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**Citation:** Lorencatto, F., Harper, A. M., Francis, J. & Lawrenson, J. (2016). A survey of UK optometry trainees' smoking cessation training. *Ophthalmic and Physiological Optics*, 36(4), pp. 494-502. doi: 10.1111/opo.12290

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# A survey of UK optometry trainees' smoking cessation training

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**Citation information:** Lorencatto F, Harper AM, Francis JJ & Lawrenson JG. A survey of UK optometry trainees' smoking cessation training. *Ophthalmic Physiol Opt* 2016. doi: 10.1111/opo.12290

**Keywords:** education, optometry, smoking, smoking cessation, teaching, training

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Received: 23 November 2015; Accepted: 29 January 2016

## Abstract

*Background:* Smoking is a risk factor for a number of eye conditions, including age-related macular degeneration, cataracts and thyroid eye disease. Smoking cessation interventions have been shown to be highly cost-effective when delivered by a range of healthcare professionals. Optometrists are well placed to deliver smoking cessation advice to a wide population of otherwise healthy smokers. Yet optometrists remain a relatively neglected healthcare professional group in smoking cessation research and policy. Surveys of UK medical/nursing schools and of optometrists' training internationally demonstrate significant deficits in current curricular coverage regarding smoking cessation. This study aimed to identify the extent of smoking cessation training in UK optometry trainees' undergraduate and pre-registration training.

*Methods:* All undergraduate optometry schools in the UK ( $n = 9$ ) were invited to participate in a web-based survey of their curricular coverage and assessment related to smoking cessation, and of perceived barriers to delivering smoking cessation training. A content analysis of the College of Optometrists Scheme for Registration Trainee Handbook 2014 was conducted to identify competence indicators related to smoking cessation.

*Results:* Nine undergraduate optometry schools (100%) responded to the survey. The majority reported dedicating limited hours (0–3) to teaching smoking cessation, and predominantly focused on teaching the harmful effects of smoking (89%). Only one school provides practical skills training for delivering evidence-based smoking cessation interventions, including very brief advice. The majority of schools (78%) reported that they did not formally examine students on their knowledge or skills for supporting smoking cessation, and rated confidence in their graduates' abilities to deliver smoking cessation interventions as 'poor' (78%). Lack of knowledge amongst staff was identified as the key barrier to teaching about smoking cessation support. The pre-registration competency framework does not include any competence indicators related to providing support for quitting smoking.

*Conclusions:* There are substantial gaps in the current curricula of UK optometry training, particularly regarding practical skills for supporting smoking cessation. Increased curricular coverage of these issues is essential to ensure trainee optometrists are adequately trained and competent in supporting patients to quit smoking.

## Introduction

Smoking remains one of the leading causes of preventable morbidity and mortality.<sup>1</sup> Despite the well-established risks of smoking, approximately 1 in 5 of the current UK population continue to smoke.<sup>2</sup> There is evidence that many smokers (70%) are interested in quitting and would like support to do so.<sup>3</sup> A range of interventions are available to support smokers in quitting, including pharmacological interventions (i.e. nicotine replacement therapy, varenicline, bupropion), and behavioural interventions, such as very brief advice and intensive/specialist behavioural support.<sup>4</sup> Behavioural interventions have been shown to be highly cost-effective when delivered by a range of healthcare professionals, including: General Practitioners (i.e. GPs, or family physicians), cardiologists, nurses, pharmacists, psychologists, midwives, dentists, dental hygienists, and social workers.<sup>5–9</sup>

Yet, optometrists have remained a relatively neglected healthcare professional group in smoking cessation research, policy and service provision.<sup>10</sup> This is surprising given the well-established links between smoking and a number of chronic ocular conditions, such as age-related macular degeneration, cataracts, and thyroid eye disease.<sup>11,12</sup> Furthermore, optometrists are arguably particularly well placed to deliver smoking cessation advice to a wide range of smokers who are otherwise healthy and may rarely come into contact with a healthcare professional. The role of optometrists in healthcare provision has also expanded to providing more general health promotion advice on other lifestyle changes (e.g. diet).<sup>13,14</sup> Similarly, optometrists have been recognised as 'gate-keepers' into the healthcare system due to their role in routinely screening, diagnosing, referring and co-managing eye conditions, including glaucoma and cataracts.<sup>13</sup> The potential for optometrists to contribute to the fight against tobacco has been recognised internationally, from New Zealand<sup>15</sup> to Canada.<sup>10</sup> In the UK, the College of Optometrists has responded to the recent publication of the UK National Institute of Health and Care Excellence (NICE) 2013 Smoking Cessation Quality Standards<sup>16</sup> requesting that the role of optometrists in delivering smoking cessation support be recognised and included in such guidelines.<sup>17</sup>

In order to successfully deliver smoking cessation interventions, healthcare professionals must be knowledgeable and adequately trained to do so.<sup>18,19</sup> The requisite competencies (i.e. knowledge and skills) for delivering evidence-based smoking cessation interventions have been identified.<sup>20,21</sup> These include behaviour change techniques such as setting a quit date with the smoker and advising on choice and use of smoking cessation medications.<sup>22</sup> The World Health Organisation has recommended the curricula of all healthcare professionals' training include tobacco

control at either an undergraduate level, or in further education and training programmes.<sup>23</sup> Coverage of issues related to tobacco use and cessation strategies have been identified in the curricula of medical, nursing, dentistry, dental hygiene and pharmacy schools internationally.<sup>10,24–26</sup>

In contrast, there has been limited research into optometrists' training for delivering smoking cessation support. The few surveys conducted to date have focussed on optometrists' current practice and identified that only a minority (<33%) of optometrists routinely assess patients' smoking status or advise on cessation.<sup>13,27–30</sup> Nonetheless, one survey of UK optometrists identified that a majority of optometrists expressed a desire to improve their knowledge of the association between smoking and eye disease (68%), and felt they would benefit from further training on smoking cessation in relation to eye disease (56%).<sup>31</sup> However, a more recent survey of Canadian optometry trainees identified that although students were routinely taught about the association between smoking and ocular pathologies, students typically received no training on how to advise patients to quit smoking.<sup>10</sup> There are no recent studies examining the extent to which UK optometry trainees are currently comprehensively trained to deliver evidence-based smoking cessation interventions.

Optometry training in the UK consists of two stages: Stage 1, an initial three (England) or four (Scotland) year undergraduate degree, followed by Stage 2, a pre-registration training period in clinical practice under the supervision and guidance of a General Optical Council (GOC) registered optometrist. As part of the pre-registration period, trainee optometrists must complete the 'Scheme for Registration' competence assessment in order to register with the GOC and practise independently. This assessment consists of three components: two work-based assessments in which trainees are assessed on relevant competence indicators in a clinical practice setting, and a final examination consisting of a series of sixteen, 5-min role-play/simulation based assessments.

It is important to examine the curricular coverage of smoking cessation interventions in training UK optometrists to identify whether trainee optometrists are being adequately trained to deliver these evidence-based, life- and sight-saving interventions to patients. Therefore, the present study aimed to conduct a national survey of UK optometry schools to explore the extent to which smoking cessation is covered in the current curricula of undergraduate and pre-registration training provided to UK optometry trainees.

## Methods

This study received ethical approval from the City University London School of Health Sciences ethics committee

(Ref: Opt/Proportionate Review/24). A national web-based survey was conducted in June 2015.

### Sample and recruitment

The cohort being investigated are UK optometry trainees, who encompass both undergraduate students (stage 1) and pre-registration trainees (stage 2). All UK optometry schools with an accredited undergraduate programme were eligible to participate in the survey. These programmes were identified from the website of the GOC ([www.optical.org](http://www.optical.org)). There are currently nine undergraduate optometry programmes across England ( $n = 6$ ), Scotland ( $n = 1$ ), Wales ( $n = 1$ ), and Northern Ireland ( $n = 1$ ). A suitable staff member (i.e. programme director) from each optometry school was identified from each school's website and sent an email containing an explanation of the study, a link to the online survey, and an invitation to complete the survey on behalf of their institution. Potential respondents were asked to forward the invitation email to a more appropriate staff member if applicable. For non-responders, alternative staff members were identified from the schools' websites.

### Materials: Questionnaire

To identify the curricular coverage of smoking cessation in undergraduate optometry training programmes, a 26-item questionnaire was developed by adapting existing questionnaires that have been used in surveys identifying the curricular coverage of issues related to smoking cessation in UK medical and nursing schools.<sup>16,24</sup> The questionnaire included five broad sections. Section 1 requested information on respondent demographics (e.g. role/department/institution). Section 2 contained items identifying the curricular coverage of smoking cessation, including: checkboxes to denote the content of any smoking cessation-related teaching (e.g. harmful effects of tobacco use; smoking prevalence; clinical skills training to deliver smoking cessation interventions etc.), time allocated to teaching smoking cessation (e.g. number of hours), and details of the staff members or organisations responsible for smoking cessation teaching. Section 3 contained items regarding the assessment of learning in relation to smoking cessation teaching, and included checkboxes to denote the content on which trainees were assessed, and forced-choice response items concerning the type of assessments conducted (e.g. written examinations, clinical skills assessments) (response options: yes/no/don't know). Section 4 presented a list of potential barriers to teaching smoking cessation in an optometry programme (e.g. lack of funding/time/expertise/enthusiasm from students), to which respondents were asked to rate their agreement on a

forced-choice response scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Lastly, Section 5 contained a forced-choice response question requiring respondents to rate their graduates' ability to deliver smoking cessation interventions (e.g. pharmacological/brief advice/behavioural support) (response options: poor/fair/good/excellent/not applicable).

An optometrist with expertise in supporting smoking cessation reviewed an initial draft of the questionnaire for content validity, and the questionnaire web-link was piloted internally by the research team. Following review and piloting, minor modifications to the web-based questionnaire were made to increase clarity, comprehension and usability. The final questionnaire is available in Data 1.

### Competence assessment framework

The College of Optometrists Scheme for Registration Trainee Handbook 2014, outlining the core competences that optometry trainees are expected to demonstrate across the pre-registration assessment period, is publicly available on the website of the College of Optometrists ([www.college-optometrists.org](http://www.college-optometrists.org)). This handbook was systematically coded to identify the extent to which smoking cessation knowledge and skills are represented in the outlined requisite competences.

### Procedure and analysis

The questionnaire was uploaded and hosted online using the survey tool 'SurveyMonkey' (a provider of web-based surveys; [www.surveymonkey.com](http://www.surveymonkey.com)). Personalised invitation emails containing a link to the web-based questionnaire were sent to all identified, eligible respondents, with two follow-up reminder emails sent to non-responders seven and 14 days later. Consent to take part in the survey was implied by completion and submission of the questionnaire.

After the closure of the survey, all data were imported into SPSS 21.0 and cleaned to remove any duplicate responses. Responses to survey Section 4 on barriers for teaching smoking cessation were collapsed into three categories: 'Disagree' (i.e. Strongly Disagree + Disagree), 'Neither Agree nor Disagree,' and 'Agree' (i.e. Strongly Agree + Agree). Responses to questionnaire Section 5 on graduate ability to deliver smoking cessation interventions were also collapsed into three categories: 'Poor,' 'Fair,' and 'High' (i.e. Good + Excellent). Data were summarised using descriptive statistics [i.e. percentages ( $n$ ), or mean  $\pm$  standard deviation] as appropriate.

To identify the coverage of smoking cessation in the pre-registration assessment, a content analysis was conducted of the 2014 Trainee Handbook (i.e. competence

framework). Two members of the research team (initials: FL, AH) independently read the handbook and extracted and tabulated any content related to 'smoking,' 'smoking cessation,' or 'tobacco use.' The extent to which both researchers independently identified the same content related to smoking cessation with agreement (i.e. inter-rater reliability) was assessed using percentage agreement; with  $\geq 75\%$  taken to represent high agreement.<sup>32</sup>

## Results

### Survey section 1: response rate and respondent demographics

An initial response was received from four undergraduate optometry schools (45%), with a further two (22%) and three (33%) responses received following reminder emails at seven and 14 days respectively; resulting in a 100% response rate ( $n = 9$  optometry schools). The majority of respondents held the role of Programme Director (45%), followed by Professor (33%), Head of Department (11%) and Lecturer (11%).

### Survey section 2: curricular coverage related to smoking cessation

The primary focus of smoking cessation training in the majority of undergraduate optometry programmes surveyed (89%) was on teaching about the harmful effects of smoking (Table 1). The three most frequently taught topics included: 'the relationship between smoking and eye disease' (89%), 'cancer risk' (67%), and 'cardiovascular health effects' (45%) (Table 2).

By contrast, just three schools reported delivering any brief intervention training, and only one reported teaching trainees how to assist smokers in making a quit attempt

**Table 1.** Inclusion of smoking cessation teaching and training on UK optometry school curricula

	Percentage (n)		Total
	Yes	No	
Teaching on harmful effects of smoking	89% (n = 8)	11% (n = 1)	n = 9
Training on how to deliver brief smoking cessation interventions to patients (e.g. 3A's)	37% (n = 3)	63% (n = 5)	n = 8
Teaching of ways to assist smokers to make a quit attempt (e.g. use of smoking cessation treatments and/or behavioural support interventions)	11% (n = 1)	89% (n = 8)	n = 9

**Table 2.** Individual smoking and smoking cessation teaching and training on UK optometry school curricula

Content area	Percentage (n)
Information on health effects of smoking and benefits of quitting	
Contents of tobacco smoke	37% (n = 3)
Relationship between smoking and eye disease	89% (n = 8)
Cancer risk	67% (n = 6)
Cardiovascular health effects	45% (n = 4)
Harm reduction	20% (n = 2)
Health effects of passive smoking	22% (n = 2)
Information on epidemiology and addiction	
Epidemiology (current smoking rates)	22% (n = 2)
Determinants of smoking	22% (n = 2)
Demographics of smoking	11% (n = 1)
Pharmacology of nicotine addiction	11% (n = 1)
Nicotine withdrawal symptoms	11% (n = 1)
Information on stop smoking interventions	
Cost and clinical effectiveness of stop smoking interventions	11% (n = 1)
Nicotine replacement therapy	22% (n = 2)
Other pharmacological agents (e.g. varenicline, bupropion)	11% (n = 1)
The role of stop smoking services	22% (n = 2)
Population strategies	0% (n = 0)
Practical skills	
Brief opportunistic intervention: very brief interventions or 3A's (ask, advise, assist/arrange follow up)	11% (n = 1)
Intensive behavioural support interventions (i.e. to be delivered within the optometry practice)	0% (n = 0)
Prescribing stop smoking medications	11% (n = 1)
Referral to smoking cessation services	11% (n = 1)
Practical delivery in artificial settings (e.g. role play)	0% (n = 0)
Practical delivery in clinical settings (e.g. observing an optometrist, or stop smoking practitioner delivering behavioural support)	0% (n = 0)
None of the above	0% (n = 0)
Other	11% (n = 1)

(Table 1). The least frequently taught topics included: 'practical delivery in clinical settings, e.g. observing an optometrist or stop smoking practitioner delivering behavioural support' (0%), 'practical delivery in artificial settings (e.g. 'role play')' (0%), 'intensive behavioural support interventions to be delivered within the optometry practice' (0%), and 'population strategies' (0%). Of note, at most only two optometry schools taught any of the specific topics related to practical skills for evidence-based intervention delivery, including: 'referral to specialist smoking cessation services' (11%), 'brief opportunistic interventions' (i.e. Ask, Advise, Assist, 11%), 'nicotine replacement therapy' (22%) and 'prescribing stop smoking medications' (11%) (Table 2).

One optometry school was unable to report how many hours were spent on smoking cessation teaching. In the

remaining eight schools, half reported spending 'less than 1 h' teaching on smoking cessation.

Four of the nine optometry schools surveyed reported that smoking cessation teaching was spread over different years of the programme, typically the second and third years (Table 3). Three schools reported providing no smoking cessation teaching over any of the years in the programme.

In five optometry schools, smoking cessation teaching was delivered by an internal staff member, in one by an external lecturer, and in three of schools no individual was responsible as the school reported they do not deliver any smoking cessation teaching.

### Survey section 3: assessment of learning in relation to smoking cessation

The majority of optometry schools (78%) reported that they did not formally examine trainees on their knowledge of smoking cessation. The two schools that did formally examine trainees reported doing so via written assessments. No optometry schools reported formally assessing trainees on practical skills for delivering smoking cessation interventions.

### Survey section 4: barriers to teaching smoking cessation

The most commonly reported barriers to teaching smoking cessation were: 'lack of smoking cessation knowledge amongst staff' (67% agree), 'lack of clarity as to who should teach smoking cessation' (66%), and 'smoking cessation being a low teaching priority' (56%). The least frequently endorsed barriers were 'lack of enthusiasm from students' (22%) and 'insufficient funding' (33%) (Table 4).

### Survey section 5. Graduate ability to deliver smoking cessation interventions

Five schools rated their graduates' ability to advise on smoking cessation medications' as poor (55%). An even greater majority ( $n = 7$ ; 78%) rated graduate ability to deliver intensive behavioural support interventions as 'poor' (Table 5).

**Table 3.** Reported frequency of teaching by year ( $n = 10$ )

Teaching by year	<i>n</i> *
First	2
Second	4
Third	6
Fourth	1
We do not cover smoking cessation in any year(s) of the curriculum	3

\*Multiple response options possible.

**Table 4.** Percentage of optometry schools reporting barriers affecting efforts to teach smoking cessation

	Percentage ( <i>n</i> )		
	Agree	Disagree	Neither agree or disagree
There are no barriers	44% ( $n = 4$ )	56% ( $n = 5$ )	0% ( $n = 0$ )
Administrative problems	22% ( $n = 2$ )	56% ( $n = 5$ )	22% ( $n = 2$ )
No space on crowded curriculum	45% ( $n = 4$ )	33% ( $n = 3$ )	22% ( $n = 2$ )
Lack of smoking cessation knowledge amongst staff	67% ( $n = 6$ )	22% ( $n = 2$ )	11% ( $n = 1$ )
Lack of enthusiasm from students	22% ( $n = 2$ )	33% ( $n = 3$ )	45% ( $n = 4$ )
Inconsistent government policies	45% ( $n = 4$ )	22% ( $n = 2$ )	33% ( $n = 3$ )
Unclear who should teach smoking cessation	66% ( $n = 6$ )	22% ( $n = 2$ )	10% ( $n = 1$ )
Insufficient funding	33% ( $n = 3$ )	22% ( $n = 2$ )	45% ( $n = 4$ )
Smoking cessation interventions are not a priority for students	56% ( $n = 5$ )	11% ( $n = 1$ )	33% ( $n = 3$ )

**Table 5.** Rating of graduates' ability to deliver smoking cessation interventions ( $n = 9$ )

	Percentage ( <i>n</i> )		
	High	Fair	Poor
Deliver of very brief advice to quit smoking (e.g. 3A's)	11% ( $n = 1$ )	45% ( $n = 4$ )	45% ( $n = 4$ )
Advise on medications for smoking cessation	0% ( $n = 0$ )	45% ( $n = 4$ )	55% ( $n = 5$ )
Deliver more intensive behavioural support for smoking cessation (i.e. within optometry practice)	0% ( $n = 0$ )	22% ( $n = 2$ )	78% ( $n = 7$ )

### Content analysis of Scheme for registration Trainee Handbook

Both researchers conducting the content analysis independently identified with 100% agreement that there is no specific mention of 'smoking,' 'smoking cessation,' or 'tobacco use' within the 299-page pre-registration competence assessment framework/Trainee Handbook (College of Optometrists, 2014). There are thus no specific competence indicators related to provision of smoking cessation support, and pre-registration students are therefore not formally assessed on smoking cessation knowledge and skills.

However, the content analysis identified a number of competency areas in which smoking and smoking cessation could potentially be addressed but was not explicitly

referred to in the handbook, including: 'risk factors for common ocular conditions,' 'assessing patient history relating to general health and lifestyle', and 'making appropriate referrals' (Table 6).

## Discussion

This survey aimed to provide a nationwide description of current smoking cessation training provided to UK optometry trainees. Findings from all current optometry schools indicate that a low number of hours are dedicated to teaching on smoking cessation, and that this time is predominantly spent teaching the harmful effects of smoking in general and specific to eye health. It is of concern that optometry trainees currently receive little to no practical skills training for delivering evidence-based behavioural support interventions in clinical practice, such as very brief advice or referrals to specialist stop smoking services. These findings are not limited to the UK, as they are in line with findings from recently conducted surveys of optometrists' smoking cessation training in other countries (e.g. Canada).<sup>10</sup> These findings are also consistent with UK-based surveys of nursing and medical schools, which consistently identify low allocation of teaching hours to smoking cessation, and a focus on teaching factual information of the health effects of smoking over practical skills training.<sup>18,26,33</sup>

It has previously been reported that optometrists feel they would benefit from additional knowledge and skills training.<sup>29</sup> This study identifies a number of existing training gaps that could be addressed in future programmes. For example, only a small proportion of schools (11–22%) are teaching trainees on key topics such as the pharmacology of nicotine addiction, withdrawal symptoms, and the evidence-base for currently available smoking cessation interventions. Similar gaps also exist in the curricula of UK nursing schools.<sup>18</sup> Understanding how an underlying biological dependence to nicotine develops, the challenges this dependence presents to quitting, and its role in the process of relapse, is a pre-requisite to understanding how to best support smokers to effectively quit.<sup>4</sup> Furthermore, previous studies have demonstrated that nurses educated on the effectiveness and cost-effectiveness of pharmacological interventions, such as nicotine replacement therapy (NRT), are more likely to recommend NRT to patients than those who were not.<sup>34</sup>

Moreover, the lack of practical skills training for delivering behavioural interventions is of primary concern, as this indicates optometry trainees are not being adequately prepared to deliver evidence-based interventions in day-to-day clinical practice. There is evidence that behavioural interventions of various intensities can be highly effective in supporting smokers to quit- from dedicated support delivered over multiple weekly sessions by specialist

**Table 6.** Scheme for registration assessment competencies where smoking and smoking cessation education and training could be included

Stage (visit)	Competency	Relevant indicators
1 (1)	6.1.1 Understands the risk factors for common ocular conditions	Understands the risk factors for developing common ocular conditions including; glaucoma, cataract, diabetic retinopathy and ARMD
1 (2)	1.1.1 Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements	Asks appropriate questions to obtain a full history
1 (2)	1.2.5 Communicates effectively with any other appropriate person involved in the care of the patient	Records and discusses advice and management in a clear and appropriate manner
1 (3)	2.2.6 Makes an appropriate judgement regarding referral and understands referral pathways	Refers to the appropriate person with appropriate urgency. Recognises the difference between referral and notification Include appropriate information in the referral letter Gives appropriate advice to the patient including written statement Shows understanding of local protocol/with some understanding of national variations
1 (3)	6.1.9 Manages patients presenting with macular degeneration	Distinguishes between wet and dry AMD from symptoms and clinical findings Establishes patient needs and visual function Makes appropriate recommendations for both management and referral Understands potential treatments both medical and 'in practice' options
1 (3)	6.1.10 Recognises, evaluates and manages diabetic eye disease and refers accordingly	Recognises and names correctly the stage of diabetic eye disease Gives local referral route and the appropriate timescales for referral following diabetic retinopathies: background/maculopathy/pre-proliferative/proliferative
2	1.1 The ability to manage patients in a safe, appropriate and confidential environment	



advisors, to brief advice interventions delivered over 10 min.<sup>7,8</sup> Previous studies have identified that nurses' lack of practical skills training, negatively impacted their delivery of smoking cessation advice to patients.<sup>35</sup> Practical skills training, including demonstrations, simulation, role plays, and observations, can help build trainees' confidence in competently delivering behavioural interventions.<sup>4</sup>

It is also important that trainees are thoroughly assessed on the requisite knowledge and skills for providing smoking cessation support. Assessments provide feedback to trainees on their performance and test whether intended competencies have been met.<sup>36</sup> However, the present study identified significant limitations in current assessment strategies; demonstrating that less than a third of optometry schools currently assess trainees' knowledge related to smoking cessation. Moreover, although evidence-based, core competencies for delivering smoking cessation interventions have been identified,<sup>20–22</sup> the pre-registration competence framework for trainee optometrists does not include any competence indicators related to smoking cessation knowledge and intervention skills delivery. Given the substantial gaps in current training and education of optometrists related to smoking cessation, it is unsurprising that respondents in the present survey often rated their confidence in optometry graduates' ability to deliver smoking cessation interventions as 'poor.'

This survey also identified potential barriers that may be contributing to such curricular gaps, which may be targeted to improve current teaching related to smoking cessation. The key barriers reported concerned lack of smoking cessation knowledge amongst staff (60%), and lack of clarity as to who should teach smoking cessation (60%); which combined suggest optometry schools may be insufficiently trained and resourced to deliver smoking cessation education.

One possible solution to such barriers is for optometry schools to utilise existing, evidence-based smoking cessation training resources to deliver or supplement the content of their smoking cessation training. A number of smoking cessation teaching modules and courses have been developed internationally.<sup>37,38</sup> In the UK, a national knowledge and skills training and accreditation programme has been developed to train stop smoking advisors to deliver evidence-based smoking cessation interventions [National Centre for Smoking Cessation and Training (NCSCT) [www.ncsct.co.uk](http://www.ncsct.co.uk)].<sup>39</sup> The programme is designed to provide training on established, evidence-based, competencies (i.e. knowledge and skills) for delivering smoking cessation interventions. The programme includes a mixture of educational text and videos simulating the delivery of evidence-based competences. Its content covers topics such as the prevalence of smoking in different population groups, health consequences of smoking, determinants of smoking and why it can be difficult to quit, effective ways to support

smokers to quit, medication use, and how to plan/deliver a behavioural support intervention. The training is entirely web-based, available online for trainees to complete at their own pace, and involves a baseline and post-training multiple choice competence assessment.<sup>39</sup> This training programme has been shown to significantly increase the knowledge and skills of specialist stop smoking advisors.<sup>39</sup>

However, the role of specialist, dedicated advisors is quite distinct from that of other healthcare professionals who provide smoking cessation advice and support to patients as a small part of their wider role (i.e. GPs, pharmacists, midwives, nurses, dentists). Therefore, the NCSCT has also developed specialist training modules to address the context specific barriers and requirements of such healthcare professionals, including those providing smoking cessation support to specialist population groups (i.e. mental health, and pregnancy), as well as a very brief advice module ([www.ncsct.co.uk](http://www.ncsct.co.uk)). The very brief advice training module takes no longer than 30 min to complete. It aims to equip trainees with the necessary skills to deliver evidence-based brief advice over a few minutes, including: asking patients about smoking, advising on cessation, and assisting smokers to quit, either locally or via a referral to a dedicated/specialist stop smoking service (<http://elearning.ncsct.co.uk/vba-launch>). If all optometry trainees were trained using such a module, potentially more patients who smoke could be supported to quit, or referred to dedicated services, such as the NHS stop smoking services in England, where smokers are four times more likely to quit than those who attempt to quit unaided.<sup>18,40</sup>

### Strengths and limitations

A strength of this study is the 100% response rate, which removes any potential selection bias that may have impacted the survey results, and provides a comprehensive description of current training across the UK. However, the self-report survey design may have been subject to other biases, such as social desirability, whereby respondents over-reported the extent of current smoking cessation training, or recall bias, as it is possible that the individual respondent may not have been fully aware of all parts of the curriculum where smoking cessation may be discussed, resulting in an under estimation of curricular coverage.

Furthermore, the survey questions only examined tobacco smoking, rather than tobacco use more broadly (e.g. water pipe, chewing tobacco). There are serious risks also associated with tobacco use through means other than smoking.<sup>41</sup> It is thus important that healthcare professionals advising on tobacco cessation are aware of other forms of tobacco use and are suitably trained to comprehensively assess smoking behaviour, and advise on the importance of not consuming tobacco in 'any form.' Similarly, holistic

tobacco control is not just about helping current smokers to quit, but also preventing the uptake of smoking (e.g. preventing youth from initiating tobacco use). The present survey items focused on smoking cessation, rather than smoking prevention. The notion of tobacco prevention raises important questions for smoking cessation training, such as at what patient age optometrists should be advised to begin assessing patients' smoking status. While there is good evidence for the efficacy of smoking cessation interventions,<sup>7,42</sup> there is currently less good-quality, clear evidence supporting community-based smoking prevention interventions.<sup>43,44</sup> Priority should thus be given to teaching evidence-based smoking cessation strategies, and curricula revised as the evidence-base supporting prevention strategies grows.

## Conclusions

Smoking remains a significant public health priority,<sup>45</sup> and there is increasing evidence that smoking is causally associated with the development of common eye diseases. The potential for optometrists to contribute to the fight against tobacco-related morbidity and mortality has been recognised.<sup>10,15</sup> However, if this potential is to be realised, it is important that the profession is adequately trained to deliver evidence-based smoking cessation interventions. The current study further highlights the substantial gaps that have been identified globally in the training of optometrists in this area, and it is recommended that educational providers, regulatory and professional bodies consider ways to address these deficits.

## Acknowledgement

This work was supported by a City University London Research Development Fund Project Grant.

## Disclosure

Fabiana Lorencatto, Alice Harper, Jill J. Francis and John G. Lawrenson report no conflict of interest and have no proprietary interest in any of the materials mentioned in this article.

## References

- Doll R, Peto R, Boreham J & Sutherland I. Mortality from cancer in relation to smoking: 50 years observations on British doctors. *Br J Cancer* 2004; 92: 426–429.
- Smoking Toolkit Study*, 2015, <http://www.smokinginengland.info>, accessed 14/07/15.
- Orleans CT. Increasing the demand for and use of effective smoking-cessation treatments reaping the full health benefits of tobacco-control science and policy gains – in our lifetime. *Am J Prev Med* 2007; 33(6 Suppl): S340–S348.
- West R, McNeill A & Raw M. Smoking cessation guidelines for health professionals: an update. *Thorax* 2000; 55: 987–999.
- West R, McNeill A & Raw M. Smoking cessation guidelines and their cost effectiveness. *Thorax* 1998; 53: S1–S38.
- Fiore MC, Jorenby DE & Baker TB. Smoking cessation: principles and practice based upon the AHCPR Guideline, 1996. *Ann Behav Med* 1997; 19: 213–219.
- Stead LF, Buitrago D, Preciado N, Sanchez G, Hartmann-Boyce J & Lancaster T. Physician advice for smoking cessation. *Cochrane Database Syst Rev* 2013; 5: CD000165.
- Aveyard P, Begh R, Parsons A & West R. Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. *Addiction* 2012; 107: 1066–1073.
- Law M & Tang J. An analysis of the effectiveness of interventions intended to help people stop smoking. *Arch Intern Med* 1995; 155: 1933–1941.
- Spafford MM, Iley MD, Schultz OAS & Kennedy RD. Tobacco dependence education in optometry: a Canadian pilot study assessing practices and opportunities. *Optom Educ* 2010; 36: 38–44.
- Thornton J, Edwards R, Harrison RA, Elton P, Astbury N & Kelly SP. 'Smoke gets in your eyes': a research-informed professional education and advocacy programme. *J Public Health (Oxf)* 2007; 29: 142–146.
- Klein R, Knudtson MD, Cruickshanks KJ & Klein BE. Further observations on the association between smoking and the long-term incidence and progression of age-related macular degeneration: the Beaver Dam Eye Study. *Arch Ophthalmol* 2008; 126: 115–121.
- Hoppe E & Frankel R. Optometrists as key providers in the prevention and early detection of malignancies. *Optometry* 2006; 77: 397–404.
- Howse JH, Jones S & Hungin AP. Screening for diabetes in optometry practices: acceptability to users. *Ophthalmic Physiol Opt* 2011; 31: 367–374.
- Sheck LH, Field AP, McRobbie H & Wilson GA. Helping patients to quit smoking in the busy optometric practice. *Clin Exp Optom* 2009; 92: 75–77.
- National Institute of Health and Clinical Excellence (NICE). *Smoking: Supporting people to Stop. NICE quality standard [QS43]*, 2013, <https://www.nice.org.uk/guidance/qs43>, accessed 12/11/15.
- College of Optometrists. *NICE Quality Standards Consultation 2013 Smoking Cessation: Joint Response*, 2013, <http://www.collegeoptometrists.org/en/utilities/document-summary.cfm/docid/D6072474-96AF-4C20-9DE11B3859-F1EAF9>, accessed 04/11/2014.
- Richards B, McNeill A, Croghan E, Percival J, Ritchie D & McEwen A. Smoking cessation education and training in UK nursing schools: a national survey. *J Nurs Edu Pract* 2014; 4: 188–198.

19. Raw M, McNeill AN & West R. Smoking cessation guidelines for health professionals – a guide to effective smoking cessation interventions for the health care system. *Thorax* 1998; 53(Suppl 5): S1–S18.
20. West R, Lorencatto F, Michie S, Willis N & McEwen A. *NCSCT Training Standards: Learning outcomes for training stop smoking specialists*. National Centre for Smoking Cessation & Training, Department of Health, UK, 2010. ISBN 978-0-9565243-1
21. Association for the Treatment of Tobacco Use and Dependence (ATTUD). *Core competences for evidence-based treatment of tobacco dependence*, 2005, <http://cttt.org/wp-content/uploads/2015/06/ATTUD-Core-Competencies.pdf>, accessed 11/02/2016.
22. Michie S, Churchill S & West R. Identifying evidence-based competences required to deliver behavioural support for smoking cessation. *Ann Behav Med* 2011; 41: 59–70.
23. World Health Organisation (WHO). *WHO informal meeting on health professionals and tobacco control. Code of practice on tobacco control for health professionals*, 2005, <http://www.who.int/tobacco/communications/events/codesofpractice/en/index.html>, accessed 13/01/16.
24. Hudmon KS, Bardel K, Kroon LA, Corelli RL & Fenlon CM. Tobacco education in U.S. schools of pharmacy. *Nicotine Tob Res* 2005; 7: 225–232.
25. Lenz TL, Monaghan MS & Hetterman EA. Therapeutic lifestyle strategies taught in U.S. pharmacy schools. *Prev Chronic Dis* 2007; 4: 1–4.
26. Raupach T, Al-Harbi G, McNeill A, Bobak A & McEwen A. Smoking cessation education and training in UK medical schools: a national survey. *Nicotine Tob Res* 2014; doi:10.1093/ntr/ntu199.
27. Lawrenson JG & Evans JR. Advice about diet and smoking for people with or at risk of age-related macular degeneration: a cross-sectional survey of eye care professionals in the UK. *BMC Public Health* 2013; 13: 564.
28. Sahu A, Edwards R, Harrison RA, Thornton J & Kelly SP. Attitudes and behaviour of ophthalmologists to smoking cessation. *Eye* 2008; 22: 246–250.
29. Kennedy RD, Spafford MM, Schultz AS, Iley MD & Zawada V. Smoking cessation referrals in optometric practice: a Canadian pilot study. *Optom Vis Sci* 2011; 88: 766–771.
30. Kennedy RD, Spafford MM, Douglas O *et al.* Patient tobacco use in optometric practice: a Canada-wide study. *Optom Vis Sci* 2014; 91: 769–777.
31. Thompson C, Harrison RA, Wilkinson SC, Scott-Samuel A, Hemmerdinger C & Kelly SP. Attitudes of community optometrists to smoking cessation: an untapped opportunity overlooked? *Ophthalmic Physiol Opt* 2007; 27: 389–393.
32. Landis JR & Koch GG. An application of hierarchical kappa-type statistics in the assessment of majority agreement among multiple observers. *Biometrics*, 1977; 33: 363–374.
33. Richmond R, Zwar N, Taylor R, Hunnisett J & Hyslop F. Teaching about tobacco in medical schools: a worldwide study. *Drug Alcohol Rev* 2009; 28: 484–497.
34. Sarna LP, Brown JK, Lillington L, Rose M, Wewers ME & Brecht ML. Tobacco interventions by oncology nurses in clinical practice. *Cancer* 2000; 89: 881–889.
35. McEwen A & West R. Smoking cessation activities by general practitioners and practice nurses. *Tob Control* 2001; 10: 27–32.
36. Rust C. The impact of assessment on Student learning: how can the research literature practically help to inform the development of departmental assessment strategies and learner-centred assessment practices? *Act Learn Higher Educ* 2002; 3: 145–158.
37. Leone FT, Evers-Casey S, Veloski J, Patkar AA & Kanzleiter L. Short-intermediate-and long-term outcomes of Pennsylvania's continuum of tobacco education pilot project. *Nicotine Tob Res* 2009; 11: 387–393.
38. Leong SL, Lewis PR, Curry WJ & Gingrich DL. Tobacco world: evaluation of a tobacco cessation training program for third-year medical students. *Acad Med* 2008; 83: S25–S36.
39. Brose LS, West R, Michie S, Kenyon JA & McEwen A. Effectiveness of an online knowledge training and assessment program for stop smoking practitioners. *Nicotine Tob Res* 2012; 14: 794–800.
40. Judge K, Bauld L, Chesterman J & Ferguson J. The English smoking treatment services: short-term outcomes. *Addiction* 2005; 100: 46–58.
41. Akl EA, Gaddam S, Gunukula SK, Honeine R, Jaoude PA & Irani J. The effects of waterpipe tobacco smoking on health outcomes: a systematic review. *Int J Epidemiol* 2010; 39: 834–857.
42. Lancaster T & Stead LF. Individual behavioural counselling for smoking cessation. *Cochrane Database Syst Rev* 2005; 1: 2.
43. Shahab L. In: *NCSCT Briefing: Effectiveness and Cost-Effectiveness of Programmes to Help Smokers to Stop and Prevent Smoking Uptake at Local Level* (McEwen A & Alley K, editors), National Centre for Smoking Cessation and Training (NCSCT): London, 2015. <http://www.ncsct.co.uk/usr/pub/NCSCT%20briefing-effectiveness%20of%20local%20cessation%20and%20prevention.pdf>, accessed 13/01/16
44. National Institute of Health and Clinical Excellence (NICE). *NICE Public health guidance 14: Preventing the uptake of smoking by children and young people*, 2008, <http://www.nice.org.uk/nicemia/live/12020/41332/41332.pdf>, accessed 13/01/16.
45. Department of Health. *Healthy Lives, Healthy People: A Tobacco Control Plan for England. (Report no: 5513)*, 2011, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/213757/dh\\_124960.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213757/dh_124960.pdf), accessed 13/01/16.

## Supporting Information

Additional Supporting Information may be found in the online version of this article:

**Data S1.** National survey of schools of optometry.