

Exploring the feasibility of general health promotion in UK dental primary care: ENGAGE in Scotland

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Key points

Highlights UK best practice recommendations for GPs to implement opportunistic general health promotion.

Suggests the ENGAGE intervention, which focuses on communicating risk information and then signposting patients to existing NHS services, as a sustainable way to implement these recommendations in dental primary care.

Describes the results of the feasibility study conducted in Scotland which supports taking forward ENGAGE and the later testing of its effectiveness for influencing patient health outcomes in a multi-centre UK trial.

Introduction Despite UK dental guidance recommending opportunistic health promotion, it's rare for GPs to discuss more than oral hygiene with their patients. The ENGAGE intervention incorporates UK guidance and evidence-based behaviour change techniques to motivate patients to make lifestyle changes (reduce smoking, alcohol consumption and/or improve diet). It was designed to take less than five minutes and be delivered during a routine dental check-up, and includes a take-home patient handout signposting to free NHS lifestyle counselling helpline services. **Aims** To determine the feasibility (patient and GP acceptance) of implementing ENGAGE in Scottish dental primary care. The overall aim is to examine feasibility UK-wide before testing its effectiveness for influencing patient outcomes in a multi-centre UK trial. **Methods** Study 1: patient survey: N = 1000 adults from all health boards in Scotland were randomly selected from an NHS data base of medical patients and emailed the study invitation and link to an online questionnaire. Study 2: GP workshop, audit, survey: N = 50 GPs across Scotland were invited to participate in the training workshop (limited to the first 20 applicants), implement the intervention with their next 20 adult patients in for a check-up, audit their experience, then complete an online questionnaire. **Results** Study 1: 200 people completed the survey (52% male; 37% were 55 years or younger; 90% had visited their dentist in the previous 12 months). Less than (<) 15% were asked about their smoking, alcohol intake and/or diet when they last visited their dentist for a check-up; <10% would be embarrassed/offended if their dentist or dental hygienist asked them lifestyle questions during a dental check-up; more than (>) 70% would be reassured by the professionalism of their dentist or dental hygienist if they were asked; <4% would be embarrassed/offended if given a leaflet with NHS helpline information by their dentist. Study 2: N = 18 GPs from nine out of 14 NHS regional health boards in Scotland delivered the ENGAGE intervention to 335 patients (averaging 18 patients each). N = 17/18 participants agreed that this intervention could be delivered during a check-up, was an improvement on what they currently did and thought that it may make a difference to what their patients thought, felt, and/or did about reducing health risk. **Conclusion** The ENGAGE intervention is feasible to implement in Scottish dental primary care. Comments from patient and GP participants will inform its development and further feasibility studies set in other UK regions.

Introduction

Tobacco use, alcohol consumption, and unhealthy diet are avoidable risk factors for many health conditions of significant personal and social burden including cardiovascular

diseases, diabetes, and cancer.¹⁻⁸ In the UK alone, cardiovascular disease is currently estimated to be affecting seven million people, with related NHS costs at approximately £9 billion a year.⁴ UK 2016-2017 prevalence data shows 3.7 million people were diagnosed with diabetes.⁵ The cost of diabetes to the NHS is estimated at £14 billion a year or approximately £1.5 million an hour.⁵ The annual cost to the NHS for diagnosing and treating cancer has been estimated at £5 billion, or £18 billion if loss of productivity was also taken into account.⁶⁻⁷

Statistics relating more specifically to tobacco use, alcohol consumption, and unhealthy diet in

the UK are also disturbing: a) One in six adult deaths in England and one in four in Scotland have been attributed to smoking.^{2,8-9} Smoking-related NHS yearly costs are estimated to be £2 billion in England and £400 million in Scotland.² b) Over half of all adults in the UK drink more than the recommended daily amounts of alcohol, with 31% of men and 24% of women drinking more than twice the recommended amounts.³ Alcohol-related NHS yearly costs are estimated to be £3.5 billion in England and £268 million in Scotland.^{3,10} c) National statistics report over a quarter of the UK population over 16 are obese.¹¹⁻¹² NHS yearly cost of obesity-related

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Table 1 Protection-motivation theory constructs and the behaviour change techniques (BCTs) employed in ENGAGE to influence them

PM theory construct	Defined in theoretical context	Behaviour change technique ^{51,52}	BCTs applied to ENGAGE
Knowledge	Awareness/understanding that a health risk exists	Provide information about the link between lifestyle behaviours and health consequences	<ul style="list-style-type: none"> • Give information about how lifestyle can impact on oral as well as general health • Offer written materials with this information
Outcome expectancies	Beliefs about the consequences/severity of a health threat	Provide information on consequences Persuasive communication	<ul style="list-style-type: none"> • Provide information about the benefits and/or costs of action and/or inaction re lifestyle, focusing on the possible impact on oral health • Appeal to reason and/or emotion to prompt a more positive attitude toward maintaining oral health
Risk perception	Beliefs about their personal susceptibility/vulnerability to that health threat	Provide information to raise risk awareness Persuasive communication Provide information about other's approval, pressure, support Credible source	<ul style="list-style-type: none"> • Assess current smoking/alcohol/diet behaviour • Provide information that personalises the risk: Use assessment results to communicate /identify why their oral health is at risk. • Appeal to reason and/or emotion to prompt a more positive attitude toward reducing risk • GDPs to stress that it's their professional responsibility (not personal judgement) to raise patient awareness of oral health threat • Offer written material to support this information
Response-efficacy	The belief that adopting a specific behavioural/coping response will be effective in reducing a health threat	Provide information about what they can do Persuasive communication	<ul style="list-style-type: none"> • Provide information on what should be an effective next step (call NHS helpline) • Appeal to reason and/or emotion (reassure) to prompt a positive attitude toward calling helplines and effectiveness of making that choice
Self-efficacy	The belief that they are capable of successfully performing a specific behavioural/coping response	Provide instruction Goal setting Self-monitoring Persuasive communication Modelling Provide prompt/cue	<ul style="list-style-type: none"> • Instruct: read the written material • Encourage setting goals: to reduce risk/to call helpline • Encourage self-monitoring of lifestyle behaviours • Appeal to reason and/or emotion to increase confidence that they are capable of taking responsibility for implementing change (emphasising choice) and that they can take the first step toward reducing risk (calling helplines) • Include in dialogue: others have found it helpful to... • Offer the written material as a prompt/cue to action

treatment is estimated at £4.2 billion in England and £175 million in Scotland.¹¹⁻¹²

Since tobacco use, alcohol consumption, and unhealthy diet are also known risk factors for oral health, there are reviews, research articles, and UK guidance recommendations advising General Dental Practitioners (GDPs) to screen for them during oral health assessments, as well as to opportunistically intervene to help patients at risk to change their lifestyle.¹³⁻²⁴ Furthermore, there is continuing pressure at the Government policy level to ensure that new dental healthcare initiatives focus on preventive care and include more comprehensive screening and the discussing of lifestyle choices.²⁵ However, there is evidence suggesting that few GDPs currently and/or effectively do so.²⁶⁻²⁸

Anecdotal evidence gathered during research supporting the implementation of the Scottish Dental Clinical Effectiveness Programme (SDCEP) guidance suggests lifestyle questions are excluded from oral health reviews when GDPs have the preconceived idea that these may embarrass or offend patients.^{17,28} Also, many GDPs believe that opportunistic interventions for lifestyle behaviours are not likely to be successful, so that

attempting them will just make them appear judgemental, jeopardising their relationship with their patients and discouraging future attendance.²⁶⁻²⁸ We couldn't find any studies explicitly exploring these issues from the patient viewpoint. However, it is unlikely that current GDP practice will change unless these specific beliefs are in some way addressed.

Even when lifestyle questions are included in oral health assessments, in the UK there are no standardised approaches for treating patients who are identified at higher risk because of lifestyle factors. In-practice advice/counselling is one option. While GDPs are well-versed in discussing oral hygiene-related concerns with their patients, few GDPs have the extended expertise required to effectively address their patients' lifestyle issues. Additionally, GDPs may not have access to an environment where they can provide patients with enough security or privacy to discuss what may be emotionally charged topics. Furthermore, GDPs are not recompensed under current NHS contracts to provide the amount of time and follow-up support that evidence suggests is required for effective lifestyle interventions.²⁹ Formal referral to NHS services is another possible

option, but it can also be problematic due to the lack of dedicated services and/or associated infrastructure in many UK health boards.

By not following best practice oral health risk assessments, UK GDPs are also less able to follow the NHS Future Forum mandate to 'make every contact count':

'Every healthcare professional should use every contact with an individual to maintain or improve their mental and physical health and wellbeing where possible, whatever their speciality or the purpose of the contact.'³⁰

Yet they are in a potentially advantageous position to do so, as UK GDPs see a large proportion of the population on a regular basis. For example, 52% (22 million) of the adult population in England have seen a dentist in the last two years; approximately 90% (4.6 million) of the adult population in Scotland are registered with an NHS dentist, 74% of whom have seen a dentist in the last two years.³¹⁻³²

The ENGAGE intervention was designed specifically to enable GDPs to improve, if needed, their current assessment and health promotion practice and so pragmatically follow the NHS mandate. The content draws on common recommendations from the National Institute for

Health and Care Excellence (NICE) guidelines for primary care interventions relating to both smoking and alcohol, as well as the World Health Organisation (WHO) manual for brief interventions in primary care.^{13–15,18–21,29} These are that health promotion interventions should educate patients about the health risks associated with their lifestyle, and that primary care interventions should encourage patients to take personal responsibility for making lifestyle changes. The above literature also suggests that the sustainability of new primary care interventions depends on how easily they can be incorporated into current practice. This reflects the growing body of evidence for the efficacy and fidelity to brief interventions (typically 5 to 35 minutes, delivered in one to five sessions) in primary care settings to reduce smoking, alcohol consumption and weight.^{21–24,27,35–38}

The design of ENGAGE also follows the Medical Research Council recommendation to use a theoretical framework when developing interventions for primary care to help understand its process and to integrate findings into an evidence base.³⁹ There are many theories of behaviour and behaviour change which have been applied to the design of lifestyle interventions. Psychological models of behaviour change have also been applied to understanding and changing oral-health behaviour and outcomes.^{40–41} NICE guidance on behaviour change in general dental practice does not recommend any particular model over another, given the heterogeneity of the research that constitutes the evidence base and because many of these theories share overlapping constructs.^{13–15,42}

The success of ENGAGE will be contingent on how effectively GDPs translate the results of the oral health risk assessment into a motivating message for patients to change their lifestyle. We therefore selected protection motivation (PM) theory as the framework for ENGAGE. Unlike other theoretical models, this model was developed specifically for understanding and designing health promotion interventions focused on increasing knowledge of health risk and changing risk perceptions.⁴³ PM theory has been used to design effective interventions in the areas of smoking, alcohol consumption, cancer screening, AIDS prevention, and adherence to medical-treatment regimens.^{44–46}

PM theory proposes that people will be motivated to take action to protect themselves from a health threat when they perceive that they are at risk (a combination of two factors: the perceived severity of risk and their perceived vulnerability to it), and if they believe that they

Which of the following do you have each day? (Please tick appropriate boxes)	
<input type="checkbox"/> Sugary carbonated (fizzy) drinks	<input type="checkbox"/> Around 5 portions of fruit and vegetables
<input type="checkbox"/> Diet carbonated (fizzy) drinks	<input type="checkbox"/> Sugary treats (sweets and biscuits) between meals
<input type="checkbox"/> Sugar in hot drinks	
Smoking Status (Please tick appropriate box)	
<input type="checkbox"/> I have never smoked	Number of years an ex-smoker _____
<input type="checkbox"/> I am an ex-smoker	Number of cigarettes etc smoked per day _____
<input type="checkbox"/> I am a smoker	
Alcohol Consumption	
1 unit of alcohol =	half a standard 175ml glass of wine (12.5% abv) half a pint of normal strength beer, lager or cider (4% abv) one 25 ml measure of spirits (40% abv)
On average how many units do you drink in a week?	_____ units
What is the largest number of units you drank in a single day in the last week?	_____ units

Fig. 1 Lifestyle questions from the Comprehensive Oral Health Assessment & Review Guidance¹⁷

have the means and ability to protect themselves, defined in terms of response efficacy (the belief that a recommended action is effective) and self-efficacy (the belief that they can successfully perform the recommended action). Thus, PM theory shares constructs and elements with the theory of planned behaviour (outcome expectancies, intention/motivation, perceived behavioural control [response efficacy]), social cognitive theory (self-efficacy), self-regulation theory (coping with emotional responses to threatening healthcare events), and the theory of cognitive appraisal (stress appraisal and stress responses).^{47–50}

Interventions based on PM theory focus on changing a person's motivation and/or risk-related behaviour by increasing their knowledge of the health threat, changing their beliefs about personal consequences related to the health threat (outcome expectancies/risk perception), increasing their confidence in the likely effectiveness of specific actions to reduce health risk and their ability to perform them (response- and self-efficacy). ENGAGE was designed to follow this 'recipe'. To do so it employs a number of evidence-based strategies, also known as behaviour change techniques (BCTs) as its 'active ingredients'.³⁹ The specific BCTs employed in ENGAGE are described in Table 1.

The BCTs in ENGAGE were identified from a larger list constructed by the PI (a health psychologist experienced in designing theoretically framed interventions in dental primary care), as likely (according to the BCT literature) to influence the PM theory constructs.^{43–46,51–52} The BCT list and some examples of how they may be incorporated into a GDP-patient dialogue and an information handout was circulated to the ENGAGE development group, which included dental academics, NHS Education for Scotland (NES) personnel, a GDP and hygienist. The

results of the development group discussion of comments, concerns and suggestions were used by the PI as the platform to draft the ENGAGE script and several different designs of the patient handout (leaflet, bookmark, post card). The handout examples were also circulated beyond the development group to in-house NHS and university staff (administrators, researchers, dental academics, and GDPs) for comment.

There were two reasons for developing a script. The first was to demonstrate to the development group (and later, participants) how this intervention could be incorporated into a routine dental check-up. The second was as a mechanism to help standardise the delivery of the intervention in everyday practice. The rationale for including a handout was to provide patients with information on how to begin reducing their health risk that could be considered in their own time, completely independent of the skills and time constraints of their GDP. Helpline services have a body of evidence supporting their accessibility and effectiveness, employ advisors already proficient in delivering lifestyle behaviour interventions, and are specifically set up to provide the necessary follow-up support.^{53–54} Providing patients with this information also complies with recommendations from NICE and the Scottish Executive for healthcare providers to raise patient awareness of existing NHS expertise and to generally encourage patients to take more advantage of these services.^{55–56} The development group discussed and reached a consensus on the final version of the script and handout (see below) to take forward.

In summary, the ENGAGE intervention entails:

- Including specific lifestyle questions in oral health assessments. These were derived from guidance on best practice oral health assessments (Fig. 1)¹⁷

- Using responses to the lifestyle questions to assess whether patients were at lower or higher health risk, and then follow the appropriate dialogue pathway in the script (Fig. 2)
- Giving patients a take-home information handout signposting to no referral required, free, NHS lifestyle counselling helpline services (telephone and internet) (Fig. 3).

The entire ENGAGE intervention was designed to take approximately five minutes and be delivered during a routine dental check-up. This was to increase the likelihood of its uptake and sustainability in dental primary care across the UK. Nevertheless, despite its evidence-based content, its top-down development leaves open the possibility that ENGAGE may not be feasible to implement in practice, or that there may be regional differences in its implementability. Health promotion studies are rare in dental primary care, and (to the authors' knowledge) no literature exists on UK dentists providing information about NHS lifestyle helplines to their patients, nor what dental patients, at-risk or otherwise, would think about receiving information on NHS lifestyle helplines at their dental practice.

Aims

The two studies described in this paper aimed to explore the feasibility of implementing the ENGAGE intervention in Scotland. The overall aim is to incorporate these results into a larger body of work examining the feasibility of implementing the ENGAGE intervention in different regions of the UK before testing its effectiveness for influencing patient outcomes in a multi-centre UK trial.

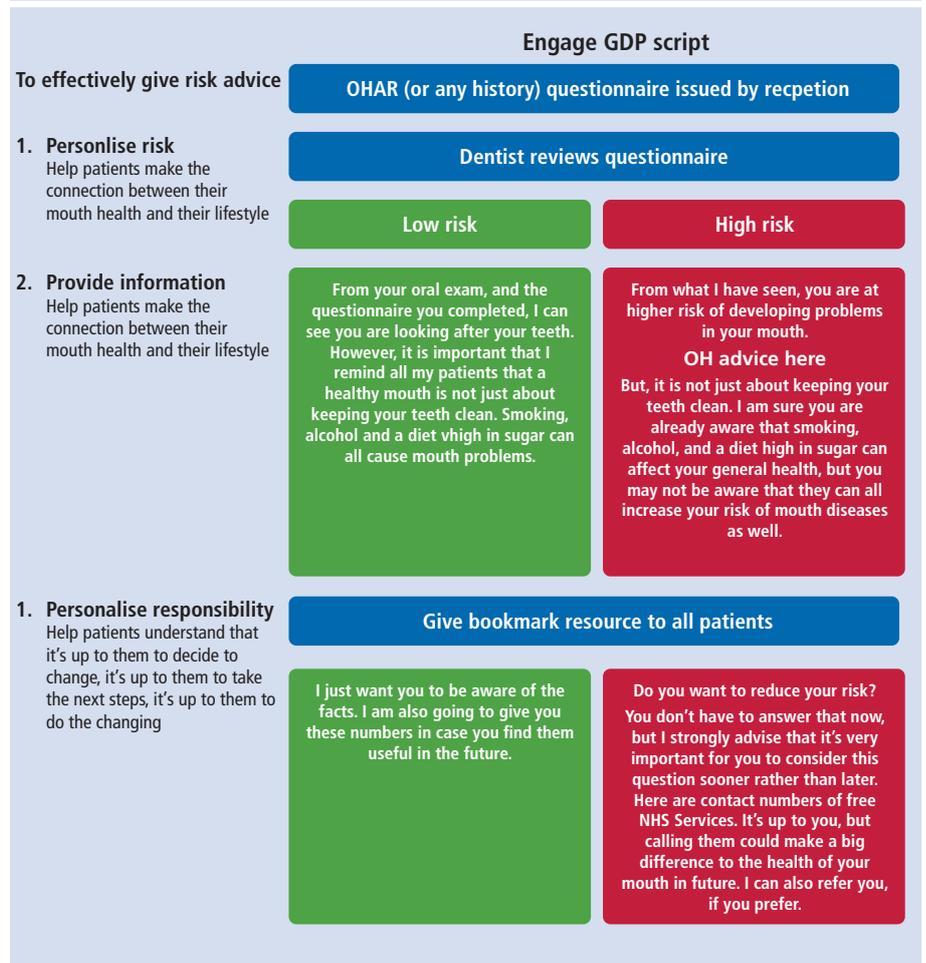
The ENGAGE intervention would be considered feasible to implement in UK dental primary care if, in each region: a) patients were generally accepting of being asked lifestyle questions as well as being given information on NHS helplines during a dental check-up; and b) GDPs were generally accepting of the intervention's content and are able to deliver it in a timely manner during a dental-check-up.

Study 1: Patient acceptance in Scotland

Materials and methods

A survey method was used to reach further into the general population than would be possible if it was restricted to dental patients recruited by participating GDPs (see Study 2). There was no

Fig. 2 The sample script demonstrating how the ENGAGE Intervention could be incorporated into a dental check-up



a priori estimate of a possible response rate, and so the total number of invitees was determined by the study budget. N = 1000 people who met the inclusion criteria (adults [over 16 years], any gender and medical condition, from all health boards in Scotland) were randomly selected from the SHARE register (an NHS database of medical patients interested in health-related research)⁵⁷, and were emailed the study invitation and an URL link to an online questionnaire. The questionnaire was published by the Library and Learning Centre (LLC and CI), University of Dundee, using the Bristol Online Survey Tool.^{58,59} Patients were given three weeks to respond. Responses were anonymised so a general reminder was emailed to all invitees after two weeks.

Analysis

The quantitative data were described as frequency counts and percentages. The qualitative data set was comprised of responses to open-ended questions asking for clarification of standardised responses. Since these all related to being

asked lifestyle questions or receiving a handout, a thematic analysis was performed to examine the qualitative data in this context. The PI and two study researchers (a GDP and a hygienist) independently reviewed all the responses to the open-ended questions and clustered repeated and similar words and phrases within this thematic framework to identify any emergent sub-themes. Differences were resolved by discussion.

Results

Participants

A total of 298 people opened the URL link (the only evidence of email receipt) and 200 people (67%) completed the survey. Of these, 52% were male; 37% were 55 years or younger, 26% between 56 years and 65 years, and 37% were 65 years or older. All participants were medical patients in or discharged from secondary care at the time they registered with SHARE. Although their current status was not available, they all will be referred to as patients in this paper for ease of exposition. Responses to the survey questionnaire items are fully presented in Table 2. In summary:



Fig. 3 The ENGAGE Intervention patient handout (bookmark format)

Experience and beliefs about health issues relating to lifestyle (Section 1, Table 1)

Over 90% of patients did not believe that smoking, alcohol or diet were responsible for any previous health issues, or were likely to be responsible for their future health issues.

Experience as dental patients (Section 2, Table 1)

Ninety percent were frequent attenders who had visited their dentist in the previous 12 months; 22% considered themselves an anxious dental patient.

Discussing lifestyle behaviours at a dental check-up (Section 3, Table 1)

Less than 15% of patients reported being asked about their smoking, alcohol intake and/or diet when they last visited their dentist for a check-up.

Less than 10% of patients believed that they

would be embarrassed or offended if their dentist or dental hygienist asked them about their current smoking, alcohol intake, or about their diet. Over 70% said that they would be reassured by the professionalism of their dentist or their dental hygienist if they asked about lifestyle in health assessments conducted during a dental check-up.

On being given information on NHS lifestyle helplines at their dental practice (Section 4, Table 1)

Only 4% of patients said that they would be embarrassed or offended if they were given a handout with this information by their dentist; 6% thought that they may be if their dental hygienist gave it to them, and 12% thought that they may be if they received this information from a dental receptionist.

Qualitative analysis

Only N = 38/200 (19%) of participating patients expanded on their standardised responses. The following are examples of the statements organised in the context of the feasibility themes:

Theme: being asked lifestyle questions in a dental check-up

There were N = 14 statements on this theme, 70% of which were positive. For example:

'This added health check would be a great idea. I feel well and in good health now but understand that some health problems can be picked by the dentist or optician'

'Anything that highlights potential health issues is positive'

'If the dentist thought I was at risk I would probably be embarrassed but it might give me the push in the right direction to do something about it.'

Examples of equivocal or negative statements were:

'I am a private dental patient so this would take up extra time and add to the cost of the treatment'

'Waste of time for me personally never smoked or drank and slim and fit.'

Theme: being given a handout with general information on NHS helplines at their dental practice

Of the 46 statements relating to this theme, 80% were positive. For example:

'I believe making patients more aware of the different avenues of help that is available can only be reassuring and thought provoking'

'Would be happy to get this information, it's pro-active, which I like'

'There are people who would find the information valuable but don't know where to find it'

'Given that the healthcare is "free" why shouldn't we be given direction to help minimise (NHS) costs in the greater interest of all of us over a lifetime'

'A leaflet is informative and thought provoking without being personally critical.'

Examples of equivocal or negative statements were:

'I would probably like to know what prompted the dentist/hygienist/receptionist to offer it to me. I would not be offended but would want either reassurance or an explanation'

'I would just dismiss it as something not relevant to me and would find it a little patronising.'

Table 2 Summary of survey responses (N = 200 medical patients in Scotland)

	Smoking	Alcohol	Diet/weight
	N	N	N
1. Experience and beliefs about health issues relating to lifestyle			
Have you ever been treated for health problems associated with:	Yes = 9	Yes = 2	Yes = 17
	No = 185	No = 191	No = 173
	Unsure = 4	Unsure = 2	Unsure = 7
Do you think it is likely that, in future, you will be treated for health problems associated with:	Yes = 9	Yes = 2	Yes = 18
	No = 176	No = 175	No = 135
	Unsure = 10	Unsure = 13	Unsure = 44
2. Experience as dental patients			
When did you last visit your dentist?	Less than a year ago = 180		
	1-2 years ago = 10		
	More than 2 years ago = 9		
Do you think of yourself as a regular attendee?	Yes = 177		
	No = 22		
Do you think of yourself as an anxious dental patient?	Yes = 44		
	No = 152		
	Unsure = 4		
3. Discussing lifestyle behaviours at a dental-check-up			
When you last went for a dental check-up, were you asked, or given a form to complete, about your:	Yes = 27	Yes = 21	Yes = 7
	No = 166	No = 170	No = 182
	Unsure = 7	Unsure = 8	Unsure = 10
Would you be embarrassed or offended if your dentist asks about your:	Yes = 4	Yes = 10	Yes = 13
	No = 196	No = 187	No = 183
	Unsure = 0	Unsure = 3	Unsure = 3
Would you be embarrassed or offended if your dental hygienist asks about your:	Yes = 11	Yes = 15	Yes = 19
	No = 186	No = 179	No = 174
	Unsure = 3	Unsure = 6	Unsure = 6
Would you be reassured about the professionalism of your dentist if they ask about your current:	Yes = 152	Yes = 151	Yes = 151
	No = 27	No = 24	No = 25
	Unsure = 21	Unsure = 25	Unsure = 22
Would you be reassured about the professionalism of your dental hygienist if they ask about your:	Yes = 143	Yes = 140	Yes = 143
	No = 29	No = 26	No = 28
	Unsure = 28	Unsure = 33	Unsure = 28
	Dentist	Dental hygienist	Dental receptionist
4. Beliefs about being given information on NHS lifestyle helplines			
Would you be embarrassed/offended if given a general handout showing NHS smoking/alcohol/diet helplines by your:	Yes = 9	Yes = 12	Yes = 23
	No = 183	No = 171	No = 151
	Unsure = 6	Unsure = 12	Unsure = 21

Subtheme: How the handout should be distributed
The following are examples of the 15 statements relating to this subtheme.

‘Maybe if (the handout) was available in reception and could be picked up discretely’

‘If dentist introduces it in a friendly, helpful and non-critical way that should minimise risk of patients taking offence’

‘If it was only given to adults at risk then I think it’s ok. If it’s to be given to all adults I think it would cause unnecessary worry.’

Study 2: GDP acceptance in Scotland

Materials and methods

A number of methods were used: A training workshop, an implementation audit, and a survey (online questionnaire), which included quantitative (standardised) and qualitative (open-ended) questions. This phase of ENGAGE was limited to N = 20 GDPs. This sample size was selected because it was more than the recommended minimum for qualitative data likely to be meaningful⁶⁰ and the maximum number we could afford. N = 50 GDPs on the Scottish Dental Practice Based Research Network (a data base of GDPs across Scotland interested in research) were sent an email invitation to participate in the study. This entailed: attending a three hour training workshop at the Dundee Dental Education Centre; implementing the ENGAGE intervention in their practices with their next 20 patients in for a check-up; recording (auditing) their experience; and completing an online questionnaire. For participating they would receive a guild sessional fee of £275. They were also informed that places on the workshop were limited, operating on a first come first served basis. The invitation email was sent out six weeks before the workshop date.

In the training workshop, GDPs were provided with background information on the intervention’s development (including the results of Study 1), the ENGAGE script and handout. They were then given an opportunity to discuss with each other any barriers they foresaw for delivering the intervention in routine dental check-ups. At the end of the workshop, participants were provided with a pack which included a list of the lifestyle questions to include in their oral health assessments, the ENGAGE script, a form to record their experience of every attempt to deliver the ENGAGE intervention to their next 20 adult patients in for a check-up, a bundle of patient

Table 3 Self-report (anonymised) audit of how often each GDP delivered the ENGAGE Intervention to 20 consecutive patients in for a check-up

How often did you deliver the scripted element of the ENGAGE Intervention?*																		
GDP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Exactly	20	18	17	1	17	17	3	20	20	15	10	0	18	0	2	5	20	20
Adapt	–	2	3	19	3	3	14	–	–	5	5	20	2	10	15	11	–	–

*The specific items were: 'How many times did you deliver the script exactly?'; 'How many times did you adapt the script to deliver it?'

How often did you deliver the handout (bookmark) element of the ENGAGE Intervention?																		
GDP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Delivered	20	20	20	20	20	20	19	20	20	20	15	20	20	0	15	5	20	20

handouts, and the URL for accessing the online questionnaire after their implementation experience. For the purpose of this feasibility study, GDPs were asked to follow the script as closely as possible when delivering the ENGAGE intervention.

Analysis

The quantitative data were analysed descriptively (frequency counts, percentages, medians, means, and standard deviations). The qualitative data were comprised of responses to open-ended questions relating to the participant's qualifying thoughts about their standardised question/responses on the ENGAGE training workshop, the intervention script, the handout, and their overall participation experience. A thematic analysis was performed to examine the data in this context. The PI and two study researchers (a GDP and a hygienist) independently clustered repeated and similar words and phrases within this thematic framework to identify any emergent sub-themes. Differences were resolved by discussion.

Results

GDP participants

N = 18 GDPs from nine out of fourteen NHS regional health boards in Scotland participated in the ENGAGE study (two GDPs did not turn up for the workshop on the day). None were from the same practice. The anonymised results of each GDP's self-report audit of delivering the two main elements of the ENGAGE intervention (the script for raising patient risk awareness [including the lifestyle oral health assessment questions] and the handout) are presented in Table 3. In summary, GDPs delivered the ENGAGE intervention in their everyday practice to a total of 335 patients in for a check-up. On average, each GDP delivered the script to 18 patients (ranging from ten to

Table 4 The overall ENGAGE experience: responses to the online questionnaire

In terms of preparing you to implement ENGAGE, how did you find the training workshop?					
18 GDPs	Provided the necessary background	Had too much unnecessary information	Had information you needed missing from it		
Yes*	94% (N = 17)	0% (N = 0)	0% (N = 0)		
How did you find the scripted element of the ENGAGE Intervention in practice?					
18 GDPs	Useful to have	Difficult to deliver	Easy to Adapt	Stressful to deliver	Embarrassing to deliver
Yes*	78% (N = 14)	50% (N = 9)	61% (N = 11)	17% (N = 3)	39% (N = 7)
How did you find the handout element of the ENGAGE Intervention in practice?					
18 GDPs	Easy to distribute	Acceptable to patients	Would recommend to other GDPs/practices to distribute		
Yes*	83% (N = 15)	94% (N = 17)	89% (N = 16)		
In terms of delivering health promotion in dental primary care, do you think the ENGAGE intervention is:					
18 GDPs	A sensible approach	Useful	An improvement on what you currently do		
Yes*	94% (N = 17)	89% (N = 16)	94% (N = 17)		
In general, do you believe that the ENGAGE intervention will make a difference to:					
18 GDPs	What patients feel	What patients think	What patients do		
Yes*	67% (N = 12)	72% (N = 13)	61% (N = 11)		

*Yes: Number of GDPs who scored 5 or more on the scale 1 (strongly disagree) to 7 (strongly agree)

20) and the bookmark to 20 patients (ranging from 0 to 20).

The results of the online survey are presented Tables 4 and 5. In summary, the majority of GDPs thought that the training workshop adequately prepared them to implement ENGAGE. They also agreed that the scripted element of the intervention was useful to have, easy to adapt, and neither stressful nor embarrassing to deliver. However, 50% (N = 9) responded that they thought it was difficult to deliver the script exactly. GDPs were also asked about possible barriers and facilitators

for implementing ENGAGE in future practice. These were derived from the (unpublished) research from the Translation Research in a Dental Setting (TRiADS) programme supporting the development of the SDCEP guidance on conducting oral health assessments.^{17–28} Participating GDPs strongly agreed that the following may be an issue for delivering ENGAGE: the patient is higher risk; they are a new patient; if they had made a plan to deliver it; if they thought that the patient would receive it well; and if they had other members of the dental team to help them.

Table 5 Possible barriers and facilitators* for delivering the ENGAGE Intervention in future practice (N = 18 GDPs)

In general, I think the following may influence whether I deliver these ENGAGE elements in future:	The script		The handout	
	Range	Mean (SD)	Range	Mean (SD)
The patient is higher risk	4-7	6.7 (0.7)	4-7	6.5 (0.9)
They are a new patient	4-7	6.2 (1.1)	4-7	6.4 (1.1)
I have made a plan to deliver it	4-7	6.1 (1.0)	1-7	5.9 (1.2)
I think the patient would receive it well	2-7	5.8 (1.6)	4-7	5.5 (1.2)
I have other members of the dental team to help me	2-7	5.4 (1.3)	4-7	5.7 (1.3)
The patient is younger	1-7	4.7 (1.6)	1-7	4.8 (1.6)
The patient is older	1-7	4.4 (1.3)	1-7	4.7 (1.7)
The patient is a poor attender	1-7	3.4 (1.8)	2-7	4.4 (1.5)
The patient doesn't appear interested	1-5	3.1 (1.2)	2-7	4.1 (1.5)
I am pressed for time	1-5	2.5 (1.2)	2-7	4.4 (1.9)
I am not feeling motivated	1-4	2.8 (1.1)	2-7	3.7 (1.5)
The patient has language/literacy barriers	1-6	2.7 (1.4)	1-6	3.7 (1.5)

*These were identified from the (unpublished) TRiaDS research supporting the development of the SDCEP guidance on conducting oral health assessments.^{17,28} Range is from the questionnaire response set: 1 = strongly disagree to 7 = strongly agree (presented here in descending order of overall agreement)

Qualitative analysis

Theme: the workshop as a training medium

N = 11/18 participants made workshop-related statements.

Subtheme: the information it covered

N = 10/11 GDPs expanded on this aspect in a positive way. For example:

'I enjoyed the workshop, and felt it covered all aspects of the project'

'The workshop was really useful in knowing the background to the study and helping implement it, including giving me confidence to deliver the advice'

'I found the workshop very useful in finding out about the study and generally understanding the outline and requirements of ENGAGE.'

One GDP expressed a negative view within this subtheme:

'I was under the impression the workshop would be more about delivering specific interventions and ways to overcome barriers rather than a blanket signposting to all patients regardless of risk.'

Subtheme: the time for discussion

N = 5/18 GDPs commented on the duration of the workshop. For example:

'Workshop good and informative. Bit rushed when discussing group thoughts due to pressure to get finished. Extra half hour would have been useful'

'We seemed to be pushed for time. A full day workshop would have been good'

'I would have liked to have had a longer discussion session.'

Theme: delivering the ENGAGE script

All 18 GDPs made statements about delivering the script. The following subthemes were identified:

Subtheme: sticking exactly to the script

The majority of statements from GDPs explaining more fully why they thought the script was difficult and/or stressful and/or embarrassing to deliver were clustered within this subtheme.

For example:

'My main struggle was trying to deliver the message without sounding as if I was reading from a script'

'I feel in general following a script is very difficult in person as patients will notice this and become quickly uninterested in what is being said'

'Very difficult to produce the exact script as each patient response is different'

'I don't want to use a script. It is useful to have general pointers/bullet points of what needs to be included in the message but reading from a script sounds unconvincing'

'I found having to deliver a script, shoehorning it in to a conversation [...] was awkward and clunky'

'Although it is nice to have [the script] as a reference, in practice it was too long to memorise.'

Subtheme: time

N = 4/18 GDPs raised time as an issue for delivering the ENGAGE script. For example:

'Some of my low risk patients were a bit anxious to be suddenly given information about oral cancer [...] I had to reassure them so it took a lot longer'

'One of my high risk patients had mental health issues as well. His consult took a lot longer than two mins and I wish I could have spent a bit more time on him and less on the low risk people.'

Subtheme: delivering the script at all: patient risk

N = 6/18 GDPs commented that patient risk was (or would be) the main determinant for delivering the script at all:

'I recommend giving the scripted advice to those at a higher risk only, but also making any information available to all patients regardless of risk, but without talking them through it (that is, through posters, adverts, leaflets)'

'We have some patients that have never smoked or drank alcohol, and it was most difficult to deliver the script to them, particularly as most of our patients have been regular attenders for many years'

'I don't think low risk patients should be given the script. It is likely to worry them unnecessarily'

'I don't like the higher risk script. It generates fear. Particularly when combined with the leaflet'

'Difficult not to sound patronising to patient when patient is low risk'

'I would be happy to give out the bookmark and basic information but to high risk patients only.'

Theme: delivering the handout

N = 13/18 GDPs commented on delivering the handout. Most comments included supportive statements, for example:

'I loved having a little information leaflet to hand patients'

'I think the bookmark is a great tool and feel that all practices should have them'

'The bookmark I found to be an excellent tool to inform the patient, and highly encourage this to be kept as an option going forward although it does need some work.'

No one commented on the handout's bookmark format. The main subthemes which emerged throughout the comments under this theme were:

Subtheme: including photos in the handout

In keeping with the PM theory and related literature on effectively raising risk perceptions, the bookmark included examples (two photos) of compromised mouths. N = 6/18 GDPs had reservations that the images may be upsetting to patients. For example:

'The book mark is good but perhaps too gruesome putting patients off looking at it with images as people do not want to see these things'

'It might be worth having a bookmark without photos for patients that are very squeamish'

'I would remove the photos of cancer and try some positive imagery.'

Subtheme: the quality of the handout photos

N = 12/18 GDPs suggested improving the quality of the bookmark photos. For example:

'I felt I couldn't hand out the bookmark as the photos were such poor quality'

'A few patients complained the pictures were poor quality'

'I felt the images on the bookmark were very poor quality and difficult for the patient to identify the pathology to look out for.'

Subtheme: the handout language

N = 4/18 GDPs made language-specific suggestions.

'The use of the word "non-communicable" should be changed to non-transferrable or

non-infectious, if possible. Otherwise the bookmark was very useful and informative for patients'

'The word "they" in the third bullet point is unclear. Does "they" refer to mouth cancer or gum disease?'

'Make information more concise.'

One GDP also suggested adding an NHS drug helpline to the content.

Theme: reflecting on their ENGAGE experience

N = 10/18 GDPs made statements on this theme. Their statements could all be grouped into the following subtheme:

Subtheme: motivating health promotion out with the study

'I aim to use the OHAS assessment form from now on as it does open the conversation up nicely when presented separate to the medical history. I see our role very much in line with sign-posting and for other health sectors where more suited could follow up on any counselling if required'

'I personally do not want to use scare tactics when changing patients' habits, however I do [...] appreciate there is an increasing need to improve health awareness. Overall I found this study useful in motivating myself to help deliver health promotion advice in general to all patients regardless of risk to oral diseases'

'I found the ENGAGE study to be very good for providing a quick and easy way to raise the subject matter with patients. Also very good for ensuring that smoking and drinking habits are routinely updated when medical history is updated as these areas tend not to be done because staff tend to just ask about illness and medication changes'

'I found the script awkward to deliver and definitely out of my comfort zone. However I did make sure I asked all my patients about their smoking/drinking and diet as on the sheet. From there I did find it easier to talk about the subjects and give advice as I had brought the subject up [...] Now I have made that change I will continue to ask every patient about their smoking/diet and alcohol.'

Discussion

Study 1 examined the intervention's feasibility from the patient's perspective. The overwhelming majority of Study 1 participants replied that they would not be embarrassed or offended if their dentist or dental hygienist asked them about their smoking, alcohol consumption or

diet during their check-up. Most would even be reassured about the professionalism of their dentist and hygienist if they were asked about smoking, alcohol and diet during their dental check-up. Furthermore, over 90% of Study 1 participants responded that they would not be embarrassed or offended if they were given a handout with NHS helpline information at their dental check-up. These results suggest that this intervention would be generally acceptable to dental patients in Scotland.

While there were very few negative comments, these did suggest that some survey participants did not perceive that lifestyle is the business of dentists. One strategy the ENGAGE intervention incorporated to disarm this possible reaction was to specifically provide information about the lifestyle-oral health link. This was apparently successful in that none of our Study 2 GDP participants reported that their patients (whether lower or higher-risk) objected to being asked lifestyle questions in practice. Nevertheless this belief may be a moderating factor for the intervention's effectiveness and so will be monitored in the future trial.

The majority of the qualitative data from the patient survey were comments expanding on responses to being given a take-home handout with NHS helpline information. While generally in favour of a handout being available in dental practices, there was equivocation about how it should be delivered. Some participants believed that it should be available to everyone, some participants believed that it should only be given to patients at risk because of their lifestyle, and many wanted reassurance that it would always be delivered in a sensitive manner. So, while these results do suggest that a handout with information on NHS lifestyle helplines would be generally well-received by dental patients, the future trial will need to address the impact of its mode of delivery in addition to its effectiveness as a health promotion tool.

Incidentally, the survey results support the anecdotal evidence that oral risk assessments in Scotland rarely include lifestyle questions, as 90% of participants did not, or did not remember, being asked about their smoking, alcohol, and/or dietary habits during their last dental check-up. We were restricted in the patient demographic data we were allowed to access or gather. However, survey participants most likely had different GDPs given that they were recruited randomly from a register of medical patients across Scotland. This provides

further support that there is room to improve current oral health assessment practice in Scotland.

It is possible that less frequent attenders or people who believed that their lifestyle was putting their health at risk (unlike the majority of Study 1 participants), were less likely to complete this survey and so were not fairly represented in these results. Also, the recruitment method meant only people with access to the internet were eligible for inclusion in this study. Furthermore, the proportion of participants over 65 years was higher than the population average of 18%.⁴⁴ Nevertheless, the overall results still provide a supportive platform for taking forward ENGAGE, on the understanding that these demographic issues may need to be explored more fully in future.

Study 2 examined the intervention's feasibility from the GDP's perspective. The overall results suggest that this intervention would also be acceptable to GDPs in Scotland. The self-report audit (Table 3) showed that participating GDPs each managed to deliver the ENGAGE intervention in practice to an average of 18 out of 20 consecutive patients in for a check-up. In the online questionnaire, the majority of GDPs reported positively on all aspects of ENGAGE, from the utility of the training to delivering the script and the handout in practice. $N = 17/18$ also thought ENGAGE was a sensible approach to take to delivering health promotion in dental primary care and was an improvement on what they were currently doing. The majority of participants also agreed that it may be effective in practice, making a difference to what their patients think, feel and/or do about reducing their health risk.

While the quantitative data from the online questionnaire supported the intervention's overall feasibility in Scottish dental primary care, the qualitative data helped further our understanding of what may influence its implementation in future and what we could do to improve ENGAGE in its next iteration.

For example, we asked GDPs to expand on the theme of the workshop as a training medium. All the workshop-related comments were collated under two subthemes: the information it covered and the time allowed for discussion. We learnt that most participating GDPs felt that the information in this single session workshop prepared them well for implementing ENGAGE, but some felt that the workshop could be improved by increasing the time allowed for group discussion. This raised an important issue. We chose a workshop

for the ENGAGE training because many continuing professional development (CPD) courses available to GDPs use this format, so it would be familiar to participants. This was also the first time ENGAGE was going to be shared with people expected to implement it in practice, and the workshop format allowed us (its developers) to be there in case we needed to address any issues on the spot. However, the workshop training format is very resource intensive, particularly if it expands over two sessions, as requested. We can't determine in a feasibility study if the possible benefits of extra training time would be worth the definite cost. We intend to explore the cost-effectiveness of alternative training formats (for example, longer workshop, online, written) as a factor in the future RCT, where we can assess how this influences the comparative effectiveness of ENGAGE for changing health outcomes.

In relation to effectiveness, PM theory predicts that risk-related behaviour is more likely to change if its specific constructs are influenced. We developed a script to operationalise relevant behaviour change techniques (BCTs) and to model how to incorporate this intervention into a check-up consultation. In the workshop we asked GDPs to follow the script exactly, to see if it was possible to standardise the intervention's delivery. The quantitative data results supported the implementability of the script, in that the majority of GDPs reported that they managed to deliver the script exactly to the majority of their patients in a timely manner. The qualitative data helped us understand that in future, while the script will be a necessary and reassuring tool, it is highly likely that most GDPs will adapt it to include less unfamiliar words and phrases before they get over their discomfort with it through rehearsal as well as to meet the needs of individual patients. The problem is the possibility that some adaptations will result in a loss of intervention integrity, through the inadvertent dropping of BCTs. However, BCT taxonomies provide only a guide for their translation into an intervention. The BCTs selected for ENGAGE (Table 1) should not rely on an exact wording to be effective. We will be taking a pragmatic approach in the future trial, accepting that the script is likely to be adapted to suit personal styles and situations as it would in everyday practice. However, we will be laying more stress in training on the BCTs to heighten GDP awareness of them, as well as assess intervention fidelity in relation to intervention effectiveness.

In their responses to the predefined list of barriers/facilitators in the online questionnaire, the majority of GDPs strongly agreed that their implementing ENGAGE in practice may be influenced by whether they thought that the patient would receive it well; if they had made a plan to deliver it; and if they had other members of the dental team to help them, as well as whether the patient was new, and the patient's health risk. These are all issues that we can raise specifically in training or address via the trial protocol. However, the qualitative data drew attention to patient risk as a particular issue as to whether the intervention would be delivered at all. In reflecting on their implementation experience, a third of participating GDPs said that they were most comfortable delivering the intervention to higher risk patients, still concerned that lower risk patients would be offended at being advised about lifestyle. This occurred despite the training workshop including the presentation of Study 1 results showing that lower risk patients did not see this as a problem. The original concept of the ENGAGE intervention was to involve all dental patients, focusing on prevention for lower risk and reduction of lifestyle-related issues for higher risk patients. However, given these results are from motivated GDPs (evidenced from their involvement in this study), involving both lower and higher risk patients will definitely need revisiting in future iterations of ENGAGE.

The authors developed a new patient handout for ENGAGE because we could not find an existing NHS handout that would be appropriate for general health promotion in dental primary care. We used the same theoretical framework as the script, and incorporated most of the same BCTs. The quantitative data strongly supported the feasibility of including a patient handout in ENGAGE per se. The qualitative data further supported this inclusion, but also provided helpful suggestions to improve its language. A more complex issue raised in the qualitative data concerned the handout photos. While improving their quality (a repeated comment) should not be a problem, not including them at all (a concern for some GDPs) will be. The photos of compromised mouths were included because pictures are an evidence-based strategy for reinforcing language designed to increase risk perception. The GDPs who objected to them were concerned that they would upset patients which, in effect, they are designed to do. This suggests that further work may be required

investigating the effect of handouts with and without photos on GDP behaviour (distributing), as well as patient outcomes.

There were some weaknesses in this study. The GDPs involved in ENGAGE already demonstrated they were motivated to think about health promotion in their practice, by being the first to sign up to the workshop. This was supported by many comments in the qualitative data relating to how they felt inspired to improve health promotion out with ENGAGE. It is possible that feasibility may depend on GDP motivation. We made an error in not keeping track of enquiries after the workshop places were filled and so failed to get a true sense of the response rate/motivation level that might inform participation issues in the future trial. Another weakness was that our results were exclusively self-reported. Unfortunately, we did not have the resources to observe GDPs delivering ENGAGE in practice, nor to perform follow-up interviews with GDPs or their patients. While no GDP reported their patients raising objections to being asked lifestyle questions, one GDP did report that some (unnumbered) patients didn't like being given the handout. Interviews may have been able to extend the depth of our understanding of our results even further, and it is something we would like to address in future.

In the workshop, some GDPs expressed concern over whether the ENGAGE intervention acceptably complied with dental guidance recommendations for opportunistic health promotion interventions. The study team contacted the Medical and Dental Defence Union of Scotland on this point in April 2017, and their reply confirmed that the ENGAGE intervention 'would appear to sit well within what is expected of them' citing Standards 1.4 and 1.4.1 from the General Dental Council Standards for the Dental Team.⁶¹ It should be noted that the authors are not advocating that GDPs do less than they currently do, in terms of in-practice counselling or referring. This intervention was designed for GDPs who do need to improve their current assessment and health promotion practice.

Nevertheless, ENGAGE is a novel way forward. Its development was prompted by a clear gap in the literature on how GDPs could pragmatically implement government and professional recommendations to increase general health promotion within the constraints of dental primary care. The studies described in this paper, and any further feasibility studies we perform, will need to serve as proof of

concept for funders, stakeholders and GDPs before we can begin examining its effectiveness for influencing patient outcomes. More research in this area is needed to close the gap between recommended best practice health promotion and what GDPs are willing and able to do in their everyday practice.

Conclusion

The design of the ENGAGE intervention incorporates UK applicable guidance recommendations as well as a theoretical underpinning and evidence-based behaviour change techniques drawn from an international literature. The overall results of the studies described in this paper suggest that the ENGAGE intervention is feasible to implement in Scottish dental primary care. Comments from patient and GDP participants will inform its future development (training, scripted dialogue, and patient handout), as will further feasibility studies set in other UK regions. The overall aim is to examine how effective this dental primary care intervention will be in motivating patients to reduce their general health risk from smoking, alcohol consumption and/or diet in a UK multi-centre trial.

Ethics

This study was assessed by East of Scotland Research Ethics service (Ref. LR/AG/16/GA/0064) and considered in compliance with ethical considerations with no need for further review.

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