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Tobacco Usage and Control: Information and Advice for Primary Dental Care Practitioners

Abstract: Ten years on from the white paper *Smoking Kills*, the UK is a leader on tackling tobacco within Europe. However, over 100,000 people die each year in the UK as a result of the effects of smoking; the most common form of tobacco use. Tobacco cessation is, moreover, a global issue with wide variation in tobacco usage, multiple determinants and numerous approaches to prevention.

This article provides an overview of the trends in tobacco usage and control in the UK compared with other nations, to bring the process into context for primary dental practitioners. Guidance is also provided on appropriate smoking interventions in dental practice that support national health targets and population health.

Clinical Relevance: Within dentistry, clear links exist between tobacco and health (both general and oral). Oral health care professionals routinely come into contact with members of the public and can contribute to tobacco control programmes through a range of public health interventions.

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Smoking, the most common form of tobacco nonuse, is the single greatest cause of illness and premature death in the UK. It causes one third of all cancers and a seventh of cardiovascular disease.[1–4] In the oral cavity alone, smoking or chewing tobacco can cause oral cancers and pre-cancers; increased severity and extent of periodontal disease; and poor wound healing.[5–7] Nonetheless, despite early research by Sir Richard Doll confirming the link between tobacco and disease in 1954,[8] major policy initiatives in the UK have accelerated only recently.[9–11]

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Most tobacco control policy in the UK is currently tackled separately in England, Scotland, Wales and Northern Ireland;[12] however, aspects of public policy, including taxation, customs, competition and parts of consumer protection, are controlled by the UK government in Westminster.[13] Tobacco control is moreover a global issue, with freedom of movement despite large variations in tobacco usage and control. Table 1 summarizes historical landmarks in tobacco control globally and Table 2 summarizes the UK agenda.

Tobacco cessation and prevention strategies should be evidence informed and this requires an understanding of the trends in tobacco usage.[32]

Tobacco usage, its consequences and control globally

The WHO European Country Profiles on Tobacco Control 2003,[33] The WHO European Tobacco Control Database[34] and The MPOWER Global tobacco report[17] provide data on tobacco (in particular smoking) usage and control globally. Unless otherwise stated, data in this section, which focuses mostly on Europe and parts of Asia, will derive from these documents.

Tobacco usage

In the UK and Europe, adult male smoking prevalence remains higher on average than adult female smoking prevalence, although the latter reduced by less between 1994 and 2005. The highest and lowest smoking prevalence in Europe (in 2005) occurred in Austria (47.1%) and Moldova (15.1%), respectively. Figure 1 relates smoking prevalence from specific countries globally.

In England and Wales, adult smoking prevalence was 22% in 2006.[3,13,16] Nonetheless, in Scotland (in 2004) and Northern Ireland (in 2002), the recent prevalence was higher at 27.2% and 25%,

Year	Event
1954	- First British Research linking lung cancer and smoking by Sir Richard Doll[8]
1950s	- UK health education campaign following the first large scale epidemiological study of lung cancer and smoking
1962	- Publication of smoking and health by the Royal College of Physicians[16]
1965	- Limited ban on UK TV cigarette advertising
1971	- ASH UK established, the first national tobacco control organization - Health warnings on cigarette packages[3]
1980s	- Nicotine chewing gum
1985	- >50% of the world's tobacco grown in developing countries[17]
1986	- Stricter limits on advertising and blunter health warnings on cigarette packaging
1988	- First WHO report on the effects of smokeless tobacco - First WHO World No Tobacco Day, subsequently an annual event on 31 May
1990	- GLOBALink; an online interactive marketplace founded by the International Union Against Cancer - International Network of Women Against Tobacco (INWAT) formed
1991	- UK International Agency on Tobacco and Health (IATH) formed as an advice service for poorly developed countries - International Smoke-free Hospitals group formed
1992	- The first international peer-reviewed journal on tobacco control, *Tobacco Control Journal*, founded by the *British Medical Journal*
1994	- Society for Research on Nicotine and Tobacco founded - International Non Governmental Coalition Against Tobacco (INGCAT) founded - International Quit and Win campaign, (WHO)
1986–1996	- Cigarette price in the UK increased by 28% more than prices generally when taking into account inflation. However, cigarettes were marginally more affordable because Personal Disposable Income (PDI) increased by 32% in real terms
1997	- European Network for Smoking Prevention (ENSP) created
1998	- First ever UK white paper on tobacco (*Smoking Kills*) sets out measures to 'reduce the 120,000 deaths caused by smoking each year', reduce passive smoking and prevent non smokers from smoking - Studies confirmed the harmfulness of smoking fewer than 10 cigarettes a day[18] - UN Foundation first funds a tobacco control project - WHO's tobacco-free initiative established
1999	- UK removes Royal seal of approval from Gallaher's Benson and Hedges cigarettes by 2000 - Global Youth Tobacco Surveys start
2000	- Global Partnerships for Tobacco Control founded by Essential Action to strengthen international tobacco control activities - International Tobacco Evidence Network (ITEN) established
2001	- WHO published Tobacco & the Rights of the Child - Major expansion of smoking cessation in the NHS
2002	- WHO published the first edition of *The Tobacco Atlas* - TobaccoPedia, the online tobacco encyclopedia, was launched
2003	- The Global Network of Pharmacists Against Tobacco launched - Treatobacco web-based database and educational resource for treatment of tobacco dependence established by the Society for Research on Nicotine and Tobacco - Ban on tobacco advertising, promotion and sponsorship
2004	- The EU Commission published the ASPECT report, 'Tobacco or Health in the European Union: Past, Present and Future', the first comprehensive overview of tobacco control in the 25 EU member countries plus Norway, Iceland and Switzerland - Interactive internet mapping of *The Tobacco Atlas* launched by Global Tobacco Research Network, John Hopkins University - WHO's 'Code of practice on tobacco control for health professional organisations' launched - IARC Monograph on Tobacco Smoke and Involuntary Smoking released, refuting tobacco industry disinformation - First general textbook for health professionals on tobacco published: *Tobacco: Science, Policy and Public Health*[19]
2005	- World Dental Federation (FDI) launches Tobacco or Oral Health publication[20] - WHO Framework Convention on Tobacco Control (FCTC) came into force, using international law to reduce tobacco use
2006–2007	- New edition of *The Tobacco Atlas* - European Commission approved Champix (varenicline) as a new 'stop smoking' aid for adults. [21] NICE recommended the use of Champix in the NHS (2007)
2008	>70% of world's tobacco grown in developing countries[17]

Table 1. History of tobacco control. Source: adapted from [2,3,8,14–21]

	England	Wales	Scotland	Northern Ireland
Dates of Ban	Health Act 2006: Smoking ban in public places and workplaces (2007)	2007 Smoking ban in public places and workplaces	2006 Smoking ban in public places and workplaces	2004 Workplace ban 2007 Smoke-free signs, premises and legislation[28]
Other Tobacco control policies	Children and Young Persons Protection from Tobacco Act (2001) – illegal to <16 2000/2001– NHS Stop smoking services 2002/2003 – Tobacco advertising ban and Tobacco Products (Safety) Regulations require severe warnings on tobacco products (from 2008)[22] 2003/2004 – Tackling Tobacco Smuggling. Strategy successfully hit 17% target 2005 – Nicotine Replacement Therapy 2006 – Internet tobacco advert regulations	Enforcing legislation (on sales/adverts), and fiscal policy[26]	1997 – Tobacco Control Resource Centre (TCRC) formed by the European Forum Medical Associations (EFMA)[27]	Enforcement on the sale of tobacco, etc. to young persons 1992 – Women and tobacco conference
Key Policy documents	1998 – DOH white paper *Smoking Kills*[10] 2000 – NHS Cancer Plan – smoking targets[23] 2002 – Priorities and Planning Framework (DOH) with targets for smoking cessation 2003 – Tackling Health Inequalities in manual groups and pregnant women[24] 2004 – Health Development Agency (2004) The Smoking Epidemic in England. HDA, London 2004 – (PSA) Delivery Agreement to promote better health and 'wellbeing for all'[24] 2005 – WHO 'Choosing Health'[25] 2006 – NHS 'New responses to new challenges: Reinforcing the Tackling Tobacco Smuggling Strategy' to cut smuggling to 16% by 2008 2008 – New document (*Beyond 'Smoking Kills'*)[12] 2010 – DOH review of smoking ban due	2005 – Pledge to reduce smoking related cancer and coronary heart disease deaths by 2012 by preventing young people from smoking, smoking cessation support and creating supportive environments[26]	2004 – Scottish Executive drove policy through *A Breath of Fresh Air for Scotland* Policies involve protection and controls, prevention and education, provision of smoking cessation services and reducing second-hand smoke 2005 – *Smoke Free Scotland*[27, 30] 2008 – Co-coordinated tobacco control programme[31]	2002 A *Five Year Tobacco Action Plan* (building on 1998 DOH *Smoking Kills*)[29]

Table 2. Tobacco control in the UK. Source: adapted from [2–6,16,25,29–34]

respectively.[1,2,35,36] Figure 2 summarizes trends in smoking prevalence amongst UK adults.

In the UK and Europe, smoking prevalence in young people (aged 11–16 year-olds) increased more in girls compared with boys since the early/mid 1990s, and by 2005 it was higher in girls on average. The highest and lowest smoking prevalence (in

2005) occurred in the Ukraine (33.8%) and Greece (13.8%). In UK children (aged 11–16 years), smoking prevalence in England decreased from 11% in boys and girls (in 1982) to 8% in girls and 5% in boys (in 2007), although it remains higher amongst girls.[3,13,26] Recent prevalence data from Northern Ireland is slightly higher at 18% for girls and 12% for boys (in 2005).[37] In Wales, the prevalence was 26.8% in girls and 15.5% in boys (in 2002)[3,13,26] and in Scotland, the prevalence was also high at 30% in boys and 18% in girls (in 2006).[1,2,35,36] Nonetheless, prevalence has recently decreased in Scottish girls[36]. Figure 3 summarizes smoking prevalence amongst young people in the UK aged 11–16. In addition, as Figure 4 shows, a large proportion of dental students smoke globally, which could encourage smoking uptake amongst patients and other students.[38]

Smoking prevalence within the UK is also higher within specific groups, for example socio-economically deprived groups,[39] in specific geographic locations,[40] in males compared with females[13] and amongst certain ethnic/cultural groups. The

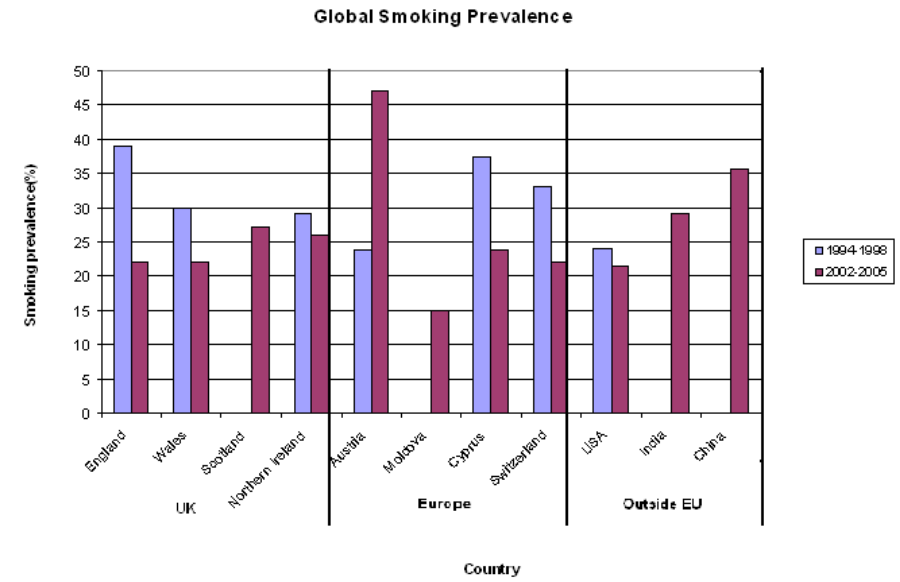

Figure 1. Global smoking prevalence. Source: WHO data. [17, 33, 34]

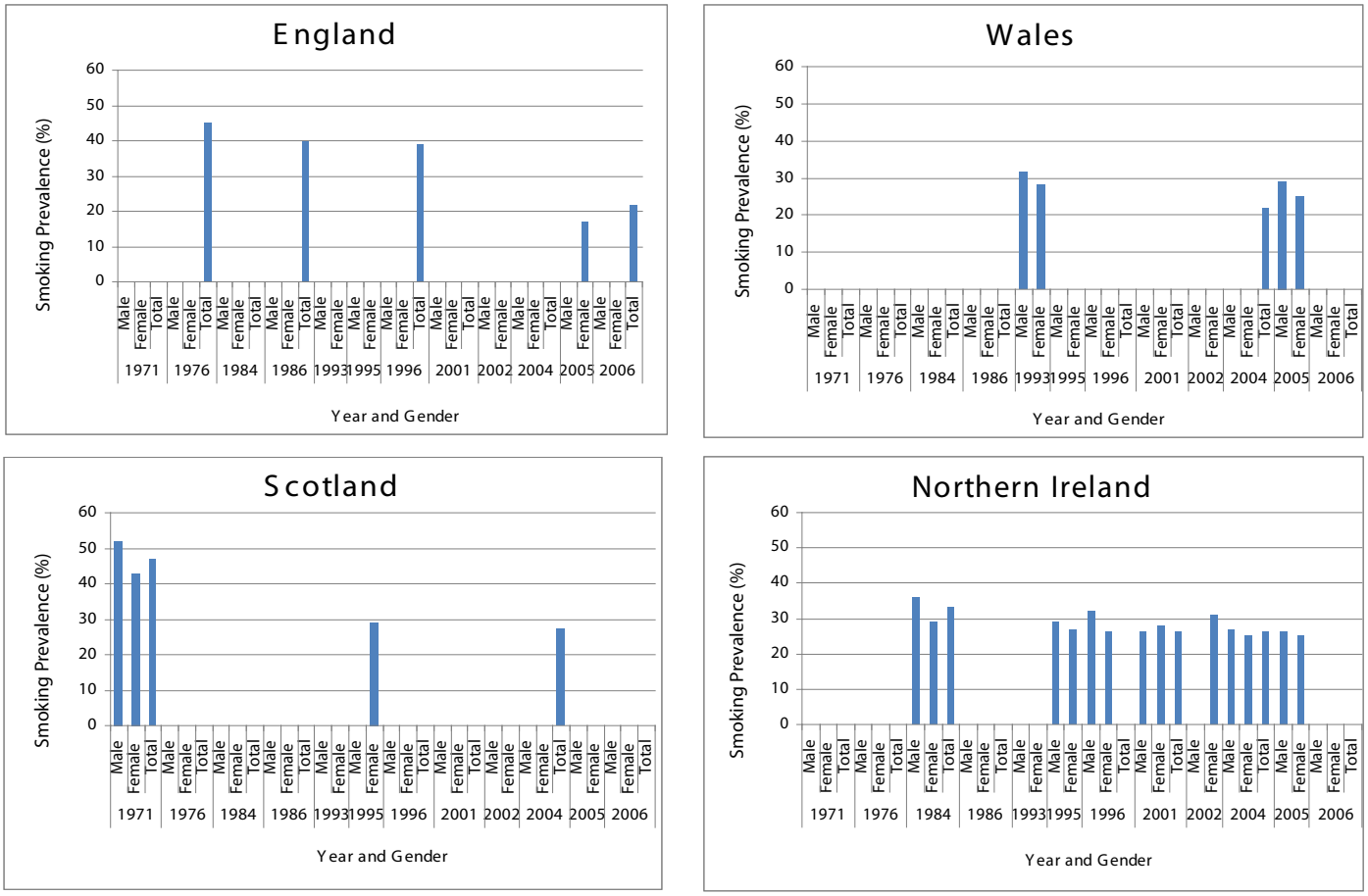

Figure 2. Smoking prevalence (%) in UK adults (>16 years old). Source: [1–3, 13, 26, 35, 36]

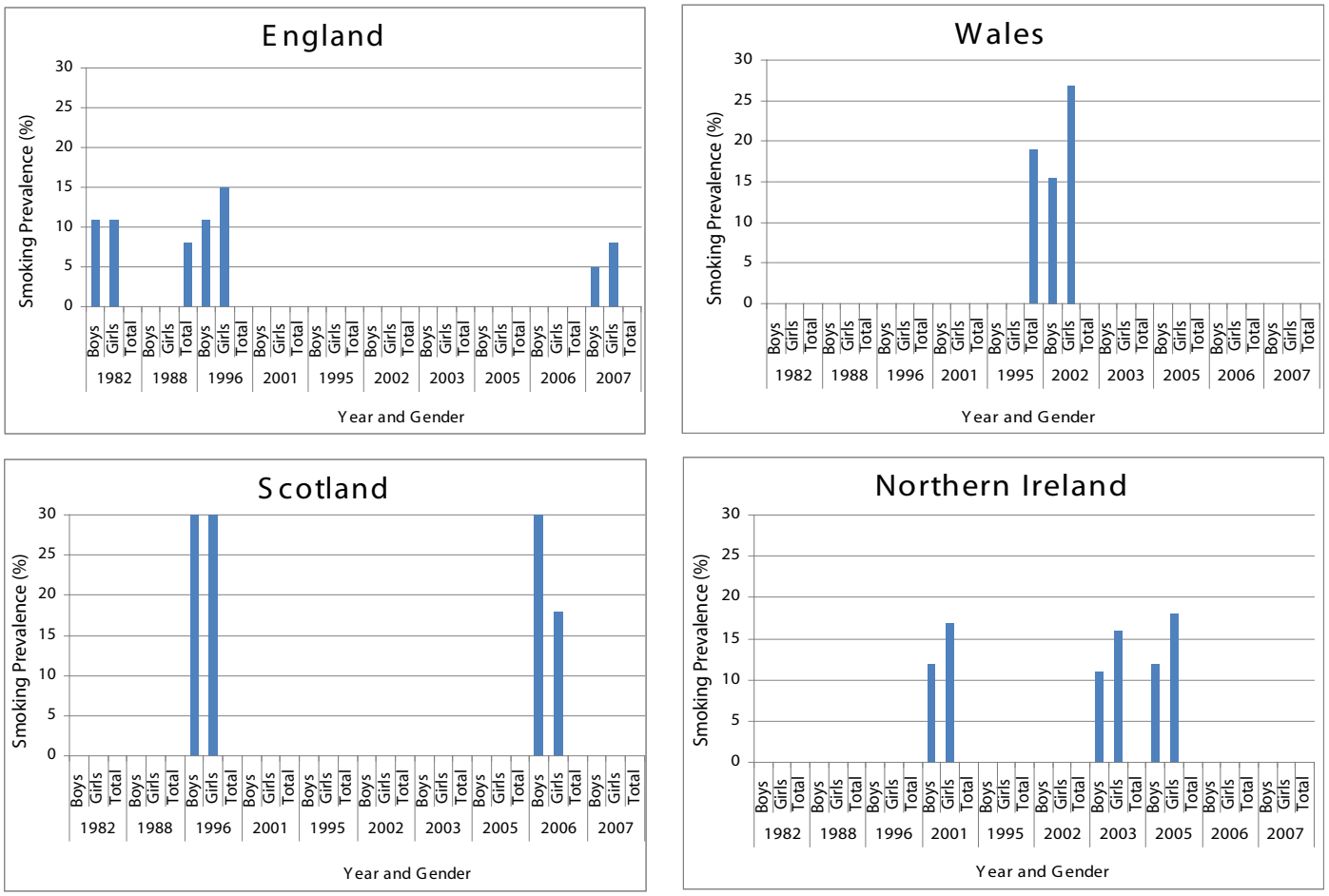

Figure 3. Smoking prevalence (%) in UK young people (11-16 years old). Source: [1–3, 13, 26, 35–37]

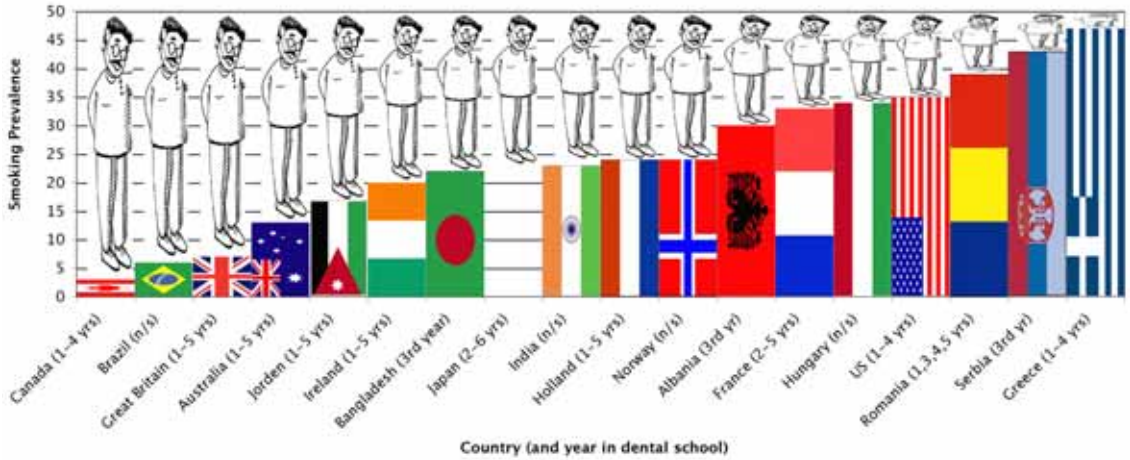

Figure 4. Smoking prevalence % in dental students globally. Source: adapted from [38]

latter includes Bangladeshi (40%), Irish (30%), Pakistani (29%) and Black Caribbeans (25%) who may also use smokeless tobacco/areca nut (pan).[41]

Consequences of tobacco

The consequences of tobacco usage range from morbidity to death. In Europe between 1990 and 2000, deaths due to tobacco smoking were, on average, greater in males compared with females. By 2000, the greatest number of deaths due to smoking had occurred in the UK (21%) and Belgium (31%), with significant increases occurring in Norway and Austria between

1990 and 2000. Smoking related cancer deaths were greatest in Hungary (115% in 2003) for males and Denmark (40% in 2000) for females, with significant increases occurring between 2000 and 2003 in both Armenia and Azerbaijan.

By 2000, the least number of deaths resulting from smoking had occurred in Tajikistan (0–5%), with substantial reductions occurring in Kazakhstan and Uzbekistan between 1990 and 2000. Smoking related cancer deaths were lowest in Tajikistan for both men and women (3% in 2001), with substantial reductions occurring between 2000 and 2003 in both Kazakhstan and Uzbekistan. Smoking related cancer death has also recently reduced in the UK and Austria. Although deaths from smoking were less in Tajikistan compared with the UK, people died 20 years earlier in Tajikistan and 12 years earlier in the UK, as a result of the effects of smoking.

Tobacco control

Legislation

Legislation includes:

- Direct and indirect tobacco advertising;
- Tobacco regulations;
- Public bans; and
- Health warnings.

Each of these will be discussed in turn below.

In the UK, legislation exists for almost all direct and indirect tobacco advertising and most European countries also have legislation on direct tobacco advertising. Direct advertisements include Radio, TV, Newspapers, Billboards, Point of Sale and Cinema. Indirect advertisements include product placement in TV and films, events sponsored with a tobacco brand, tobacco products with a non tobacco name, direct mail giveaways and promotional discounts. The earliest advertising restrictions occurred in Bulgaria in 1973 and Norway in 1975 and the earliest bans occurred in Finland in 1977. However, very recent legislation was introduced in Spain and Austria.

Other regulations exist for tobacco sales, the minimum age for buying tobacco, penalties or fines for selling to minors, the number of cigarettes per pack and licensing for retailers. These occur in Sweden, Tajikistan and Turkmenistan. Legislation on tobacco distribution includes vending machines, self-service displays, mail order/electric sales, single/unpacked cigarettes, duty free tobacco products and free samples of cigarettes. Early restrictions were set up in Finland and recent legislations were introduced in Spain. However, no legislation is reported in Kyrgyzstan, Tajikistan and Turkmenistan.

Public area bans include hospitals, schools, government offices, restaurants, bars and pubs, indoor workplaces and offices, theatres and cinemas. The UK (in addition to Austria, Bulgaria, Finland, France, Ireland, Kazakhstan, Spain and Sweden) has legislation in all public areas and public transport. Kyrgyzstan and Tajikistan lack legislation. Some of the earliest smoke-free areas were created in Bulgaria (in 1974) and Austria (in 1954). Recent restrictions occurred in Armenia (2005) and Spain (2006).

Regulations also exist on nicotine, tar, additives, carbon monoxide, pH, product ingredients, smoke constituents, packages and adverts and the disclosure of constituents to government. The UK, in addition to Austria, Belgium, Denmark, Finland, France, Norway and Sweden, has legislation in all areas. Countries with no legislation include Albania, Turkmenistan and Tajikistan.

Economics

The highest tax revenues on cigarettes in 2004 were in the UK (8.093 billion pounds) and France (9.197 billion euros), but the lowest occurred in Moldova in 2005 (24.4%). Taxation is beneficial but has the adverse effect of encouraging smuggling (for example, recent data suggests 40% of tobacco is smuggled in France). The cheapest cigarettes (with the shortest labour time in which to purchase a packet) were reported in Luxembourg. Furthermore, the UK (in addition to Denmark, Finland, Kazakstan, Turkmenistan, Kyrygystan and Sweden) lacks much tobacco legislation on retail, wholesale and distribution, import and export and manufacturing. Nonetheless, earmarking of tobacco products occurs in the UK and Finland. Elsewhere in Albania and the Former Yugoslav Republic of Macedonia, financial incentives exist for manufacturing tobacco, farmers are supported by the tobacco industry and government ownership exists on tobacco products.

Smoking interventions

Smoking cessation interventions include promotional and educational programmes to encourage tobacco cessation, primary healthcare programmes to treat tobacco dependence and national health prevention programmes. Smoking cessation treatments include quit lines, Nicotine Replacement Therapy (NRT), Buproprion[21,42] and its reimbursement by government. Cessation treatment at all levels is available in France, Ireland and the UK. Countries with fewer reported interventions include Andorra, Armenia, Bulgaria, Denmark, France, Kazakhstan, Spain and Uzbekistan.

Tobacco control in the UK

Since the first white paper *Smoking Kills* in 1998 (and its pledge to reduce smoking prevalence by 4%),[22] the UK sought to reduce tobacco usage further. The second white paper *Choosing Health* proposed a move towards supportive environments that encourage smokers to quit through informed choices, taking responsibility and tackling health inequalities. It proposed smoke-free public places and workplaces, restrictions on tobacco advertising, tougher legislation on cigarette sales to children and strong picture warnings on tobacco packets.[25]

Many smoking policies now relate their targets for health promotion to 'de-normalize smoking'.[26] This involves the use of social determinants (eg income, education, public policy), individual risk factors (eg illegal sales) and service-related factors (for example, access and resources such as smoking cessation services). Action is based upon evidence, cost, feasibility and re-evaluation. In England, smoking cessation strategies now focus on a wide range of public health measures, increasing tobacco taxation, mass media campaigns and banning tobacco promotion and sponsorship. They are summarized by a measurable six-strand Tobacco Control Policy:[3]

- Reducing exposure to second-hand smoke;
- Reducing tobacco advertising and promotion;

Country	Target	Outcome	Target Met?
England	Reduce smoking in children from 13% to 9% or less by 2010[10]	9% in 2006[3]	✓
	Reduce smoking in pregnant women from 23% to 15% by 2010; with a fall to 18% by 2005[10]	17% in 2005[3]	✓
	Reduce smoking in adults >16 years to 21% or less by 2010[24]	22% in 2006[3]	?
	Reduce smoking in routine and manual groups to 26% or less by 2010[24]	29% in 2006[3]	?
Northern Ireland	Reduce smoking in children from 13.5% in 2000 to 11% in 2006, bringing smoking in girls in line with boys[29]		?
	Reduce smoking in pregnant women from 22% in 2000 to 18% in 2005[29]		?
	Reduce smoking in adults from 25% in 2000 to 17% in 2006–2007[29]	23% in 2008[2]	✓
	Reduce smoking in manual workers from 35% in 2000–2001 to 31% in 2006–2007[29]		?
Scotland	Reduce smoking in adults from 26.5% in 2004 to 22% in 2010[30]	22% in 2008[31]	✓
	Reduce smoking in adults from deprived areas from 37.3% in 2004 to 33.2% in 2008[30]		?
	Reduce smoking in pregnant women from 29% to 23% between 1995 and 2005 and to 20% by 2010[30]		?
	Reduce smoking in pregnant women from deprived areas from 35.8% in 2003 to 32.2% in 2008[30]		?
	Reduce smoking in young people from 14% to 12% between 1995 and 2005 and to 11% by 2010[30]	Pledge confirmed in 2008[31]	✓
Wales	No Target set		

Table 3. Targets and outcomes for reducing tobacco usage in the UK.[2,3,10,24,29,30]

- NHS Stop Smoking Services and wider availability of Nicotine Replacement Therapy (NRT);
- National smoking campaigns and education;
- Regulating tobacco products;
- Reducing the availability and supply of tobacco.

Early results of the smoking bans in the UK are yet to be seen,[43] but there has been high compliance with the new regulations. In addition to reducing the effects of secondary smoke, NHS stop smoking services have also reported a 20% increase in demand, probably as a result of environments which are more supportive of health.[44] Table 3 provides examples of smoking cessation targets and outcomes throughout the UK.

Discussion of tobacco control

International tobacco control and trends

Smoke-free public areas protect non-smokers from the dangers of passive smoking as well as encouraging smokers to quit or to reduce their cigarette consumption.[45] In the UK, smoking bans in public places were introduced only recently and some smoking prevalence figures from the individual countries have been relatively high compared with other European countries. For example, in Finland adult smoking prevalence has remained at 24% or less since 1994, possibly as a result of early restrictions on tobacco advertising and public smoking since 1977 (and bans in 1994), in addition to comprehensive smoking cessation programmes. Conversely, smoking bans occurred recently in Austria and Spain, where smoking prevalence is high; at 47% and 28%, respectively, for male and female adults and 31.5% and 28%, respectively, for girls and boys. They also have a substantial number of smoking-related deaths. In addition to recent smoking bans, Denmark and Austria lack national/primary healthcare programmes and many other smoking restrictions.

It is nonetheless evident that smoking related deaths (which were 19% in 2000 in the UK[12]) are unlikely to be eliminated by national smoking restrictions alone. For example, despite a low smoking prevalence in Finnish adults, the smoking prevalence in its young people was 30.2% in 2005. In addition, in Luxembourg, the smoking prevalence was 33% and, despite early tobacco legislation, cigarettes are more affordable. In addition, the smoking prevalence in Moldova in 2001 was lower than many other European countries at only 18.1%, despite smoking bans as late as 2001 (although smoking prevalence decreased to 15.7% by 2005).

Multiple factors are clearly responsible for smoking related behaviour. For example, despite early smoking bans in 1974 and public legislation, Bulgaria had the highest number of cigarettes smoked in Europe in 2000 and a large proportion of deaths due to smoking (10% in 2000). Bulgaria lacks licensing for tobacco import and export, national health programmes, smoking quit lines and has support and financial incentives for tobacco farmers. The situation is similar in Greece and Belgium. Finally, in Tajikistan, the data suggest no legislation exists on tobacco distribution or smoking in public places. However, Tajikistan had very few smoking-related

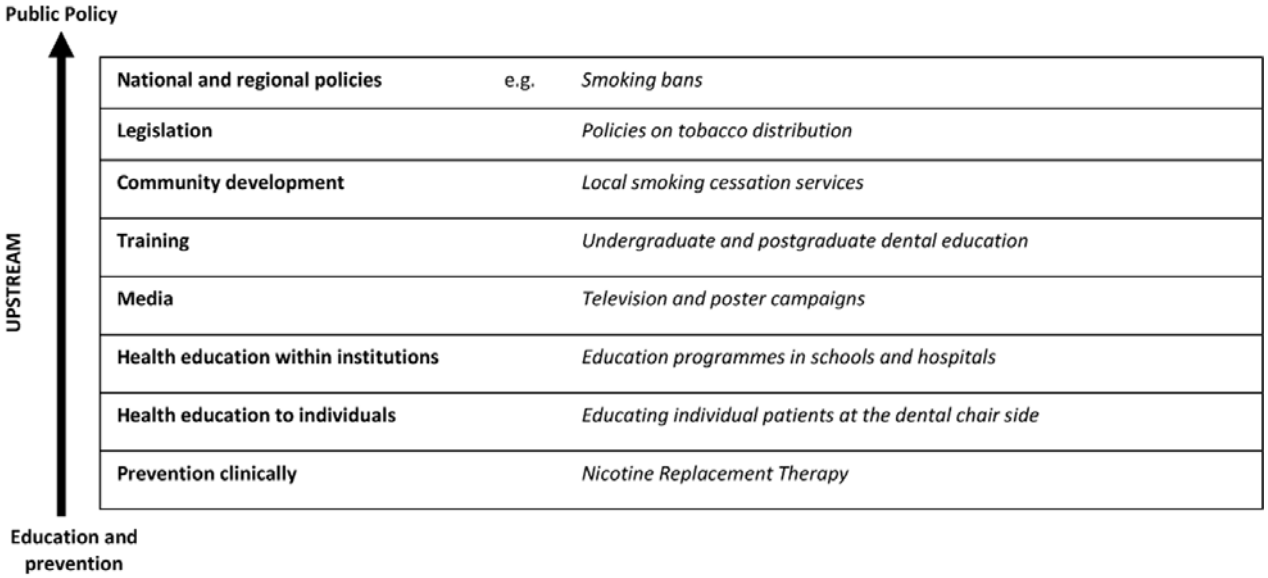

Figure 5. Upstream/downstream approaches to smoking cessation. Source: adapted from [51]

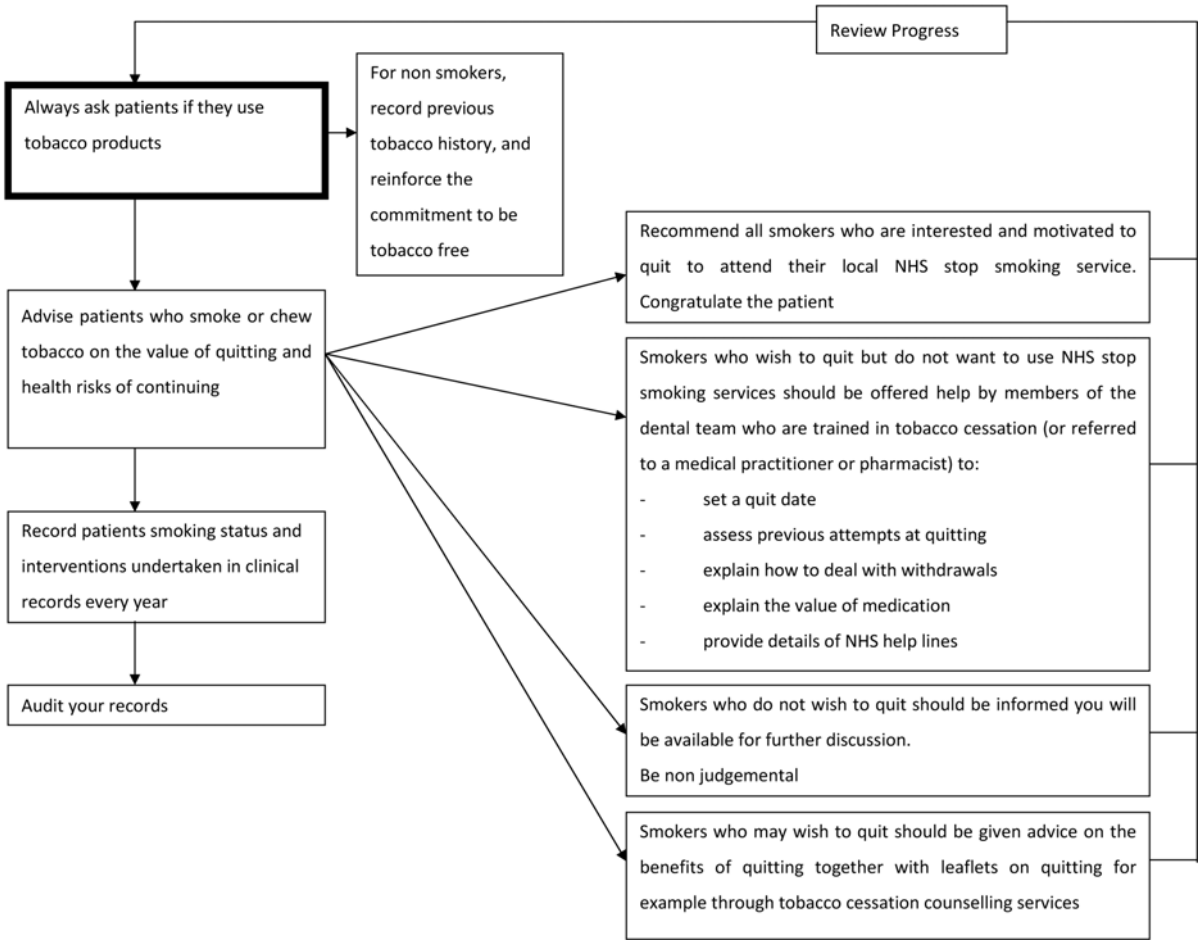

Figure 6. Supporting patients in general dental practice. Source: [5,9]

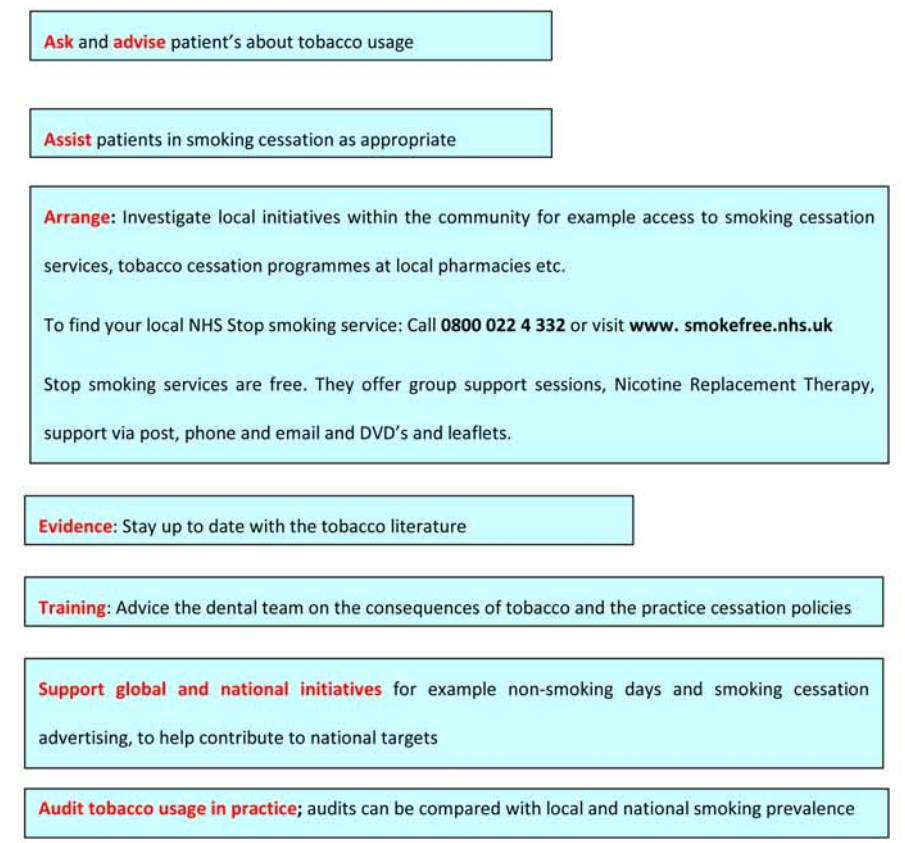

Figure 7. Action plan for primary dental practitioners. Source: adapted from [5,9] and author's opinion.

deaths (0.7% in 2000), despite the years lost at death (due to smoking) being high. This may be because the smoking prevalence is low (although this data was not available) and influenced by wider psychosocial factors in isolated communities, in addition to a lower life expectancy.

Approaches to tobacco control

Health promotion may be defined as 'the process of enabling people to increase control over and improve their health' where they 'live, work and play'.[46] The recent smoking ban in all enclosed public places is a population approach to smoking cessation, designed to prevent disease in the entire population.[47] It will benefit non-smokers and lessen the widening inequality gap between rich and poor,[48] which is a key battleground for the new DOH paper, *Beyond Smoking Kills*.[12] However, to support health promotion, policies should promote healthy lifestyles through adequate resources or opportunities for change.[49]

Barriers may include disputes relating to resource allocation (eg of stop smoking clinics), problems with policy enforcement and the illegal smuggling and sales of tobacco to under-aged people.[50] For health professionals to combat tobacco effectively, 'downstream' approaches, such as education and prevention, are more efficient when supported by 'upstream' approaches, for example smoking bans, regulating the manufacturers of illness (ie the tobacco industry) and co-ordinated global action. Figure 5 summarizes multiple approaches that aid tobacco control.

Helping patients to quit in general dental practice

The Department of Health document *Smoke free and smiling* reinforces the role of the dental team, as healthcare professionals, to provide assistance to their patients in tobacco cessation and to support national and global tobacco interventions (for example, smoking bans and NHS Stop Smoking Services).[5,25] At least 60% of the population in England visits a dentist for a regular check-up and, although 70% of England's smokers want to quit, smoking is highly addictive owing to the effects of nicotine.[25] Nonetheless, cessation rates are much higher when patients are referred to stop smoking services and smokers are up to four times more likely to quit.[3] In addition, unlike many patients who visit general medical practitioners, dentists provide assistance to healthy people, thus adopting a closer whole population approach. If smokers quit, many of the adverse consequences of tobacco are reversible, especially before 35 years of age.[5] Figure 6 outlines a pathway for helping patients to quit in dental practice.[5,9] An action plan for primary dental practitioners to help their patients quit in general practice is summarized in Figure 7.

Conclusion

Dentists can play a key role in tobacco cessation and control as well as encouraging non-smokers not to smoke through a range of initiatives that support both their patients and wider national policies. This is possible with an understanding of the wider context, including population trends and health policy.

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