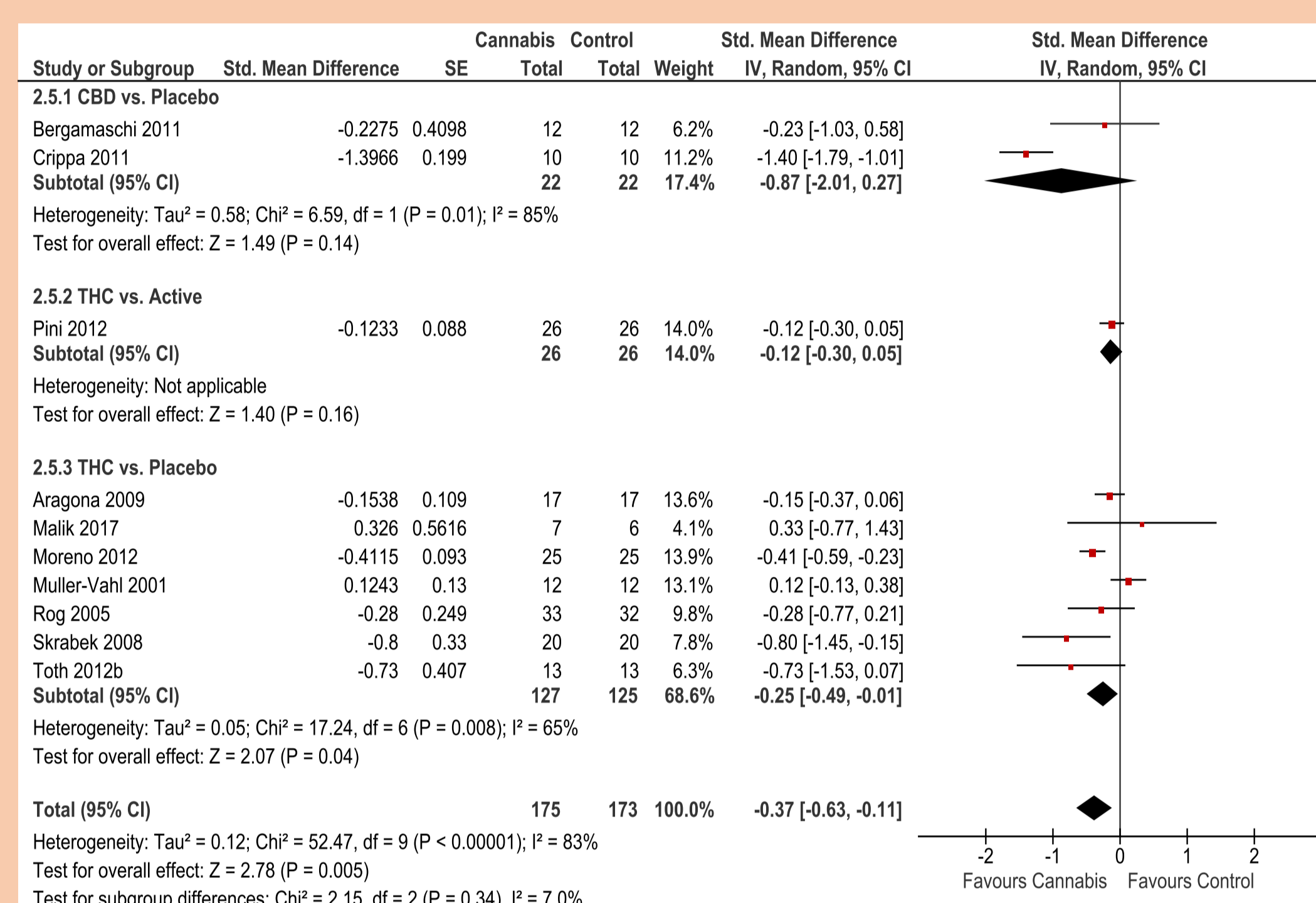


Figure 1. Pooled SMD for RCT study evidence for impact of cannabis or cannabinoids on anxiety symptoms

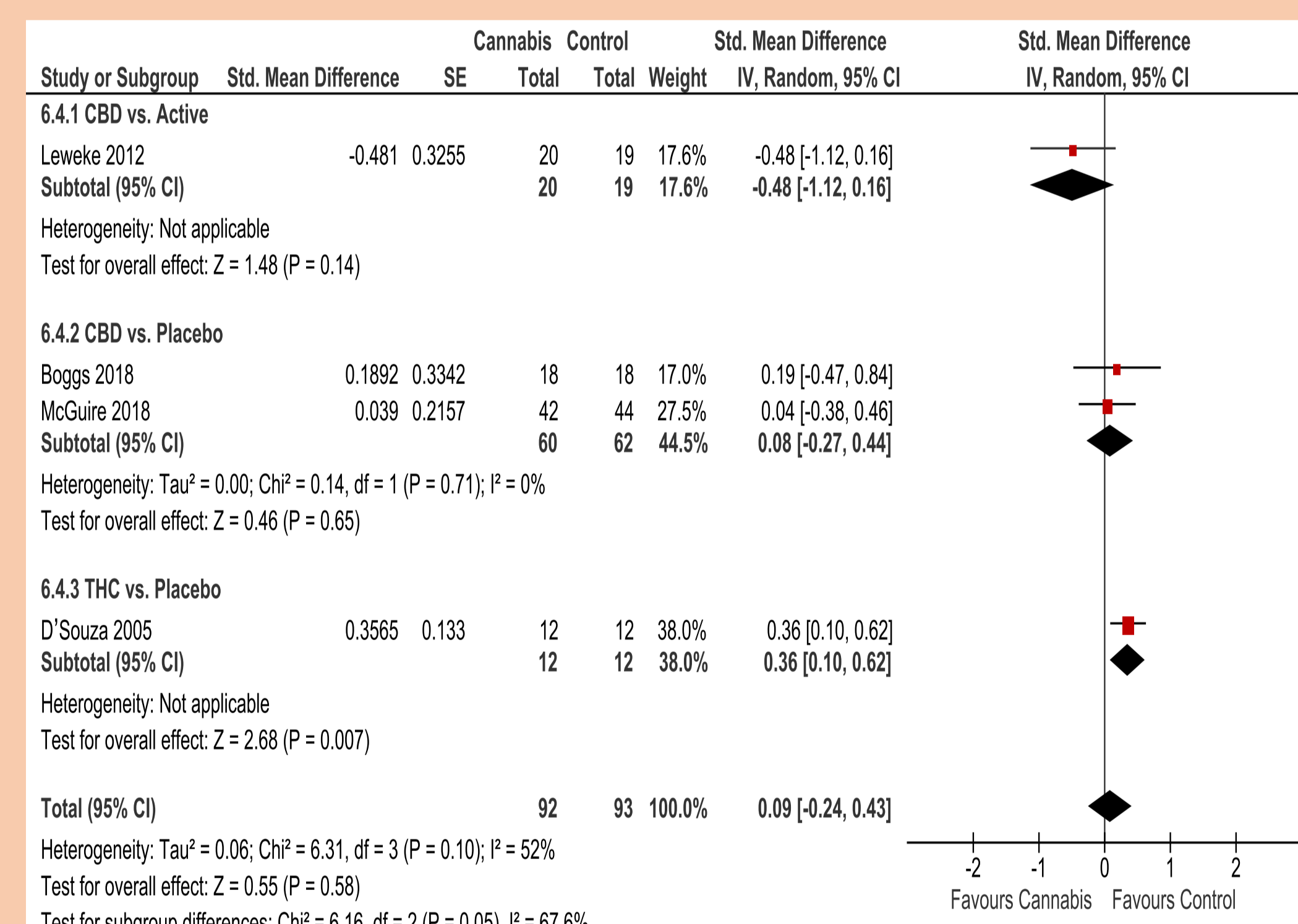


Figure 2. Pooled SMD for RCT study evidence for impact of cannabis or cannabinoids on PTSD negative symptoms

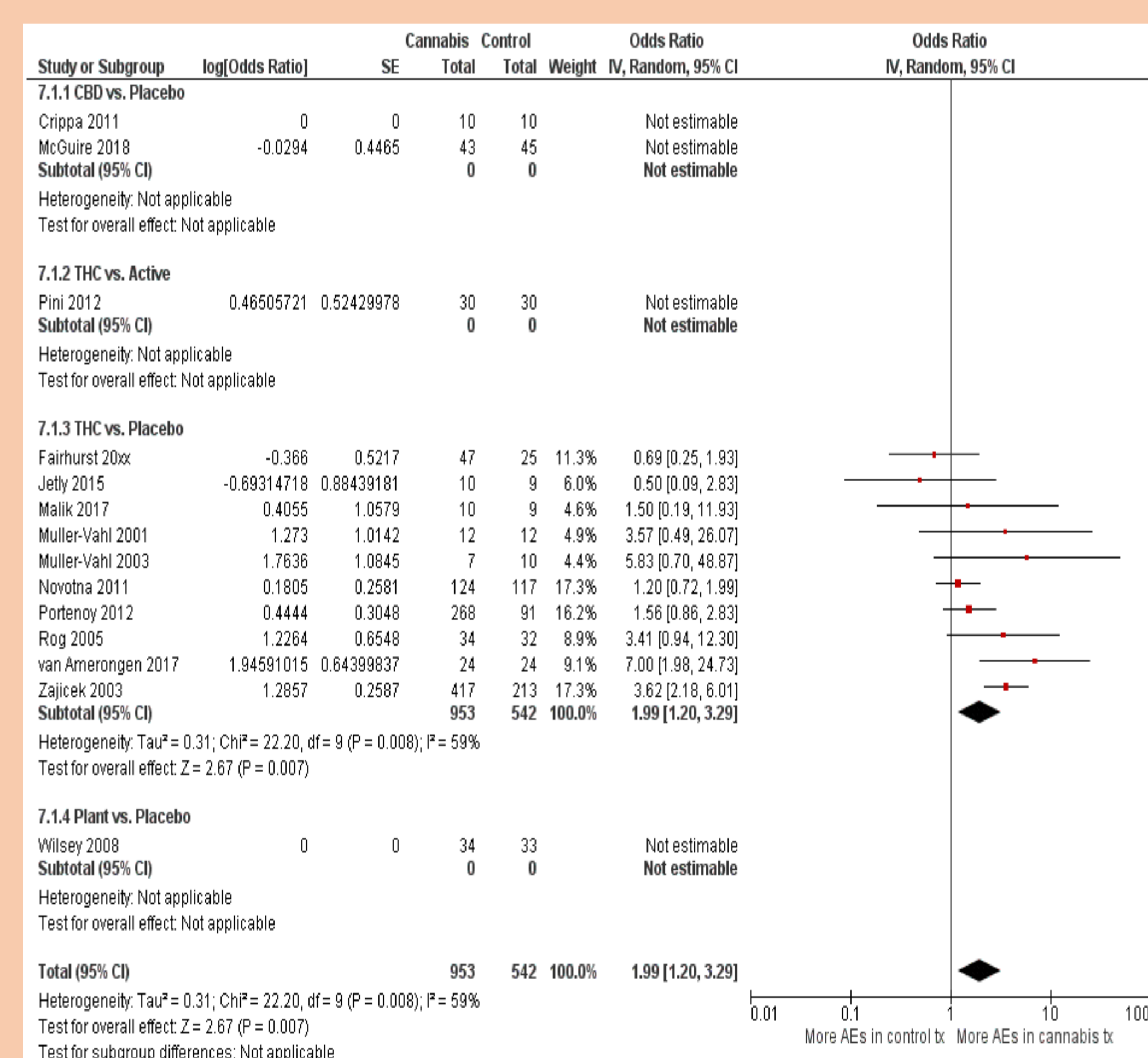


Figure 3. Pooled SMD for RCT study evidence for impact of cannabis or cannabinoids on adverse events

## RESULTS

There was no significant difference within the RCTs in any of the depression, ADHD, TS outcomes. A summary of the different cannabinoid types on anxiety, PTSD and psychosis outcomes can be seen in the table below. Forest plots for change in anxiety symptoms and change in psychotic negative symptoms are also provided.

Additionally, there were more adverse events (OR: 1.80, 95%CI: 1.18-2.77), withdrawals (OR: 1.53, 95%CI: 1.06-2.21), and withdrawals due to adverse events (OR: 2.06, 95%CI: 1.12-3.77) after cannabinoids compared to control.

	Comparison	Pooled SMD
<b>Anxiety</b>		
Change in anxiety symptoms	THC vs. Active	-0.12 (-0.30, 0.05)
	THC vs. Placebo	-0.25 (-0.49, -0.01)
<b>PTSD</b>		
Change in global functioning	THC vs. Placebo	-1.13 (-1.48, -0.77)
Change in nightmare frequency	THC vs. Placebo	-1.11 (-1.46, -0.76)
<b>Psychosis</b>		
Change in negative symptoms	THC vs. Placebo	0.36 (0.10, 0.62)
Change in cognitive function	THC vs. Placebo	1.08 (0.71, 1.45)
Change in global functioning	CBD vs. placebo	-0.62 (-1.14, -0.09)

Table 1. Summary of RCT evidence of pharmaceutical THC and CBD on mental health outcomes

## CONCLUSIONS

There is a lack of evidence indicating the beneficial effect of cannabinoids on mental health disorders and symptoms. Concerningly, there were no RCTs that had depression as their primary condition, and very few had a diagnosis of anxiety.