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**FACTORS THAT INFLUENCE DELIVERY OF TOBACCO CESSATION SUPPORT IN GENERAL
DENTAL PRACTICE: A NARRATIVE REVIEW**

ABSTRACT

Objectives

To review the literature reporting factors that are associated with the delivery of lifestyle support in general dental practice.

Methods

A systematic review of the quantitative observational studies describing activities to promote the general health of adults in primary care general dental practice. Behaviour change included tobacco cessation, alcohol reduction, diet, weight management and physical activity. Tooth brushing and oral hygiene behaviours were excluded as the focus of this review was on the common risk factors that affect general health as well as oral health.

Results

Six cross sectional studies met the inclusion criteria. Five studies only reported activities to support tobacco cessation. As well as tobacco cessation one study also reported activities related to alcohol usage, physical activity and Body Mass Index. Perceptions of time availability consistently correlated with activities and beliefs about tobacco cessation, alongside the smoking status of the dental professional. Dentists who perceive having more available time were more likely to discuss smoking with patients, prescribe smoking cessation treatments and direct patients towards (signpost to) lifestyle support services. Dental professionals who smoke were less likely to give smoking cessation advice and counselling than non-smokers. Finally, the data showed that professional support may be relevant. Professionals who work in solo practices or those who felt a lack of support from the wider professional team (peer support) were more likely to report barriers to delivering lifestyle support.

Conclusion

Organisational changes in dental practices to encourage more team working and professional time for lifestyle support may influence delivery. Dental professionals who are smokers may require training to develop their beliefs about the effectiveness of smoking cessation interventions.

Key words

'Lifestyle', 'Prevention', 'Primary Health Care', 'General Practice, Dental'

INTRODUCTION

Periodontal, cardiovascular and respiratory diseases and oral cancer are largely preventable. They share common risk factors which include poor diet, stress, increased alcohol consumption and tobacco use (1).

The rising prevalence of lifestyle related diseases in developed countries has prompted changes to health policy towards prevention. A UK initiative 'Making Every Contact Counts' states any healthcare provider who comes into contact with a patient and has the opportunity to have a conversation to improve their health should take advantage of that situation (2). In the UK, evidence-based recommendations have been developed to support lifestyle interventions in dental settings; targeting diet, smoking and alcohol (3-6) intending to capitalise on this contact with 'healthy patients'. General dental practice team members are ideally placed to deliver these initiatives due to high attendance rates (61% of UK dentate adults attend for regular dental check-ups (7) and repeated visits for treatment.

Within the dental setting there is evidence that teams are engaging with activities to support lifestyle behaviour change with their patients; around 50% of dentists routinely enquire about smoking behaviours during checkups (8, 9). In contrast only 2-4% of dentists and hygienists routinely offer counselling on alcohol misuse with the majority considering this beyond their role (10, 11).

There has been some research into the possible barriers for dental professionals' delivering lifestyle interventions. Reported barriers include lack of time, financial factors, lack of personal skills, and concerns about an adverse effect on the professional-patient relationship (12-15). However, despite these it has been shown that dentists are amenable to focusing on prevention in dental practice (16) with education, training and reimbursement for time to deliver interventions being cited as facilitators (12).

There is a lack of clarity in the literature regarding the significant factors that influence dental teams to provide lifestyle support for their patients. Therefore, the aim of this review was to gain an understanding of the range of reported factors that impede and facilitate the delivery of lifestyle support in general dental practice.

MATERIALS AND METHODS

Selection criteria

The inclusion criteria for this review were: published quantitative [observational](#) studies examining the role of various factors in the delivery of lifestyle behavior change 'support' to adults in primary care general dental practice. Factors were age, gender, practice type etc. 'Support' include activities such as for example, advice, counselling and signposting. The lifestyle behaviours of interest were those that affect both general and oral health, termed 'common risk factors'. These were tobacco cessation, alcohol reduction and diet. Thus studies reporting advice on tooth brushing and oral hygiene alone were excluded. Further exclusion criteria were: secondary care such as hospitals or specialist practice settings, and selected populations, such as those with mental health problems or the prison population. Quantitative studies were also excluded if they only reported descriptive statistics or failed to report p-values or confidence intervals. Authors of publications were contacted to clarify any ambiguities that were essential to ascertain the eligibility, and papers of authors who failed to respond were excluded. There was no language limitation.

Policy changes in the UK relating to delivery of smoking cessation services occurred in the 1990s, therefore, the search strategy coincided with this time point as it was considered that research in this area would unlikely to predate this (17).

Identification of studies

An electronic search strategy was devised by the authors and run in Medline, Evidence Based Medicine (Cochrane Library) and PsychInfo from January 1990 to January 2015. The main search terms included: 'lifestyle interventions', 'general dental practice', 'primary dental care', 'oral health', 'health education', 'oral health promotion' involving 'tobacco use cessation', 'alcohol drinking', 'diet advice'. The full electronic search strategy is available from the authors on request.

Search results were exported to Endnote X3. One reviewer (RL) screened all titles against the predefined selection criteria. Ten percent of the titles were double screened (JM, GD) to check for accuracy in selection. All the selected abstracts were independently reviewed by two reviewers (RL and JM or GD or JC). Full copies of papers were obtained for those studies that either met the eligibility criteria or could not be categorically excluded or included

by their abstract. Screening of full papers was conducted by two reviewers independently (RL and JM or JC). Reference lists of included studies were hand searched (Figure 1). Discrepancies were resolved by group consensus.

Quality Assessment

Quality assessment for each eligible study was carried out independently by two reviewers (RL and JC) using the Critical Appraisal Skills Program (CASP) for observational studies. Studies that met less than 50% of the quality criteria were deemed of poor quality, studies meeting between 50% and 74% were considered to be of moderate quality and those scoring 75% or more were weighted as good quality (18). Studies that were deemed to be of poor quality were excluded.

Data extraction and analysis

A standardised data extraction sheet was applied to each included study. Two reviewers independently extracted the data (RL and JM or JC) for study design, analysis and outcome measures. The findings were compared after the extraction process, discrepancies in interpretation of results were reviewed and a consensus reached. The data extracted included: authors, date, country, language, study design, data collection method, selection criteria, lifestyle behaviour, influencing factors (including demographics and role where available), and lifestyle support activities. Results were organised according to the type of lifestyle support activities reported in the included studies.

Results

Fourteen trials were identified which were included in a systematic review of trials of tobacco cessation interventions (19), therefore, this review focused on observational studies. Six foreign language abstracts were translated and excluded at the abstract stage. After contacting the authors, one study was excluded due to ambiguities that suggested that the study not meet the inclusion criteria (14). There were no studies excluded on the basis of quality in the review.

Six studies met our inclusion criteria see Figure 1: PRISMA flow diagram. All were cross-sectional and reported activities related to tobacco cessation. As well as tobacco cessation one study also reported activities related to alcohol usage, physical activity and Body Mass Index (20). All but one study (21) collected data through postal questionnaires. Three of the studies focused on dentists (9, 20, 22). As well as dentists two studies also considered hygienists (21, 23) and one study included dentists, hygienists and prevention auxiliaries (21). One study focused only on dental hygienists (24) (Table 1). In two studies, multivariate analysis was applied

(20, 21), one study used structural equation modeling to predict hygienists' behaviour (24) and the remaining studies applied bivariate analysis (9, 20, 22, 23). All included studies were of moderate quality.

Six types of lifestyle support factors were reported: enquiring (about lifestyle behaviours); advice and counselling; recording and; signposting, referring and prescribing; knowledge and; beliefs. Although 'recording' is not a supportive activity as such it was considered evidence that the professional had engaged in discussions about lifestyle behavior with the patient. These are reported in Table 2.

Enquiring about smoking behaviours

One study found that hygienists with low self-efficacy (having the required skills and confidence) were more likely to ask patients about smoking (24). However, none of the factors investigated in the remaining included studies correlated with dental professionals enquiring about patients' lifestyle behaviours.

Advice and counselling

One study relating to advice and counselling split data into three target groups: patients with oral complaints, patients without oral complaints, and all patients, as well as by the types of activities, i.e. advice or counselling (21). To simplify reporting only general information without specifics of target groups have been reported. One study found that high levels of self-efficacy correlated with discussing strategies for quitting with patients (24). The most consistent finding reported in three studies (9, 21, 22) was that the smoking status of the professional was associated with advice giving and counselling. Being a smoker appears to be negatively related to both activities (9, 21), likewise being a non-smoker was associated with discussing smoking with patients (9, 22).

Other factors that seemed to be associated with lifestyle support included being in a private practice (22), having more time available (23), having a perception of possible success in helping patients to quit (23) and perceived support from their wider dental team (21). In contrast being a male was negatively associated with discussing tobacco or counselling some patient groups (21). The influences of age and professional experience on activities were not consistent (20, 21).

Recording smoking status

Two studies exploring the relationship of the professionals' smoking status on recording of patient smoking status reported that a dental professional being a smoker was negatively correlated with recording patients' smoking status (9). The converse was also confirmed in another study (22). Recording of smoking status was also more likely among newer graduates (9, 22).

Signposting, referring, and prescribing

One study explored seven factors and two (having 'more time' and asking about smoking status) were found to be correlated with signposting and the prescription of smoking cessation treatments (23). In this study referral to smoking cessation clinics was not correlated with any factor. However, in another study high levels of self-efficacy were correlated with assisting patients to quit smoking through signposting and referring to smoking cessation services (24). Finally rurality was found to be a significant barrier to referral due to lack of locally available options (20).

Knowledge

In one study, being a smoker was positively correlated with having good knowledge about smoking cessation treatments, while there was no relationship between knowledge and year of graduation or practice type (9).

Beliefs

Four studies investigated relationships between various factors and beliefs (9, 20, 22, 23). Being a non-smoker was positively correlated with beliefs that: dentists should encourage patients to stop smoking; set good examples; be influential at policy level; are effective at facilitating smoking cessation and; smoking cessation treatment is effective (9, 22). With regards to professional experience, conflicting results were found (9, 20, 22). Two studies showed newer graduates were more likely to believe doctors to be effective in smoking cessation, (9, 22), however, only one study (9) showed a positive relationship between the perception of dentists' effectiveness in smoking cessation and year of graduation. The study investigating dentists' behaviours related to tobacco, alcohol, weight management and physical activity found that younger dentists were more likely to perceive that patients would object to the additional costs for more holistic care and counselling. Younger dentists and females were also more likely to worry about appearing judgmental and doubt patients' acceptance of lifestyle support by dental professionals (20). Dentists working in solo private practices were also more likely to perceive patients would object to increased costs of further general health services (20). Another study showed 'more time' was associated with perceiving success in helping patients to quit (23).

Discussion

This review has assessed the range of investigated factors that are associated with lifestyle support activities in general dental practice. All the studies that met the inclusion criteria in this review focused on tobacco cessation. This focus perhaps reflects the investment and significant policy changes in smoking cessation (17), as

well as the repeated calls to all healthcare providers to be involved in the process of helping their patients to stop using tobacco (3, 5, 6).

Lifestyle support in dentistry has been shown to be effective in increasing cessation rates. A systematic review involving 14 intervention studies concluded that tobacco interventions based within a dental setting significantly increase abstinence rates for six months or longer amongst both cigarette smokers and smokeless tobacco users (19).

The present review explored the factors that influence the delivery of lifestyle support in dental practice. The perception of time was a factor that consistently influenced lifestyle support activities in general dental practice. Having more time available was positively related to signposting to services and the prescription of smoking cessation treatments and this may have led to the perception that more time leads to success in helping patients to quit tobacco (23). A survey of 149 UK dentists reported 'a lack of time' as the most cited barrier by 80% of the respondents in providing smoking cessation advice (13).

Besides the perception of time, the smoking status of the dental professional was also found to be a significant factor associated with smoking cessation activities (9, 21, 22). Smokers were less likely to record their patients' smoking status (9, 22) and deliver smoking cessation advice and counselling (9, 21), yet there is evidence in the data that smokers have more knowledge about smoking cessation treatments than non-smokers (9). In the included studies, less than one sixth of dentists were smokers (9, 21, 22) and 28% of prevention auxiliaries smoked (21). Dental professionals who are smokers may require further training to develop their beliefs about the effectiveness of smoking cessation interventions (9, 22). However, commensurate with the national population trend, the current smoking rates amongst dental professionals are likely to be lower than when these studies were carried out,

making this issue less pertinent (25). Non-smokers may have different training needs such as further knowledge expansion about smoking cessation treatments, and there is encouraging evidence to suggest dentists are amenable to further training to enhance their lifestyle support skills (26).

Finally, our analysis found that peer support was an important facilitator in delivering prevention in general dental practice. Dental professionals who perceived having support from colleagues were more likely to give advice and counselling (21) and those working in solo practices were more likely to perceive barriers in delivering lifestyle support (24).

There are numerous evidence based guidelines for dental professionals that have been developed (3, 27, 28) to assist in delivering lifestyle interventions in a dental setting, targeting diet, smoking and alcohol to bring about good oral and general health. However, only one study in the review made reference to recommended guidance, '2000 Public Health clinical practice guidance' which encompasses the 5As (ask, advise, assess, assist, and arrange) during data analysis (23). None of the included studies in the review asked participants if they were aware of evidence-based national guidance and if these informed their lifestyle support activities.

The data drawn from the six studies confirms time, and possibly lack of peer support and personal skills (amongst smokers) cited in the literature (16) as barriers to delivering lifestyle support. All the other data showed inconsistencies or were only reported in one study, making it difficult to draw conclusions. Our findings also suggest that dentists perceived that the additional patient charges for giving lifestyle support may adversely affect the professional patient relationship (20). This is consistent with some of the barriers in the wider literature (12-15).

This review only included one study investigating alcohol support, weight management and physical activity (20). However with the exception of tobacco use

none of the factors investigated **influenced** dental practitioners' lifestyle support activities. Lack of research into other unhealthy lifestyle behaviours in this context is of concern particularly around alcohol reduction where there has been a sharp increase in alcohol related disorders in developed countries over the last two decades (29). It has been reported in the literature that dentists feel uncomfortable having alcohol-related discussions with their patients and considered there to be a lack of appropriate management pathways (15). Training in this area has been shown to significantly enhance skills in asking alcohol related questions and advising patients to reduce drinking (15).

In the UK, alcohol misuse referral pathways for dental professionals are developed locally and lack consistency, therefore it may prove challenging for dental teams to access information on such pathways. The national UK evidence-based guidelines for dental professionals outlines guidance on providing brief alcohol intervention and signposting to local services (3). However, the findings from this review shows that a lack of appropriate referral pathways can be a barrier to providing lifestyle support (20).

Currently in the UK, three new primary care dental contracts are being piloted. These pilots aim to assess possible ways to provide lifestyle support in dental practice. The findings of this review are timely as they consistently identify two factors in general dental practice that appear to be associated with activities related to smoking cessation: perceptions of time and smoking status of the professional. Smoking cessation advice is a financially rewarded 'quality' element of the piloted contracts (30). However, time is another factor the new dental contracts can reward; thereby encouraging practices to engage in more training and employ more professional support, which the data suggests facilitates lifestyle support (20, 21).

Strengths and Limitations

This is the first review to explore the factors that influence delivery of lifestyle support in primary care general dental practice. The research strategy was robust and transparent assuring all the relevant studies were identified. Future reviews could widen their scope and search more databases and identify grey literature, as well as include more dental settings and patient demographics to identify further factors that influence delivery of lifestyle support in dentistry to complement our findings.

Whilst this review has highlighted some important findings there are a number of limitations of the research. There were only six studies included in the review, none of which were assessed as being of high quality. Most of the reported factors were not tested for independence, and the cross sectional nature of the studies meant that causal pathways for many could not be determined. Many of the factors were only investigated in one study, and therefore, remain unconfirmed by other studies. Also, the results of one study were split into target groups with examples of conflicting results (21), making the results particularly challenging to interpret.

The included studies did not give sufficient details of the questionnaires or instruments used, nor was there any reference to consistent validated outcomes comparable across the studies. In particular, one study measured self-efficacy using a five-point scale ranging from 'confident' to 'doubtful' (21). Another study (24) describes using a 'five point semantic differential scale' to measure self-efficacy. However, it was unclear if these scales were the same and consequently directly comparable.

The only primary quantitative study investigating general health holistically did not yield any significant findings related to weight management, physical activity and alcohol support (20). Further research is needed to determine if dental professionals are aware of and implementing the evidence-based guidelines to provide lifestyle

support and if they consider these activities as part of their remit. In addition, more research is needed to explore the potential factors to supporting these lifestyle interventions in dental settings.

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Table 1 Study Characteristics

Author & Country	Participant characteristics		Practice status
	Dentists	Other staff	
John et al, 1997 UK (22)	N= 674* Female = 30.9% Smoker = 9.4% Ex-smoker = 28.2%	Not included	NHS practice: 36.8% Private practice = 30.4%
Albert et al, 2002 USA (23)	No details provided	3% of dental practices had a dental hygienist	75 dental practices Practice status- not included
John et al, 2003, UK (9)	N= 696 Female = 35.3% Smoker = 8.1% Ex-smoker = 23.3%	Not included	NHS practice: 30.9% Private = 33.1%
Rosseel et al, 2009 The Netherlands (21)	N=72 Female: 47.2% Age: 43.6 yrs Years experience: 17.2 yrs Smokers: 13.9%	<u>Hygienists</u> N=31 Gender: all female Age: 31.6 yrs Years experience = 8.2 Smokers: 10% <u>Auxiliaries</u> N= 50 Gender: all female Age: 34.4 yrs Years experience: 3.7	87 dental practices. Practice status – not included

		Smokers: 28%	
Freeman et al, 2012 Australia (24)	Not included	362 hygienists Gender: 97% female Age: 37.2 yrs Smoker = 4.1% Completed smoking cessation training = 62.4% Years experience: 10.2 yrs	Private practice = 85.2% Public practice = 10.2%
Wilder et al, 2014 USA (20)	N= 667 Gender: 23% female Age bands: 27% < 40 yrs; 24% between 41-51 yrs; 29% between 51-59 years; 20% ≥ 60 yrs	Not included	Suburban practice = 39% ; Urban = 35% ; Rural = 26% 31-41 hours worked per week = 71% Single dentist practices: 59%

All ages and years professional experience are means unless otherwise stated

* Professional details of study participants not broken down

Table 2 Factors related to lifestyle support in general dental practice

Lifestyle support factors	Professional Factors							
	Smoker	Time	Experience	Private practice	Rural Practice location	Male	Professional Support	Self-efficacy
Enquiring								(24) (-)
Advice & Counselling	(9, 21, 22) (-)	(23)(+)	(21) (+) (20) (-)	(22)(+)		(21) (-)	(21) (+)	(24) (+)
Recording	(9, 22) (-)		(22) (-)					
Signposting, referring & prescribing		(23)(+)			(20) (-)			(24) (+)
Knowledge	(9) (+)							
Beliefs	(9, 22)(-)	(23) (+)	(9)(-) (20) (+)	(20) (-)		(20) (+)	(20) (+)	

Facilitator = (+)

Barrier = (-)

Figure 1 Flow chart of included and excluded studies (PRISMA)

