

The Effectiveness of Enhanced Oral Health Advice and Instruction upon Patient Oral Hygiene, Knowledge, and Self-Reported Behaviour: A Randomised Controlled Trial

Linda Young and Jan Clarkson on behalf of the VDP Trials Group

Aim

To evaluate, in general dental practice, the effectiveness of providing oral health advice and instruction (OHI) on patient oral hygiene, cognitions and self-reported behaviour.

Project Outline/Methodology

Two parallel randomised controlled trials (RCTs) – a patient RCT and a Vocational Dental Practitioner (VDP) RCT in which all patients attending the same VDP were allocated to either the intervention or control group - were carried out in 84 general dental practices across Scotland. VDPs – 34 in the patient RCT and 50 in the VDP RCT – recruited, respectively, 310 and 489 participants who had attended the dental surgery for a check-up. Apart from the method of randomisation both trials were identical.

Figure 1 Evidence-Based Oral Hygiene Package



Patients allocated to the intervention group received an evidence-based OHI package (Figure 1) which included simple chairside advice and a powered toothbrush with a rotation oscillation action¹. The delivery of the advice and the instruction, demonstration and practice in the use of the

powered toothbrush was designed using a psychological framework which targeted patient confidence towards their toothbrushing behaviour². Patients in the control group received routine care.

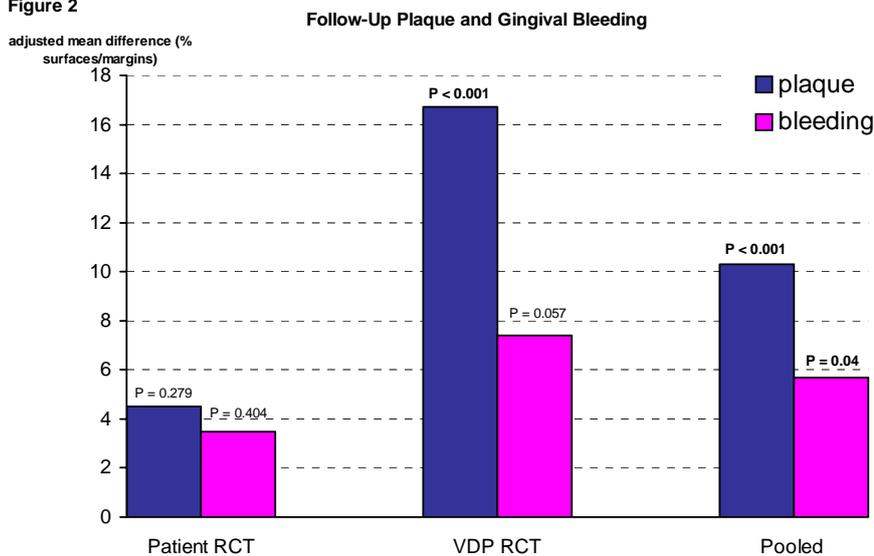
Cognitive and behavioural outcomes were assessed by self-administered questionnaires at baseline and at eight weeks, for all participants. Oral hygiene was assessed by measuring gingival bleeding on probing and plaque at baseline and, for participants who required a follow-up appointment, eight weeks later.

Key Results

In the patient RCT 125 evidence-based OHI group and 122 routine care group participants returned the follow-up questionnaire. In the VDP RCT the follow-up questionnaire was returned by 169 participants in the evidence-based OHI group and 205 in the routine care group. In both trials participant confidence towards toothbrushing behaviour was significantly higher in the evidence-based OHI group than in the routine care group ($P < 0.05$). Given this result, psychological theory predicts that the behaviour of participants who received the evidence-based OHI package would be influenced in a manner consistent with the advice given. Self-reported behaviour lends support to this prediction. Post-intervention the odds of a participant brushing their teeth at least twice daily, brushing for at least two minutes and spitting without rinsing were significantly greater in the evidence-based OHI group than in the routine care group ($P < 0.05$).

The number of patients who required a return visit to the VDP for further treatment was lower than anticipated and as a consequence in the individual RCTs there may

Figure 2



have been insufficient power to detect statistically significant differences in outcomes. However, because the trials were identical apart from the method of randomisation, it was possible to conduct a meta-analysis pooling the plaque and bleeding data from both trials. The results of the meta-analysis showed that evidence-based OHI group

participants had significantly less plaque at follow-up than those in the routine care group (mean difference = -10.3, $P < 0.001$). The mean percent of gingival margins exhibiting bleeding on probing was also significantly lower in the evidence-based OHI group than in the routine care group (mean difference = -5.7, $P = 0.04$) (Figure 2).

Conclusions

In this study VDPs carried out the first, national, multi-centre practice based RCT evaluating the effectiveness of implementing evidence-based oral hygiene advice and instruction under day to day surgery conditions. The results suggest that psychological theory can be used to facilitate a simple, but effective, intervention to influence toothbrushing behaviour in general dental practice.

Poor oral hygiene is associated with the main oral diseases (cavities and periodontal disease) and a key oral health strategy in Scotland is the development and implementation of effective methods for imparting oral health advice to dental patients. This study has demonstrated the short term effectiveness of evidence-based oral hygiene advice and instruction in general dental practice. Future research should consider the longer term effect of using a psychological approach to the design of interventions to influence oral hygiene and other health related behaviours in general dental practice.

References

1. Heanue M. et al. 2003.' Manual versus Powered Toothbrushing for Oral Health.' (Cochrane Review) *The Cochrane Library*. Issue 1. Oxford: Update Software.
2. Bandura A. (1998) 'Health Promotion from the Perspective of Social Cognitive Theory.' *Psychology and Health*, 13: 623-649.

Acknowledgements

The VDP Trials Group would like to thank all patient participants, VDPs, trainers and advisers for their help and co-operation in the initiation and implementation of this study. The study was supported by the Scottish Dental PBRN, NHS Education for Scotland, DHSRU University of Dundee, HSRU University of Aberdeen and the University of Manchester. It was co-funded by a Chief Scientist Office of the Scottish Executive Small Grant award and an Oral-B Clinical Research Award. The views expressed reflect those of the authors and are not necessarily shared by the supporting institutions or study co-funders.