



The  
University  
Of  
Sheffield.

# Manual versus powered toothbrushes for oral health; An update

Yaacob M, Deacon SA, Deery C, Glenny AM, Heanue M,  
Walmsley AD, Worthington H, Robinson PG

University of Sheffield, Frenchay Hospital, Bristol, University of  
Manchester, Private Dental Practice, University of Birmingham.



# Introduction

## Dental Plaque

- Periodontal disease: gingivitis and periodontitis
- Which one is better, manual or powered
- Previous Cochrane reviews: Robinson 2005, Heanue 2003



# Aims

To compare manual and powered toothbrushes in everyday use, by people of any age, in relation to:

- Plaque removal
- Gingival inflammation
  
- Secondary Outcomes
  - Removal of staining and calculus
  - Dependability and cost
  - Adverse effects



# Method

- Systematic review and meta-analysis
- Cochrane Oral Health Group method
- New quality assessment : Risk of Bias (ROB)



# Method

## Inclusion criteria

- RCT comparing powered vs. manual toothbrushes
- >1 month duration with 'every day' use of brush
- Cross-over trials: wash-out period > 1 week
- June 2004 – March 2011

## Search strategy

- COHG Trials Register      CENTRAL
- MEDLINE                      EMBASE
- CINAHL

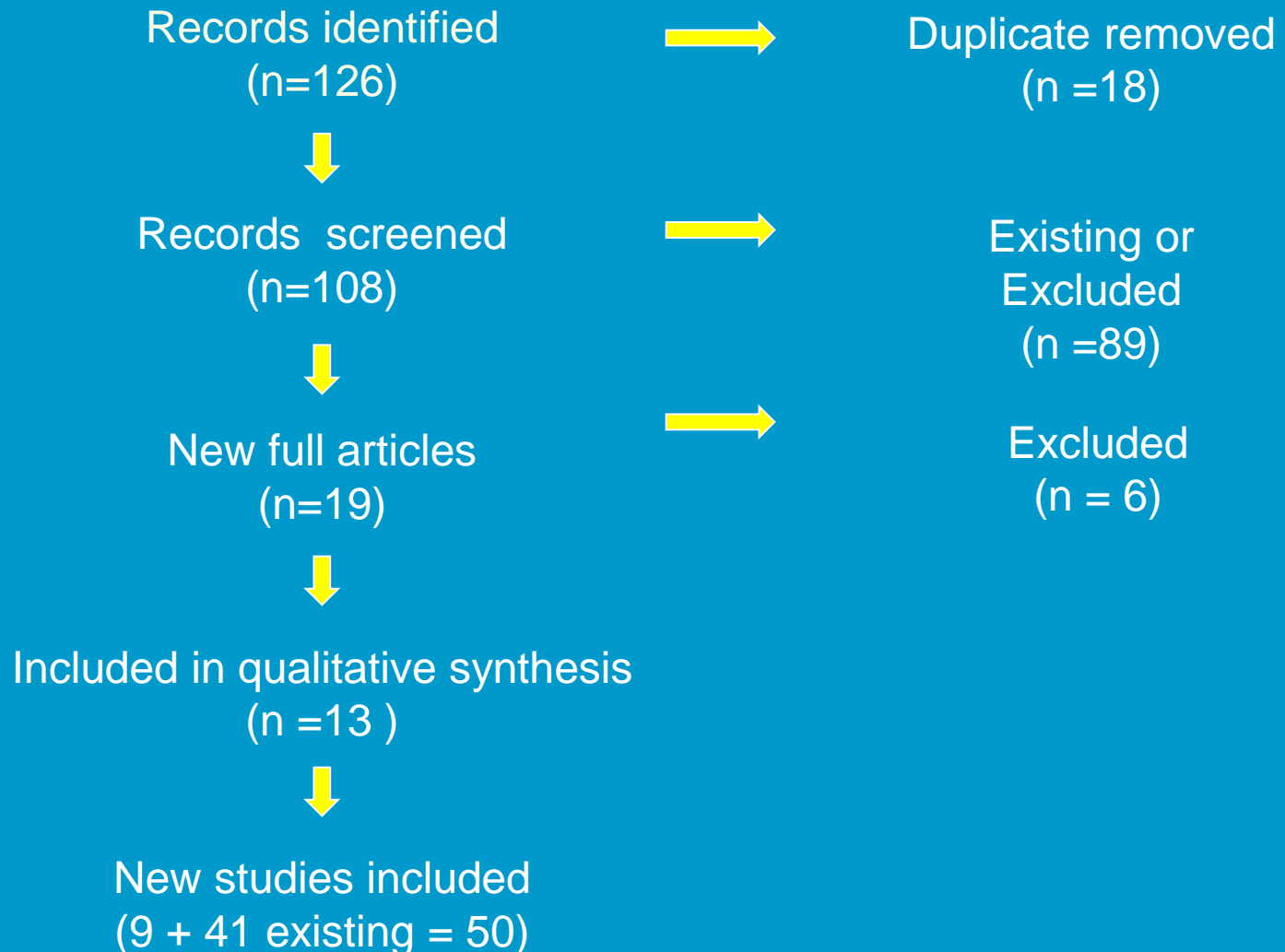


# Definitions and analyses

- Short term            1 to 3 months
- Long term            >3 months
  
- Treatment effects measured using:
  - Standard mean differences (SMD) 95% CI for multiple indices
  - Mean differences (MD) 95% CI if one index was used



# Review profile





# Results: Brush types

	No. trials
Side to side	9
Counter oscillation	5
Rotation oscillation	24
Circular	3
Ultrasonic	4
Ionic	4
Unknown	3





# Results

50 trials (4326 subjects)

## Plaque

- 42 trials (2523 subjects) short term
- 14 trials (1018 subjects) long term

## Gingivitis

- 48 trials (3167 subjects) short term
- 15 trials (1689 subjects) long term

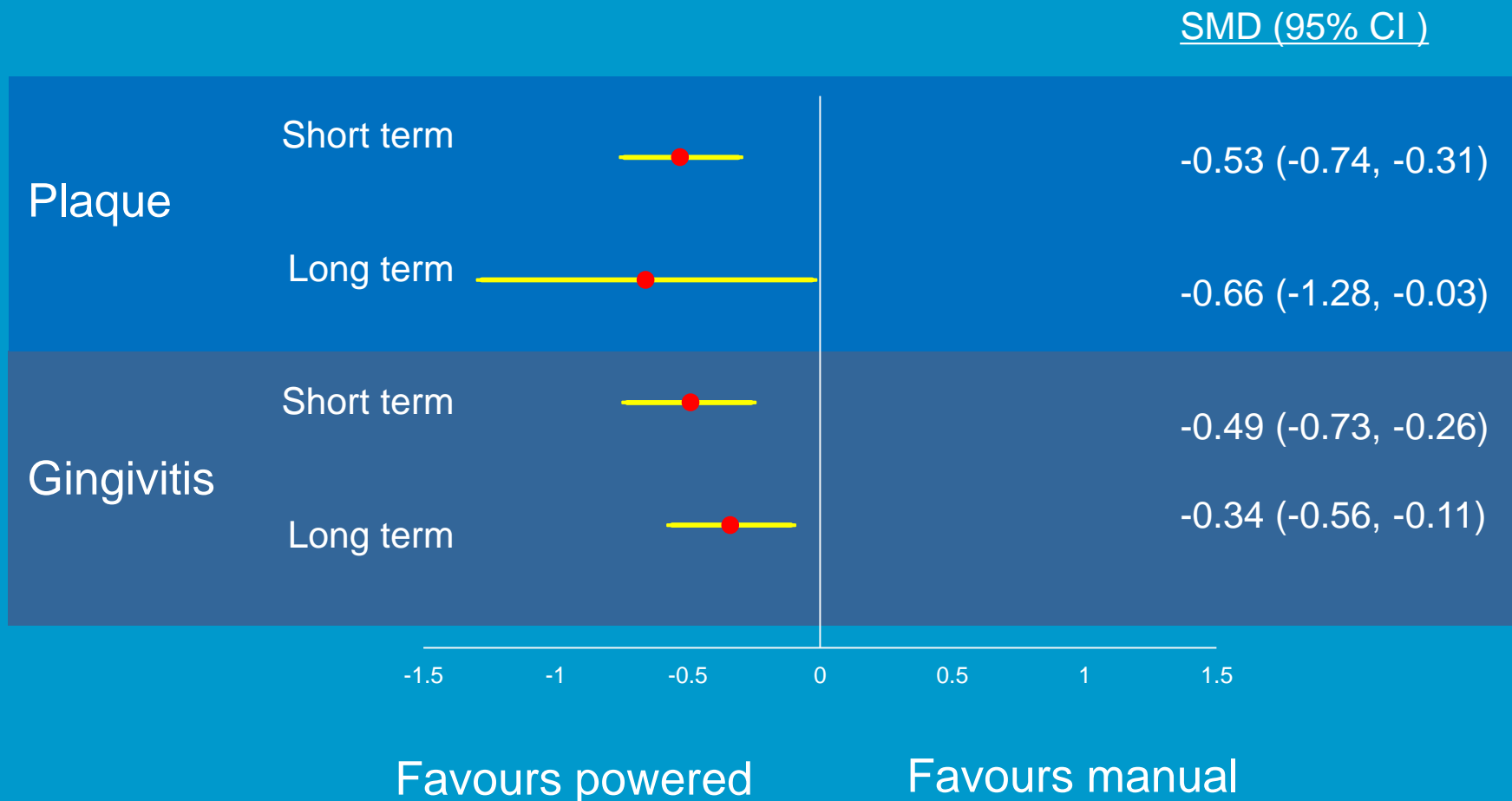


# Summary of results

	Short term		Long term	
	Plaque	Gingivitis	Plaque	Gingivitis
Side to side				
Counter oscillation			<input checked="" type="checkbox"/>	
Rotation oscillation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Circular				
Ultrasonic		<input checked="" type="checkbox"/>		
Ionic			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Unknown		<input checked="" type="checkbox"/>		

Only powered brushes with rotation-oscillation action were consistently better than manual

# Rotation Oscillation





# ‘Clinical implication’

## Plaque reduction (TQHI) :

- Short term, 0.2
- Long term, 0.3

## Gingivitis reduction (BOP Ainamo Bay index) :

- Short term, 46%
- Long term, 27%



# Conclusion

- Rotation-oscillation powered brushes reduced plaque and gingivitis more than manual brushes in short & long term
- No other powered brushes were more effective than manual
- Better quality trials
  - Longer term
  - Attachment loss
  - Standardised indices