

Does motivational interviewing have a role in dentistry?

FEATURE



Huma Aiman,^{*1,2} **Julie K. Kilgariff**,³ **Dougie Marks**⁴ and **Mairi Albiston**⁵ discuss how motivational interviewing can be applied in oral healthcare settings to enhance general and oral health.

Abstract

Traditional approaches to health promotion involve clinicians imparting knowledge to patients and 'telling' patients what changes they should make to benefit their

health. This so-called 'fixing reflex' can be counterproductive and ineffective, creating unhelpful discord between clinicians and patients. There is little evidence that this approach is wholly effective in bringing about healthier patient behaviours. In contrast, motivational interviewing (MI) is a person-focused consultation style aimed at developing patient motivation and commitment for a range of health-related behaviours. It focuses on discovering the values, beliefs and goals of patients and encourages clinicians and patients to work together collaboratively, to bring about change and growth. It is an effective, evidence-based approach, even when used as a 'brief intervention' for a few minutes only. This paper discusses how MI can be applied in dental healthcare settings to enhance general and oral health. The evidence available for its use in dentistry is discussed, along with opportunities for training of the dental team in this skill.

Introduction

Motivational interviewing (MI) is a style of communication that aims to bolster motivation by bringing to light a person's reasons for change in a guided, curious and

compassionate manner.¹ A key principle of MI is that the practitioner facilitates the process of considering change but attempts to take a neutral stance on the patient's decision and not put their 'thumb on the balance scales', thereby fostering a sense of empowerment for change.¹ This promotes an individual's intrinsic motivation to overcome ambivalence, as well as honouring patient choice and control where change may be challenging. This communication method allows for the delicate and essential practitioner-patient rapport to be maintained for future discussions about change which may then allow for plans about change to take seed. Scaling questions regarding confidence and importance may be used to evaluate readiness for change and can uncover barriers and facilitators.¹ MI was initially developed to aid behaviour change in alcohol-dependent patients² but has since been used effectively in diverse healthcare settings, including to decrease dental caries, alcohol consumption and tobacco use.³ While MI is not the only approach to offer a framework for person-centred care (for example, the Calgary-Cambridge model),⁴ skills drawn from MI are particularly well-suited to a dental setting

Author information

¹Post DCT Fellow, Dundee Dental Hospital and Research School, UK;

²Current Orthodontic Specialty Registrar, Chesterfield Royal Hospital, UK; ³Consultant in Endodontics,

Dundee Dental Hospital and Research School, Park Place, Dundee,

DD1 4HR, UK; ⁴Health Psychologist/CBT Practitioner and Lecturer in Behavioural Sciences, University of

Glasgow, School of Medicine, Dentistry and Nursing, Wolfson Medical School

Building, University Avenue, Glasgow, G12 8QQ, UK; ⁵Head of Programme

(Physical Health), NHS Education for Scotland, 89 Hydepark Street,

Psychology Directorate, Glasgow, G3 8BW, UK.

and are also highly consistent with a trauma-informed care approach.

Supporting collaborative, personalised, person-centred care

MI is an evidence-based, person-focused approach to behaviour change, which cultivates a collaborative relationship between the practitioner and client to encourage change⁵ through the tasks of engaging, focusing, evoking and planning.¹ Rather than being rigid and fixed, motivation is viewed as a readiness to change which varies over time. In MI, the goal is to positively shape a patient's state of readiness through discussion and resolution of ambivalence towards behaviour change.^{6,7} This approach aligns with various policy drivers, including Realistic Medicine, by identifying what matters to patients and promoting shared decision-making,⁸ and the first and second principles of 'put patients' interests first' and 'communicate effectively with patients' within the General Dental Council (GDC)'s *Standards for the dental team*, by considering a patient's needs, preferences and values.⁹

Traditionally, in healthcare, clinicians made treatment decisions and advised patients what to do based on clinician perception of a patient's best interests, with minimal involvement of the patient themselves.¹⁰ This approach involved providing information and standard advice, assuming that improving a patient's knowledge of their health condition would lead to behaviour change; however, change does not always occur purely on the basis of imparting knowledge and advice.¹¹ Moreover, retention of medical information given is often poor and can be impacted by perceived importance of the information and anxiety, among other factors.¹²

Dental clinicians are aware of frustrations when using traditional methods to encourage healthy behaviours.^{13,14} When clinicians impart advice with the goal of persuading patients to do 'the right thing', perhaps delivering information-laden arguments for the change, strong emotion may be provoked in recipients. This technique is termed the 'fixing reflex'. Although clinicians may be well-intentioned in their advice giving, using the fixing reflex tends to evoke a paradoxical reaction in patients, who may choose to remain ambivalent, or indeed resist beneficial change.¹

In MI, resistance to change (more recently termed discord) is the product of the interaction between patient and clinician, i.e. patient motivation may be increased

or decreased as a result of the clinician's approach and responses. MI avoids using the fixing reflex and instead encourages the spirit of MI which includes 'rolling with resistance', i.e. meeting resistance with a reflective and curious attitude rather than confrontation or argumentation.¹⁵ Tailoring patient education and providing person-focused, supportive and personalised care is a cornerstone of ethical healthcare.^{8,16,17} The importance of clinicians building a collaborative relationship with patients, accepting the context of oral health within the lives of patients and using a non-judgemental approach are key factors in successful oral health promotion.¹⁸ Miller and Rollnick's method of cultivating 'change talk' and softening 'sustain talk' allows exploration of reasons why a patient may be struggling to make a particular change, recognising the patient as an expert in their own health.¹ This supports patients towards identifying their goals, rather than the clinician solely imparting knowledge.

Applying MI techniques as a brief intervention

Barriers to health education in dental practice include a lack of time, inadequate funding, workload pressures, a lack of knowledge or training (including in communication skills) and the possibility of alienating patients.¹³ Yet, oral healthcare professionals have a responsibility to provide a preventive and holistic approach to care.⁹ Achieving behaviour change is a recognised challenge in healthcare; however, research indicates that brief motivational interventions can lead to beneficial changes.¹⁹

MI can be used as a brief intervention, making it suitable for the dental setting, where time can be a limiting factor.²⁰ Brief interventions may take different forms, including a verbal, time-limited counselling strategy,²¹ delivered in as little as 5–10 minutes.^{22,23} Furthermore, the technique may be used by all members of the dental team^{24,25,26} as well as students.²⁷ MI skills are also a helpful framework when considering

MI has been used effectively in diverse healthcare settings, including to decrease dental caries, alcohol consumption and tobacco use.'

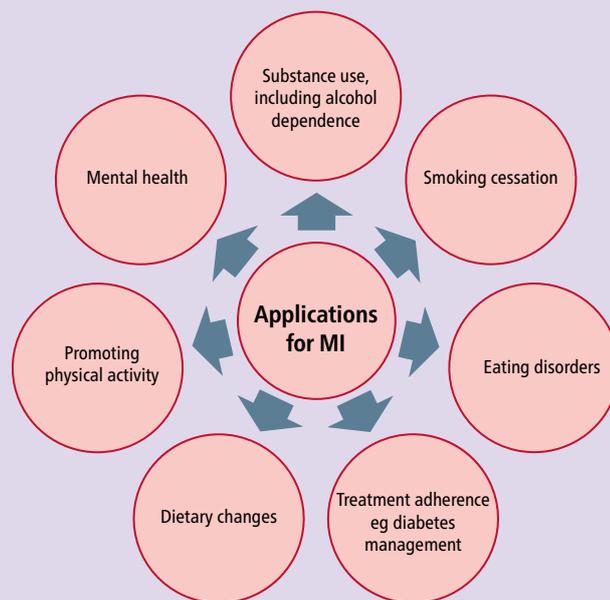


Fig. 1 Examples of the range of healthcare settings in which MI has been reported as used (this list is not exhaustive)⁷

the competencies required for the *Safe practitioner framework* 'clinical knowledge and skills' and 'interpersonal skills' published by the GDC.²⁸

Can using MI enhance general health outcomes?

It should be recognised that health behaviours are influenced by a wide range of factors, including a person's health beliefs, income and education, as well as social, physical, mental and societal circumstances.²⁹ MI has been used successfully by various healthcare specialties to promote positive healthy behaviours. Figure 1 illustrates some reported uses of MI in health settings.⁷

MI has been successful in improving patient outcomes when compared with control groups for antiretroviral therapy adherence in patients with HIV (human immunodeficiency virus),³⁰ decreasing depression symptoms,³¹ reducing body mass in patients who are overweight,³² reducing excessive alcohol consumption³³ and increasing physical activity.³⁴ Additionally, MI is more effective for smoking cessation when compared with brief anti-smoking advice.³⁵

However, not all publications find significant improvement with the use of MI. Individual studies have shown improvement in dietary behaviour change through the use of MI,³⁶ but a meta-analysis found non-significant results when MI was used to tackle healthy eating, blood glucose control and medication adherence.³ Nevertheless, the chances of improving a range of health outcomes increased by one and a half times

when patients received MI and a positive impact on patient confidence and intention to make health behaviour changes was reported.³

Can using MI in dentistry improve oral health outcomes?

The role of MI in dentistry has been examined because a multiplicity of health behaviours are crucial to oral health.³⁷ Behaviour change is therefore central to improvement of patient oral and general health and approaches focused on behaviour change may enhance the effectiveness of oral health education.³⁸ MI has been shown to have a positive impact on self-efficacy – the belief that one is capable of the required behaviour change – which is key to commencing and maintaining healthy behaviours.^{39,40} Higher patient self-efficacy in relation to oral health behaviours, such as frequency of toothbrushing and regular dental visits, has been linked to better performance in these areas.⁴¹

A number of studies have examined the role and impact of MI in dentistry. Relevant areas in dentistry include the below.

Caries risk/susceptibility reduction

Dental caries risk/susceptibility is influenced by sociocultural, environmental and health system factors.⁴² A number of health behaviours impact caries risk, including oral hygiene practice, sugar consumption and utilisation of oral health services.⁴² MI can be used to help patients identify the benefits of good oral hygiene, understand risks of poor oral hygiene, and explore barriers to practising good oral hygiene. This can

increase patients' motivation to care for teeth and gums, improving oral hygiene habits.⁴³ MI, in comparison to traditional approaches, has been shown to result in significantly decreased levels of caries in children, particularly in those from lower income backgrounds, where the burden of disease lies.⁴⁴ Thus, MI may hold a key role in tackling oral health inequities. A systematic review and meta-analysis of eight studies on the role of MI in preventing early childhood caries found there was greater benefit in caries reduction in children with higher caries experience; although, it was noted interventions provided were varied and further studies focused on high-risk groups were recommended.⁴⁵

Periodontal disease risk reduction

Modifiable risk factors influencing periodontal disease include plaque control, smoking and management of diabetes.⁴⁶ MI may be used to achieve periodontal disease risk reduction through encouraging patients to improve oral hygiene practices, reduce or quit smoking, and improve glycaemic control for patients with diabetes. Patients participating in MI (compared to traditional intervention) in a randomised controlled trial reported a higher frequency of daily interdental cleaning and improved adherence to oral hygiene practices for one year, with greater reductions in dental plaque and gingivitis.⁴³ Similar findings in periodontitis patient cases are reported; although, it must be noted that these findings reflected the patient perception, not clinical outcome measures.¹⁹ Another randomised controlled trial found that using MI to enhance oral hygiene instruction (OHI) resulted in improved plaque and gingivitis levels in orthodontic patients when compared with conventional OHI alone, which was sustained at six months.⁴⁷

Woelber *et al.*⁴⁸ reported improvement in periodontitis patients' interdental cleaning self-efficacy following only a one-day MI training intervention, delivered to dental students, promoting MI compliant conversations with patients without increasing total conversation time. This demonstrates translation of education and evidence to improve patient outcomes, supporting adoption of MI within busy dental settings. Moreover, use of MI-consistent language has been shown to evoke 'change talk' in periodontal patients.⁴⁹

In contrast, a systematic review by Carra *et al.*⁵⁰ and meta-analysis by Zhan *et al.*⁵¹ evaluated clinical outcomes, finding no significant improvement when using MI for outcomes such as bleeding and plaque

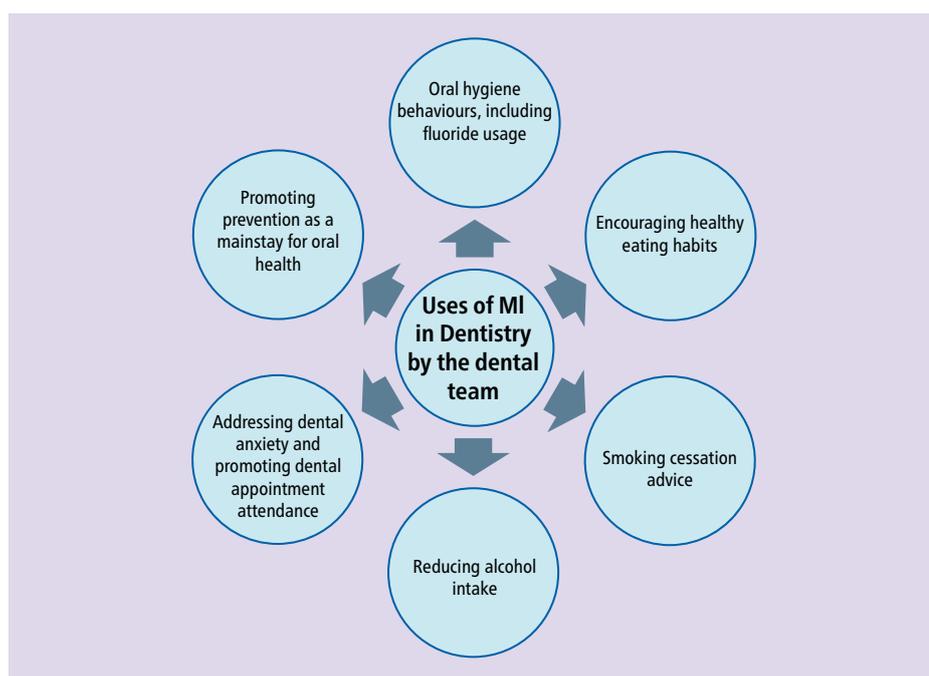


Fig. 2 Applications for MI in dentistry²⁰

levels in periodontitis patients. A review by Gao *et al.* found varied effectiveness of MI.⁵² Others found some significant improvement in indices such as plaque levels and bleeding on probing when MI was used alongside periodontal therapy.⁵³ In 2016, Kay *et al.* reported that most reviewed literature supported the use of MI in dental settings.¹⁸

Tooth wear risk reduction

Behavioural risk factors linked to tooth wear include excessive consumption of erosive drinks, parafunctional habits, substance use and overzealous toothbrushing.⁵⁴

There is limited data on the effect of MI for tooth wear risk reduction; although, other behaviour change techniques have been trialled with some success. For example, 'implementation planning' was successful in reducing tooth wear and self-reported dietary acid frequency at six months when compared with standard advice.⁵⁵ MI could potentially be used to promote reduction in tooth wear by encouraging modification of risk factors.

Oral cancer risk reduction

Modifiable factors, such as smoking, diet and alcohol intake, impact upon oral cancer risk and other oral health problems.^{56,57} MI can help patients identify and explore the benefits, risks and barriers related to smoking cessation and reducing alcohol intake, thus aiming to reduce oral cancer risk. MI can be used to encourage patients to quit smoking; although, taking longer to deliver than conventional brief advice, MI is significantly more effective at increasing patient likelihood to be ready for smoking cessation.^{22,35} Given the increased time to deliver MI for smoking cessation, future research could explore the cost-effectiveness of MI delivery in relation to the decreased burden on healthcare services if smokers successfully quit.

Dental general anaesthetic need reduction

Management of carious teeth is one of the most common reasons for hospital admission in paediatric patients.⁵⁸ Dental caries can lead to pain, disturbed sleep and missed social activities and school days for children.⁵⁹ General anaesthesia (GA) for dental procedures can cause distress to patients, families and those involved in their care.⁶⁰ Additionally, there is a significant financial burden associated with hospital admission for caries-related extractions; in England alone, for the year 2019–20, this was around £33 million for 0–19-year-olds.⁶¹ Avoiding repeat GAs prevents distress and benefits health economics.

Pine *et al.*²⁵ tested the efficacy of a 30-minute, brief MI intervention delivered by dental nurses to parents of children who had deciduous extractions under local anaesthesia, GA or inhalation sedation. Results found a 29% decrease in relative risk of new caries at two years in the intervention group.²⁵ This landmark study evidenced successful MI use, delivered by the wider dental team.

communication skills by the end of their undergraduate education.^{28,65} Evidence regarding MI knowledge and skills training embedded in dental school curricula across the UK is challenging to find and it would be helpful for more courses to foster the spirit of MI within teaching programmes.¹

Outwith the UK, student hygienists attended 14 hours training and completed

'Using MI to enhance oral hygiene

instruction resulted in improved plaque

and gingivitis levels in orthodontic

patients compared with OHI alone'

Reducing dental anxiety

Many people experience anxiety or fear when visiting the dentist.⁶² MI may help patients overcome anxiety and feel more comfortable during dental procedures. MI could be used to explore fears and concerns, identify coping strategies and build self-efficacy. However, evidence attesting to this lacks. One pilot study involved participants who rated forgetfulness and fear of the dentist among reasons for non-attendance. MI-based counselling was found to be a viable way to reduce avoidance of dental visits among this group.⁶³ Further research into the role of MI in relation to reducing dental anxiety is needed.

In summary, current evidence suggests that MI can be used by the whole dental team to support several behavioural changes known to reduce the risk of oral health problems (Fig. 2).²⁰

MI training for the dental team

The evidence currently available is compelling. There is a need for the dental team to develop skills in MI. Effective skill development may translate to improved patient outcomes in terms of readiness for change and/or change making.

Today, training opportunities appear to be at local levels rather than UK-wide. Readers are directed to the Motivational Interviewing Network of Trainers website to learn more: <https://motivationalinterviewing.org>.⁶⁴

Undergraduate/pre-registration training

Dental and medical undergraduates must develop and evidence proficiency in

pre- and post-training evaluations in the United States of America (USA).⁶⁶ Those trained in MI were able to demonstrate patient-centred communication skills which were statistically, and clinically, significantly improved. Third-year dental students in Illinois, USA, had three hours teaching on MI, they used their newly learned skills on a patient case and completed an assignment on the experience.⁶⁷ Those students who accurately identified their patient's readiness to change were most effective in using MI. In the Netherlands, over a two-year period, undergraduate dental students were either taught nothing about MI, or taught to use MI for smoking cessation. The group of students trained in MI use had a significant number of patients quit smoking compared to the non-MI dental student group.⁶⁸

The GDC's *The safe practitioner: a framework of behaviours and outcomes for dental professional education* comes into effect from September 2025 and is relevant to undergraduate dental and dental therapy students.²⁸ This guidance highlights the need for the dental team to develop and use skills to achieve the best oral health outcomes for patients. The framework outlines the need for interpersonal skills and effective communication, underpinned by empathic, personalised, preventive and person-focused care which considers the impact of patient adherence and self-care. It is acknowledged that behaviour change advice should be given in a way which motivates adherence and encourages patients to take responsibility for improvement and maintenance of their oral health.²⁸ MI is well-placed to fulfil this curricula requirement. It has been reported

as important that health coaching-based interventions, specifically MI, are provided for learners, and that learners are appropriately trained in their use.⁶⁹ Although training can be effectively delivered in short two-day courses or less,⁷⁰ longer-term training has also been shown to be important in developing MI skill competency.⁷¹ As such, introducing MI at the undergraduate level and building on this to develop sustained practice could be beneficial.

In recent years, 'non-technical skills' have emerged, adopted from high-risk industries into healthcare settings for reducing all manner of adverse events and increasing the quality of patient care.^{72,73} Non-technical skills are cognitive and interpersonal abilities, which are essential clinical skills and are characteristic of effective interventions.^{73,74} Communication is a vital non-technical skill. There have been various studies examining non-technical skill development and assessment in acute medicine, with recognition that training should be included in medical curricula.^{75,76} Going forward, the alignment of MI knowledge and skills training within the teaching and training of non-technical skills may be beneficial.

Integrating MI techniques into dental training has been recommended as beneficial for some years,⁷⁷ but a barrier may be an absence of suitably trained clinical mentors.⁶⁶ Thus, to effectively embed MI training and proficiency in its use clinically, postgraduate/post-registration training of the existing dental team is needed.

Postgraduate/post-registration training

Evidence is surprisingly sparse on MI training for postgraduate or post-registration members for the dental team, given recommendations.¹⁸

There is increasing focus on the importance of non-technical skills for post-qualification healthcare staff, as seen in the General Medical Council's *Generic professional capabilities framework in medicine* and the Faculty of Dental Trainers (Royal College of Surgeons, Edinburgh) development of a 'DeNTS taxonomy' (dental non-technical skills) for assessing non-technical skills in dentists.^{78,79}

Effective communication plays a key part of dental specialty training, and core and foundation/vocational training for postgraduate dentists and dental hygienists and dental therapists.⁸⁰ Therefore, further evidence may emerge as focus grows on non-technical skills and specifically, communication.

Of the evidence currently available, one

study in the USA focused on training the dental reception team to improve the care co-ordination of patients, which involved training in the use of MI. Following the intervention, dental receptionists felt better able to answer patients' oral health questions.⁸¹ The effectiveness of MI training for primary care dentists and dental health technicians in Brazil has been reported.⁸² Participants received eight hours training in MI and were followed-up for 1–2 years. Participants demonstrated that the MI skills learned were maintained over this period.

Additionally, there are a number of publications from the USA in relation to the use of MI by dental hygienists. These studies report that dental hygienists trained in MI use pre-graduation value and embrace the spirit of MI and the majority continue to use it post-qualification; however, periodic 'refresher' training is likely to promote and sustain the values and use of MI long-term.^{83,84,85}

It therefore appears that the use of MI within dentistry is recommended. It is a collaborative and supportive tool which allows patients to explore the benefits and barriers for specific behaviour changes and identify their own behaviour change goals. It can be applied to cases where better oral hygiene practices are likely to be of benefit, aiding caries and/or periodontal disease management. It is effective for supporting a decrease in both alcohol and tobacco use, and also reducing dental anxiety and identifying coping strategies in dentally anxious individuals. MI can be used by all members of the dental team as a brief intervention. Recent GDC guidance regarding undergraduate curricula aligns with the incorporation of the spirit of MI; however, current dental team members registered with the GDC may require training to use it effectively.

Conclusion

MI is a powerful tool for supporting patients to make positive changes towards improved health outcomes. Since the publication of the last systematic review in this area in 2016,¹⁸ related to general oral health promotion, there has been further consistent evidence for its efficacy and high relevance in dental settings in several domains relating to general and oral health. Incorporating the spirit of MI training into pre-registration curricula for members of the dental team would likely offer continued opportunities to practise and hone communication skills in supported simulated and clinical environments. Ample research has shown that the therapeutic relationship is as important in the dentist-patient relationship as it is in other healthcare settings.^{86,87}

Incorporating MI skills would help cultivate strong therapeutic relationship growth, alongside sustainable skill development for MI-compliant conversation and enhance confidence and competency in MI techniques for the dental team during their working lives.

Of the available evidence in dentistry, a substantial amount relates to caries prevention in children, improving oral hygiene practices in children and adults, and self-efficacy. MI use to promote dental attendance, healthy eating, and reduction of plaque, gingivitis, alcohol consumption and tobacco use has also been reported. Effectiveness of MI in a variety of dental areas, as well as practitioner training, would benefit from further robust research due to the heterogeneity of the evidence base.⁸⁸

In future research, standardising MI intervention methods and evaluation would be useful because self-reported 'improvements' as to the effectiveness of MI training are not necessarily objective or representative of the actuality. Research into training delivery methods, effectiveness of one-off events versus longitudinal training programmes, and if online training or in-person events work best to promote translation of MI skills learned into clinical practice, are needed. Further information on the frequency of MI interventions, number and duration of appointments that most likely support healthier behavioural changes would be useful. It is unclear what level of training is needed for the dental team to enable likely translation into improved patient oral health outcomes.

Going forward, existing dental team members need training opportunities to master and use MI skills. This, together with training pre-qualification, appears to be the essential step needed for regular and routine application of MI in oral healthcare, and would assist in gaining better insight into the role MI can play in supporting oral health improvements.

Ethics declaration

The authors declare no conflicts of interest.

Author contributions

Huma Aiman, Julie K. Kilgariff, Dougie Marks and Mairi Albiston drafted the manuscript and each author revised and amended the manuscript until completed.

Acknowledgements

Thanks are extended to Alan Gillies who was involved in the literature search related to this article.

This article was originally published in the BDJ in Volume 238 issue 3, pages 166 to 171, and is republished here with the permission of the authors.

References

- Miller W R, Rollnick S. *Motivational Interviewing: Helping People Change and Grow*. 4th ed. New York: The Guilford Press, 2023.
- Miller W R. Motivational interviewing with problem drinkers. *Behav Psychother* 1983; **11**: 147–172.
- Lundahl B, Moleni T, Burke B L *et al*. Motivational interviewing in medical care settings: a systematic review and meta-analysis of randomized controlled trials. *Patient Educ Couns* 2013; **93**: 157–168.
- Kurtz S, Silverman J, Benson J, Draper J. Marrying Content and Process in Clinical Method Teaching: Enhancing the Calgary-Cambridge Guides. *Acad Med* 2003; **78**: 802–809.
- Rollnick S, Miller W R, Butler C C. *Motivational Interviewing in Health Care: Helping Patients Change Behavior*. New York: The Guilford Press, 2008.
- Rollnick S, Miller W R. What is Motivational Interviewing? *Behav Cogn Psychother* 1995; **23**: 325–334.
- Britt E, Hudson S M, Blampied N M. Motivational interviewing in health settings: a review. *Patient Educ Couns* 2004; **53**: 147–155.
- Fenning S J, Smith G, Calderwood C. Realistic Medicine: Changing culture and practice in the delivery of health and social care. *Patient Educ Couns* 2019; **10**: 1751–1755.
- General Dental Council. Standards for the dental team. 2013. Available at <https://www.gdc-uk.org/standards-guidance/standards-and-guidance/standards-for-the-dental-team> (accessed February 2024).
- Hoving C, Visser A, Mullen P D, van den Borne B. A history of patient education by health professionals in Europe and North America: From authority to shared decision making education. *Patient Educ Couns* 2010; **78**: 275–281.
- Kelly M P, Barker M. Why is Changing health-related Behaviour so difficult? *Public Health* 2016; **136**: 109–116.
- Kessels R P C. Patients' memory for medical information. *J R Soc Med* 2003; **96**: 219–222.
- Dyer T A, Robinson P G. General health promotion in general dental practice – the involvement of the dental team Part 2: A qualitative and quantitative investigation of the views of practice principals in South Yorkshire. *Br Dent J* 2006; **201**: 45–51.
- Watt R G, McGlone P, Dykes J, Smith M. Barriers limiting dentists' active involvement in smoking cessation. *Oral Health Prev Dent* 2004; **2**: 95–102.
- Moyers T B, Rollnick S. A motivational interviewing perspective on resistance in psychotherapy. *J Clin Psychol* 2002; **58**: 185–193.
- Scottish Government. Personalising Realistic Medicine: Chief Medical Officer for Scotland's Annual Report 2017–2018. Chapter 1: Personalising Realistic Medicine For Our Patients. 2019. Available at <https://www.gov.scot/publications/personalising-realistic-medicine-chief-medical-officer-scotland-annual-report-2017-2018/pages/2/> (accessed January 2025).
- Varkey B. Principles of Clinical Ethics and Their Application to Practice. *Med Princ Pract* 2021; **30**: 17–28.
- Kay E J, Vascott D, Hocking A, Nield H. Motivational interviewing in general dental practice: a review of the evidence. *Br Dent J* 2016; **221**: 785–791.
- Arnett M C, Rogers K M, Evans M D, Reibel Y. Effectiveness of brief motivational interviewing on perceived importance, interest and self-efficacy of oral health behaviors: a randomized clinical trial. *PEC Innov* 2022; **1**: 100092.
- Gillam D G, Yusuf H. Brief Motivational Interviewing in Dental Practice. *Dent J (Basel)* 2019; **7**: 51.
- Fleming M, Manwell L B. Brief Intervention in Primary Care Settings. A primary treatment method for at-risk, problem, and dependent drinkers. *Alcohol Res Health* 1999; **23**: 128–137.
- Butler C C, Rollnick S, Cohen D, Bachmann M, Russell I, Stott N. Motivational consulting versus brief advice for smokers in general practice: a randomized trial. *Br J Gen Pract* 1999; **49**: 611–616.
- Senft R A, Polen M R, Freeborn D K, Hollis J F. Brief Intervention in a Primary Care Setting for Hazardous Drinkers. *Am J Prev Med* 1997; **13**: 464–470.
- Colvara B C, Faustino-Silva D D, Meyer E, Hugo F N, Hilgert J B, Celeste R K. Motivational Interviewing in Preventing Early Childhood Caries in Primary Healthcare: A Community-based Randomized Cluster Trial. *J Pediatr* 2018; **201**: 190–195.
- Pine C M, Adair P M, Burnside G *et al*. Dental RECUR Randomized Trial to Prevent Caries Recurrence in Children. *J Dent Res* 2020; **99**: 168–174.
- Batra M, Shah A F, Virtanen J I. Integration of oral health in primary health care through motivational interviewing for mothers of young children: A pilot study. *J Indian Soc Pedod Prev Dent* 2018; **36**: 86–92.
- Arnett M C, Evans M D, Stull C L. Brief Motivational Interviewing: Evaluation of a skills-based education program. *J Dent Hyg* 2022; **96**: 46–56.
- General Dental Council. Learning outcomes and behaviours. 2022. Available at <https://www.gdc-uk.org/education-cpd/dental-education/quality-assurance/learning-outcomes-and-behaviours> (accessed March 2024).
- Short S E, Mollborn S. Social Determinants and Health Behaviors: Conceptual Frames and Empirical Advances. *Curr Opin Psychol* 2015; **5**: 78–84.
- Golin C E, Earp J, Tien H C, Stewart P, Porter C, Howie L. A 2-arm, randomized, controlled trial of a motivational interviewing-based intervention to improve adherence to antiretroviral therapy (ART) among patients failing or initiating ART. *J Acquir Immune Defic Syndr* 2006; **42**: 42–51.
- Van Voorhees B W, Fogel J, Reinecke M A *et al*. Randomized clinical trial of an internet-based depression prevention program for adolescents (Project CATCH-IT) in primary care: 12-week outcomes. *J Dev Behav Pediatr* 2009; **30**: 23–37.
- Armstrong M J, Mottershead T A, Ronksley P E, Sigal R J, Campbell T S, Hemmelgarn B R. Motivational interviewing to improve weight loss in overweight and/or obese patients: a systematic review and meta-analysis of randomized controlled trials. *Obes Rev* 2011; **12**: 709–723.
- Vasilaki E I, Hosier S G, Cox W M. The efficacy of motivational interviewing as a brief intervention for excessive drinking: a meta-analytic review. *Alcohol Alcohol* 2006; **41**: 328–335.
- Hardcastle S, Taylor A, Bailey M, Castle R. A randomised controlled trial on the effectiveness of a primary health care based counselling intervention on physical activity, diet and CHD risk factors. *Patient Educ Couns* 2008; **70**: 31–39.
- Soria R, Legido A, Escolano C, Yeste A L, Montoya J. A randomised controlled trial of motivational interviewing for smoking cessation. *Br J Gen Pract* 2006; **56**: 768–774.
- Campbell M K, Carr C, DeVellis B *et al*. A randomized trial of tailoring and motivational interviewing to promote fruit and vegetable consumption for cancer prevention and control. *Ann Behav Med* 2009; **38**: 71–85.
- National Institute for Health and Care Excellence. Oral health promotion: general dental practice [NG30]. 2015. Available at <https://www.nice.org.uk/guidance/ng30> (accessed October 2023).
- Jepsen S, Blanco J, Buchalla W *et al*. Prevention and control of dental caries and periodontal diseases at individual and population level: consensus report of group 3 of joint EFP/ORCA workshop on the boundaries between caries and periodontal diseases. *J Clin Periodontol* 2017; DOI: 10.1111/jcpe.12687.
- Schwarzer R, Fuchs R. Self-efficacy and health behaviours. In Conner M, Norman P (eds) *Predicting Health Behaviour: Research and Practice with Social Cognition Models*. pp 163–196. Berkshire: Open University Press, 1996.
- Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977; **84**: 191–215.
- Syrjälä A M H, Knecht M C, Knuutila M L E. Dental self-efficacy as a determinant to oral health behaviour, oral hygiene and HbA_{1c} level among diabetic patients. *J Clin Periodontol* 1999; **26**: 616–621.
- Petersen P E. Sociobehavioural risk factors in dental caries – international perspectives. *Community Dent Oral Epidemiol* 2005; **33**: 274–279.
- Jönsson B, Öhrn K, Oscarson N, Lindberg P. The effectiveness of an individually tailored oral health educational programme on oral hygiene behaviour in patients with periodontal diseases: a blinded randomized-controlled clinical trial (one-year follow-up). *J Clin Periodontol* 2009; **36**: 1025–1034.
- Faustino-Silva D D, Colvara B C, Meyer E, Hugo F N, Celeste R K, Hilgert J B. Motivational interviewing effects on caries prevention in children differ by income: a randomized cluster trial. *Community Dent Oral Epidemiol* 2019; **47**: 477–484.
- Colvara B C, Faustino-Silva D D, Meyer E, Hugo F N, Celeste R K, Hilgert J B. Motivational interviewing for preventing early childhood caries: a systematic review and meta-analysis. *Community Dent Oral Epidemiol* 2021; **49**: 10–16.
- Van Dyke T E, Sheilesh D. Risk factors for periodontitis. *J Int Acad Periodontol* 2005; **7**: 3–7.
- Rigau-Gay M M, Claver-Garrido E, Benet M, Lusilla-Palacios P, Ustrell-Torrent J M. Effectiveness of motivational interviewing to improve oral hygiene in orthodontic patients: A randomized controlled trial. *J Health Psychol* 2020; **25**: 2362–2373.
- Woelber J P, Spann-Aloge N, Hanna G *et al*. Training of Dental Professionals in Motivational Interviewing can Heighten Interdental Cleaning Self-Efficacy in Periodontal Patients. *Front Psychol* 2016; **7**: 254.
- Kitzmann J, Ratka-Krueger P, Vach K, Woelber J P. The impact of motivational interviewing on communication of patients undergoing periodontal therapy. *J Clin Periodontol* 2019; **46**: 740–750.
- Carra M C, Detzen L, Kitzmann J, Woelber J P, Ramseier C A, Bouchard P. Promoting behavioural changes to improve oral hygiene in patients with periodontal diseases: a systematic review. *J Clin Periodontol* 2020; **47**: 72–89.
- Zhan C, Qu W, Fok M R, Jin L, Lin Y. Motivational Interviewing on Periodontal Treatment Outcomes: A Meta-Analysis. *Int Dent J* 2024; **74**: 669–678.
- Gao X, Lo E C, Kot S C, Chan K C. Motivational interviewing in improving oral health: a systematic review of randomized controlled trials. *J Periodontol* 2014; **85**: 426–437.
- Kopp S L, Ramseier C A, Ratka-Krüger P, Woelber J P. Motivational Interviewing as an Adjunct to Periodontal Therapy – A Systematic Review. *Front Psychol* 2017; **8**: 279.
- Leven A J, Ashley M. Epidemiology, aetiology and prevention of tooth wear. *Br Dent J* 2023; **234**: 439–444.
- O'Toole S, Newton T, Moazzez R, Hasan A, Bartlett D. Randomised Controlled Clinical Trial Investigating The Impact of Implementation Planning on Behaviour Related to The Diet. *Sci Rep* 2018; **8**: 8024.
- Ram H, Sarkar J, Kumar H, Konwar R, Bhatt M L B, Mohammad S. Oral cancer: risk factors and molecular pathogenesis. *J Maxillofac Oral Surg* 2011; **10**: 132–137.
- FDI World Dental Federation. Alcohol as a Risk for Oral Health. *Int Dent J* 2024; **74**: 165–166.
- Alkhoury N, Sanders H, Waite C, Marshman Z, Ashley P. Variations in provision of dental general

- anaesthetic for children in England. *Br Dent J* 2022; DOI: 10.1038/s41415-022-4455-8.
59. Gilchrist F, Marshman Z, Deery C, Rodd H D. The impact of dental caries on children and young people: what they have to say? *Int J Paediatr Dent* 2015; **25**: 327–338.
 60. Geddis-Regan A R, Gray D, Buckingham S, Misra U, Boyle C. The use of general anaesthesia in special care dentistry: a clinical guideline from the British Society for Disability and Oral Health. *Spec Care Dent* 2022; **42**: 3–32.
 61. UK Government. Hospital tooth extractions of 0 to 19 year olds. 2019. Available at <https://www.gov.uk/government/publications/hospital-tooth-extractions-of-0-to-19-year-olds> (accessed January 2024).
 62. Hill K B, Chadwick B, Freeman R, O'Sullivan I, Murray J J. Adult Dental Health Survey 2009: relationships between dental attendance patterns, oral health behaviour and the current barriers to dental care. *Br Dent J* 2013; **214**: 25–32.
 63. Skaret E, Weinstein P, Kvale G, Raadal M. An intervention program to reduce dental avoidance behaviour among adolescents: a pilot study. *Eur J Paediatr Dent* 2003; **4**: 191–196.
 64. Motivational Interviewing Network of Trainers. Homepage. 2021. Available at <https://motivationalinterviewing.org> (accessed February 2024).
 65. General Medical Council. Outcomes for graduates. 2020. Available at <https://www.gmc-uk.org/education/standards-guidance-and-curricula/standards-and-outcomes/outcomes-for-graduates/outcomes-for-graduates> (accessed February 2024).
 66. Bray K K, Catley D, Voelker M A, Liston R, Williams K B. Motivational interviewing in dental hygiene education: curriculum modification and evaluation. *J Dent Educ* 2013; **77**: 1662–1669.
 67. Hinz J G. Teaching dental students motivational interviewing techniques: analysis of a third-year class assignment. *J Dent Educ* 2010; **74**: 1351–1356.
 68. Schoonheim-Klein M, Gresnigt C, van der Velden U. Influence of dental education in motivational interviewing on the efficacy of interventions for smoking cessation. *Eur J Dent Educ* 2012; **17**: 28–33.
 69. Chunda R, Mossey P, Freeman R, Yuan S. Health Coaching-Based Interventions for Oral Health Promotion: A Scoping Review. *Dent J* 2023; **11**: 73.
 70. Curtin S, Trace A, Ziada H, Crowley E. Motivational interviewing for dental clinicians. *J Ir Dent Assoc* 2014; **60**: 35–37.
 71. Hall K, Staiger P K, Simpson A, Best D, Lubman D I. After 30 years of dissemination, have we achieved sustained practice change in motivational interviewing? *Addiction* 2016; **111**: 1144–1150.
 72. Tan Y X, Jalal A H B, Ngai V, Manobharath N, Soh T C F. What are the non-technical skills required by junior doctors in the NHS to manage medical emergencies? A scoping review. *Postgrad Med J* 2021; **97**: 813–818.
 73. Stahel P F, Cobiauchi L, Dal Mas F *et al*. The role of teamwork and non-technical skills for improving emergency surgical outcomes: an international perspective. *Patient Saf Surg* 2022; **16**: 8.
 74. Flin R, O'Connor P, Crichton M. *Safety at the Sharp End: A Guide to Non-Technical Skills*. Surrey: Ashgate Publishing, 2008.
 75. Gordon M, Darbyshire D, Baker P. Non-technical skills training to enhance patient safety: a systematic review. *Med Educ* 2012; **46**: 1042–1054.
 76. Hamilton A L, Kerins J, MacCrossan M A, Tallentire V R. Medical Students' Non-Technical Skills (Medi-StuNTS): preliminary work developing a behavioural marker system for the non-technical skills of medical students in acute care. *BMJ Simul Technol Enhanced Learn* 2018; **5**: 130–139.
 77. Curtin S, Trace A. Exploring motivational interviewing and its philosophical alignment to an undergraduate behavioural science programme in dentistry. *Eur J Dent Educ* 2013; **17**: 83–87.
 78. General Medical Council. Generic professional capabilities framework. 2019. Available at <https://www.gmc-uk.org/education/standards-guidance-and-curricula/standards-and-outcomes/generic-professional-capabilities-framework> (accessed March 2024).
 79. Royal College of Surgeons of Edinburgh. Dental Non-Technical Skills (DeNTS) Masterclass. Increasing patient safety: how to assess the non-technical skills of dentists using DeNTS. 2024. Available at <https://services.rcsed.ac.uk/events-courses/dental-non-technical-skills-dents-masterclass-increasing-patient-safety-how-to-assess-the-non-technical-skills-of-dentists-using-dents> (accessed April 2024).
 80. UK Committee of Postgraduate Dental Deans and Directors. Postgraduate training. 2024. Available at <https://www.copdend.org/postgraduate-training/> (accessed March 2024).
 81. Kottek A M, Hoeft K S, White J M, Simmons K, Mertz E A. Implementing care coordination in a large dental care organization in the United States by upskilling front office personnel. *Hum Resour Health* 2021; **19**: 48.
 82. Faustino-Silva D D, Meyer E, Hugo F N, Hilgert J B. Effectiveness of Motivational Interviewing Training for Primary Care Dentists and Dental Health Technicians: Results from a Community Clinical Trial. *J Dent Educ* 2019; **83**: 585–594.
 83. Rogers K M, Arnett M C, Mays K A, Wang Q, Blue C M. Dental hygienists' use of motivational interviewing and perceptions of effectiveness in changing patient behaviors. *J Dent Educ* 2022; **86**: 909–917.
 84. Curry-Chiu M E, Catley D, Voelker M A, Bray K K. Dental Hygienists' Experiences with Motivational Interviewing: A Qualitative Study. *J Dent Educ* 2015; **79**: 897–906.
 85. Arnett M, Korte D, Richards P S *et al*. Effect of Faculty Development Activities on Dental Hygiene Faculty Perceptions of and Teaching About Motivational Interviewing: A Pilot Study. *J Dent Educ* 2017; **81**: 969–977.
 86. Jones L M, Huggins T J. Empathy in the dentist-patient relationship: review and application. *N Z Dent J* 2014; **110**: 98–104.
 87. Myran L, Willumsen T. The importance of a safe relationship with dental patients. In Willumsen T, Lein J P Å, Gorter R C, Myran L (eds) *Oral Health Psychology: Psychological Aspects Related to Dentistry*. pp 63–73. Cham: Springer International Publishing, 2022.
 88. Brennan R, O'Driscoll R. A scoping review of the use of motivational interviewing in oral healthcare settings. *J Ir Dent Assoc* 2021; **67**: 272–276.

<https://doi.org/10.1038/s41407-025-3057-0>

CPD questions

This article has four CPD questions attached to it which will earn you one hour of verifiable CPD. To access the **free** BDA CPD hub, go to <http://bit.ly/2e3G0sv>.

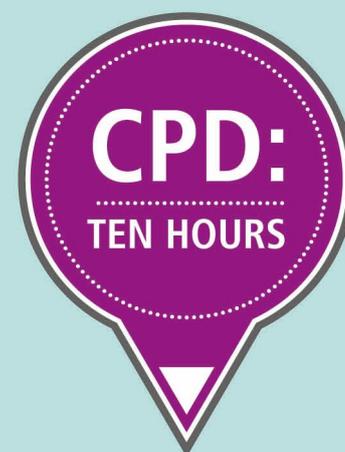
BDJ Team

Free CPD!



Stay up-to-date!

10 hours of free CPD every year



[go.nature.com/TeamCPD25](https://www.nature.com/TeamCPD25)