

**EVIDENCE TABLE: WORKPLACE INTERVENTIONS TO PROMOTE SMOKING CESSATION**

Evidence table	Study population (Analytic Sample)	Research question	Intervention	Main results	Applicability to UK populations and settings	Confounders
Year	Inclusion/exclusion criteria.	Power calculation	Comparisons	Effect size		Comments
Country	Number of participants (randomised to each group or otherwise).	Funding	Length of follow-up, follow-up rate	CI	Relevance to focus of Rapid Review, NHS Stop Smoking Services	
Study design	Age; Sex; S/E status; Ethnicity; Pregnant; Other, e.g. inpatient		Exposure measures described	P value		
Quality				Outcome measures described		
1. Abrams (1992) USA Cross sectional survey	799 smokers from five England worksites that participating in a larger study of worksite smoking control interventions.	New relationship between demographic and selected psychosocial factors and intention to quit	This study examined the responses of workers to self-report questionnaire delivered in 1987/88 measuring readiness to quit smoking (primary measure of readiness was the Contemplation Ladder). Behavioural measures included smoking history, current smoking rate, and a measure of self-reported nicotine dependence.	Analysis was based on survey of 6.1% of white collar workers and 14.7% of blue collar workers surveyed had thought of quitting; 17.7% of white collar workers and 18.2% of blue collar workers indicated that they need to consider quitting someday; 39.6% of white collar workers and 36.7% of blue collar workers indicated that they are not quite ready to quit; 29.6% of white collar workers and 22.4% of blue collar workers are currently thinking about how to change their smoking patterns; and only 7.1% of white collar workers and 8% of blue collar workers were currently taking action to quit. Predictors of higher levels of motivation to quit smoking included higher socio-economic status, maleness, lower levels of self-reported nicotine dependence and stronger perceptions that smoking was against the social norms of the workplace.	This is an American study and it is not clear how applicable its findings are to a UK setting. However, given the similar class disparities in smoking patterns in the USA the conclusions of the study appear broadly relevant to a UK setting.	Overall, a reasonably good quality study. However, there was no discussion of how missing data was dealt with and blue collar workers had a significantly lower response rate (57%) than white collar workers (86%).
2+	Blue collar workers: 52% of sample, 59% male, 41% female, employed smokers at 30% less than high school education, 45% high school graduates, 22% post secondary education, mean age: 39 years  White collar workers: 48% of sample, 47% male, 53% female, 3% less than high school education, 34% high school graduates, 62% post secondary education, mean age: 39 years.	Funding source: National Cancer Institute Grant				

<p>2. Albertsen (2004) Denmark Cohort Study 2+</p>	<p>3,606 observations of smokers received from the Central Population Register of Denmark in 1990, 1995 and 2000.</p> <p>Open cohort study, with a random sample between the ages of 18-59. However in 1995 and 2000, new participants aged 18-22 and immigrants were added to the cohort.</p> <p>Some 57% of the observations are from 1990-95, 56% male, 22% between 18-29 years old, 31% between 30 and 39, 30% between 40-49, and 17% older than 50 years.</p>	<p>Examine to what extent factors in the work environment affect the probability of smoking cessation among employed Danish smokers over a five year period.</p> <p>Hypotheses: 1) Medium psychological demands at work will increase the likelihood of cessation. 2) High decision latitude and skill discretion will increase the likelihood of cessation. 3) Noise, cold, chemical and physical load will decrease the likelihood of cessation.</p>	<p>Analysis was based on survey responses of smokers in 1990 who were interviewed again in 1995, and all smokers in 1995 who were interviewed in 2000.</p>	<p>Multiple logistic regression analysis was performed to estimate the probability of smoking cessation. The estimated cessation probability was greatest in the period 1995-2000, in youngest and oldest age groups, with medium and high levels of psychological demands and with medium and high levels of responsibility at work. The cessation probability decreases with heavy smoking, with exposure to noise for a quarter to half of the working day and with high physical load.</p> <p>The probability of smoking cessation differs between people with different exposures to certain work environments.</p>	<p>This is a Danish study and its applicability to the UK setting is unclear. However, the link between smoking and workplace demands has been posited in a number of studies and the conclusions of this study therefore seem broadly relevant to a UK setting.</p>	<p>The study was well conducted and had a large sample size. However, the study relied on self-report data which could result in bias. As well, no account was made for missing data.</p>
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<p>3. Anderson 1999 England Qualitative</p>	<p>N=7 Nurses from one surgical directorate, surgical nurses only were selected</p> <p>4 non smokers, 2 x-smokers, 1 smoker</p> <p>6 females, 1 male, all between 26 and 59 years</p>	<p>To explore nurses' views, awareness and perceptions of their hospital Trust's smoking policy, and its effects on staff and patients.</p> <p>Funder not clearly stated.</p>	<p>Hospital smoking policy: staff and patients were not permitted to smoke within the hospital except in a designated area, visitors were not permitted to smoke in the hospital</p>	<p>Interviews revealed that nurses thought policy could help in limiting post-op. complications but could also have negative effects on the mental well being of those dependent on nicotine for stress relief and on the safety of individuals, e.g. those who choose to go outside in bad weather to smoke. They felt that greater provisions for patients who smoked needed to be made (e.g. designated areas, NRT); that all other staff working in the Trust had to share the responsibility for enforcing the policy; that more training should be provided (eg. Smoking cessation techniques); that future policy development could benefit from patient input.</p>	<p>Conducted at an English hospital and relevant to study population. However, the study deals only with a hospital smoking ban, rather than national smoke-free legislation.</p>	<p>Small sample size due to staffing shortage and homogenous sample (all from the same specialty).  Only 1 smoker included which may have affected results. Methodological approach to analysis not clear; contexts and variation in responses not explored.  Study sample was not representative and no power calculation was provided. Lack of information on validity and reliability, no mention of missing data or eligibility criteria. UK setting.</p>
<p>4. Ashley (1997) Canada Cross Sectional</p>	<p>N= 1429 respondents completed a phone interview.</p> <p>Response rate of 62.5%</p> <p>Although the study attempted to reflect census data for the Metropolitan Toronto area, the sample underrepresented single individuals (by 4% points) and overrepresented married/separated individuals (by 5% points). Respondents were also better educated, high school graduates being overrepresented (by 17% points) and university graduates (by 9% points).</p>	<p>Examines the relationship of worksite and company size to workplace smoking restrictions and programmes, using data from a population-based telephone survey.</p>	<p>Surveys sent out to three worker groups differentiated by worksite and company design. Surveys compared attitudes, perceptions, knowledge, and behaviours concerning restrictions on smoking and smoking related programmes in the workplace to both the size of the particular worksite and the size of the company/organization.</p>	<p>"Small" worksites were significantly less likely than other groups to report that their workplaces provided quit smoking programmes, either free or not (15.1% in large worksites vs. 2% in small). This group was also significantly less likely to provide pamphlets or lectures about smoking and health (32.5% large vs. 11% small). Finally, small worksites were less likely to offer incentives to quit smoking (12.4% in large worksites vs. 2.6% in small).</p>	<p>Although this is a Canadian study, a relationship between worksite size and the existence of workplace policies and smoking cessation programme has been found in a number of international studies. It therefore seems likely that the findings of this study are broadly applicable to a UK setting.</p>	<p>Study sample was not representative and no power calculation was provided. Lack of information on validity and reliability, no mention of missing data or eligibility criteria.</p>

<p>5. Biener (1994) USA Cross Sectional Survey 2+</p>	<p>Using the Dun &amp; Bradstreet data base, all manufacturing companies employing 200 or more workers located within a 50-mile radius of Rhode-Island (27 companies took part).  In order to be eligible, a company had to 1) employ at least 200 workers on a regular basis 2) gave a primarily blue-collar work force engaged in manufacturing or warehouse/distribution work 3) Have employees working in one building or in several buildings no further than 2 miles apart from each other 4) Have a work force that included no more than 20% non-English speaking people. 5) Have some smoking taking place at the work site.</p>	<p>Assess the extent to which companies that agreed to participant in a randomized trial of a multi-risk factor health promotion research project differed to those that declined.</p>	<p>Comparisons made to assess differences between participating and non participating companies, bivariate relationships between the predictors and the outcome variable (signing the agreement to participate) were examined.  Measures: Work force characteristics (i.e. number of employees) were based on interviews and data collected from the Dun &amp; Bradstreet data base. Orientation toward worker health was determined by interviews. Information on financial outlook was obtained from the Dun &amp; Bradstreet data base.</p>	<p>151 companies were identified from the Dun &amp; Bradstreet database. Of this group, 77 were determined to be ineligible, 64 were eligible, and 10 refused to provide information about eligibility. In total 26 companies agreed to participate.  Overall, analysis indicated that there were very few significant differences between companies that accepted and companies that refused.</p>	<p>Although this is an American study, it is likely that similar structural factors may inhibit the desire and ability of UK worksites in taking part in smoking cessation interventions. Therefore, the findings of this study seem broadly applicable to a UK setting.</p>	<p>Although this study was conducted well, findings were based on self-report data. As well, there was little information outlining the validity and reliability of the measures. Positive bias could be a result.</p>
<p>6. Borland (2006a) Australia, Canada, UK, US Cross sectional survey 2+</p>	<p>N=9,046 smokers surveyed. Similar sized samples from the U.S. Canada, the UK and Australia. Australia had a greater number of respondents under 24 and the UK over 55. Females were over-represented.</p>	<p>Studied variation in support and compliance for smoke-free policies by country. Also explored whether age, sex, and cigarette consumption affected support for bans.</p>	<p>Smoke free home policies.  Cooperation rates were: USA 77%, Canada 78.5%, UK 78.7% and Australia 78.8%.</p>	<p>Reported presence of a total ban and documented extensive restrictions were most strongly related to support. Support of ban was higher among those who believed second-hand smoke is harmful to non-smokers (more in UK and Canadians). Female smokers and those whose consumption was greater were less supportive. Support for bans was related to not smoking in situations where there were no reported bans. Compliance to bans was highest in Australia and lowest in the UK.</p>	<p>Directly applicable to UK as England is going smoke-free in summer 2007. Examples from Australia, Canada could be predictors.</p>	<p>Self reported attitudinal outcome measure is somewhat unreliable and could bias results in a positive direction. However, a well conducted study overall.</p>

<p>7. Campbell (2000), Campbell (2002)</p> <p>USA</p> <p>RCT</p> <p>1+</p>	<p>Women workers participating in the HWW (Health Works for Women) project. Women had to be 18 years or older and speak either English or Spanish.</p> <p>Study (N=856) included 40% European American women, 57% African American women, and 2% women of other ethnicities. 11% of women had less than a high school education, 57% had a high school education and 6% had more than a high school education.</p>	<p>This study examined the relationship between health risks, health behaviours, stages-of-change, and behaviour change priorities among blue-collar women participating in a worksite health promotion study and the impact of the intervention.</p> <p>Funding source: grant from Centers for Disease Control and Prevention</p>	<p>Intervention sites:</p> <p>1) computer tailored messages</p> <p>2) social support activities using worksite natural helpers</p> <p>Control sites:</p> <p>1) one tailored magazine</p> <p>Follow up at 6 and 18 months</p>	<p>At the 18-month follow-up, the intervention group had increased fruit and vegetable consumption by 0.7 daily servings compared to no change in the delayed group (P &lt; 0.05). Significant differences in fat intake were observed at 6 months (P &lt; 0.05) but not at 18 months. The intervention group also demonstrated improvements in strengthening and flexibility exercise compared to the delayed group. The rates of smoking cessation and cancer screening did not differ between study groups.</p>	<p>Although this is an American study, it is likely that an intervention tailored to female blue-collar workers in the UK would have a similar effect, based on the similar financial and social pressures that female blue collar workers in each country face. The results of this study therefore seem broadly applicable to a UK setting.</p>	<p>This is a well conducted study although it is unclear how the researchers treated missing data. Also, the surveys were completed at different rates for each worksites - with a response range of between 37-88%.</p>
<p>8. Chan (1997)</p> <p>USA</p> <p>Cross Sectional Survey</p> <p>2+</p>	<p>N= 220 male smokers working in an automobile manufacturing plant in a medium sized urban area in Michigan.</p> <p>Participants ranged in age from 27-69. Mean numbers of years of education was 12.39 with 45% of employees having some post-high school education. 76% of employees were married. 89% were blue-collar. 17% were African American.</p>	<p>Examine the nature and extent of the relationship between stress levels and intentions to participate in a worksite smoking cessation programme among male current smokers. Hypotheses: 1) Among current smokers, those who experience high levels of stress will be less likely to intend to participate in a worksite smoking cessation program. 2) Current smokers who report high levels of stress will be more likely to participate in a worksite smoking cessation programme.</p>	<p>A plant wide survey was conducted to measure job stress, non-job stress, smoking behaviour and intent to participate.</p>	<p>Intent to participate in a worksite smoking cessation programme was almost equally distributed across the three response categories, with "not at all likely" (31.5%) and "very likely" (32.4%) reported slightly less frequently than "somewhat likely" (36.1%).</p> <p>Comparing employees who reported "very likely" to those who reported "not at all likely" perceived job stress was significantly positively associated with intentions to participate in a smoking cessation programme.</p> <p>Non job stress enhanced the likelihood of intending to participate in a worksite smoking cessation programme.</p>	<p>Although this is an American study, the link between smoking and workplace stress has been posited in a number of international studies and the conclusions of this study therefore seem broadly relevant to a UK setting.</p>	<p>This study was well conducted but relied on self report data, which could result in bias. Furthermore, eligibility criteria were not outlined. However, the study established the validity and reliability of the measurement methods.</p>

9. Clarke (1997) Australia Cross sectional	44% men (38.6 average age) and 56% women (31.1 average age), range from 20 to 74. Males were older than females (p<.0001). Most respondents were clerks, salespeople, or personal service workers (67%). 38% had a university degree or diploma.	Examines the perceptions and beliefs about exiled smoking in non-smoking workers: the extent non-smokers view smokers as a distinct group from themselves; claims that non-smokers see smokers as having a work benefit or not and whether this is a source of antagonism; are there factors that lead non-smokers to join exiled smokers and then to smoke?	Entire sample was subject to workplace smoking restrictions	No relationship between position on exiled smoking and gender, occupation or education. Most non-smokers thought smokers took more time (32%) or a little more time (46%) away from work than non-smokers. Non-smokers who would never join had more negative attitudes toward smoke break scores than other positions (F=2.9, P<.05); however, non-smokers did see smokers as getting something desirable. Social smokers were more likely to have gone out and smoked than x-smokers or non smokers (chi2=29, p<.01) 52% of those who went out with different groups smoked as compared with 28% of those who went out with the same group (chi2=4.9, p<.05). Those who had smoked were more tempted to smoke (chi2= 30.6, p<.05).	This is an Australian study and it is unclear how readily its results translate to an English setting. However, the potential tensions it discusses are likely to be relevant to England once the smoke-free legislation is implemented.	Non-representative sample possibly contributing to the positive view that non-smokers had of smokers. Non-smokers who do not interact with smokers it have been under represented and the true number of non-smokers smoking with exiled smokers is likely lower. Good discussion of potential bias.
10. Conrad (1996) USA Cross Sectional Survey	N=310 smokers: 68% white, 69% female, 72.4% with one or more years of college education and with a modal age category of 25.34 years (46.8%).	Study explores the idea that exposure to a worksite health-promoting environment acts as a cue to smoking reduction. Hypotheses: b) pre-test health beliefs, smoking behaviour, and exposure to a health-promoting environment will have direct effects on posttest smoking reduction and indirect effects on posttest smoking reduction via posttest health beliefs b) posttest health beliefs will have direct effects on posttest smoking behaviour.	Intervention included a host of company strategies and initiatives to create a health-promoting environment supportive of smoking reduction or cessation. Specific strategies included: invitation to participate in risk reduction programmes, health risk counselling and received health education materials  Pre-test survey and posttest survey at 1 year follow up.	Exposure to the health-promoting environment had statistically significant direct and indirect effects on posttest smoking. Direct effects: reduction in daily cigarette consumption and reduction in the amount inhaled Indirect effects: reduction in the perceived barriers to quitting.  The LISREL (path analysis) model explained 74% of the variance in smoking reduction and fit the data satisfactorily.	Although this is an American study, it is likely that smokers who are not actively seeking to change their health behaviours have broadly similar characteristics – whatever their geographic location. It therefore appears that the findings of this study are broadly applicable to a UK setting.	This is a poorly laid out and confusing study where many key details on study design are either missing or obscure. The study does not report how much of a reduction occurred in any of the key outcomes of interest and indicates only that the difference was 'statistically significant'.

<p>11. Daza (2006) N= 1,398 Baseline participants who were current smokers and had smoked a cigarette in the past seven days N= 709 after 4 year follow up</p> <p>USA</p> <p>Cohort Study</p> <p>2+</p>	<p>Examine racial/ethnic differences in smoking cessation, prospective predictors of cessation, and whether the predictive ability of these factors differed by race/ethnicity.</p> <p>88% of the participants were white, 78% were male, 82% were married, 88% had a high school diploma or some college education. Mean age was 39.</p> <p>Eligibility for participants: Permanent employees who worked at least 50% of the full-time work week were eligible for the baseline survey. Employees had to have worked with the company for at least 6 months to be eligible for the final survey.</p>	<p>Participants in the treatment group received self help material and direct education on topics including smoking cessation and nutrition. Participants also received feedback based on their self-assessments and received instruction on goal setting for their target behaviour change. Participants in the comparison group received newsletters and self-help material on the same topics as participants in the treatment group.</p> <p>Compared smoking status of participants between 1990-1994. 1,398 participants identified being current smokers in 1990. 709 participants engaged in the 4 year follow up.</p>	<p>Abstinence rates at follow up were 24% for Hispanics, 23% for African Americans, and 17% for Whites. Both African Americans and Hispanics smoked fewer cigarettes per day than Whites (p=.002 and p=.001, respectively). Hispanics waited longer than Whites (p=.003) or African Americans (p=.03) to smoke their first cigarette of the day. African Americans reported more confidence related to quitting smoking than did Whites (p= .008). African Americans used more behavioural processes of change than Whites (p=.01) or Hispanics (p= .0005) and reported more cons of smoking on Decisional Balance Scale than did Whites (p= .0005). Finally, African Americans were less likely to smoke cigars than Whites (p= .04). (Smoking related measures included the Contemplation Ladder, Process of Change Inventory, and the Decisional Balance Scale)</p>	<p>Given the different ethnic composition of the USA and the UK, the findings of this study are not directly applicable to a UK setting. However, there are ethnic differences between the smoking behaviours and patterns of UK ethnic groups and this study's discussion of the importance of tailoring smoking cessation interventions based on distinct ethnic smoking patterns and broader health behaviours therefore seems broadly relevant to a UK setting.</p>	<p>A well conducted study, however it relies on self-reported changes in smoking and no attempts are made to outline what is done with missing data. As well, 88% of participants were white when the main purpose of the study was to examine race/ethnicity.</p>
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12. Docherty (1999)	N=1041	Assess the current state of health promotion activity in the workplace and to establish a context for evaluation of Scotland's Health at Work (SHAW) scheme.	This study outlines the initial phase of a study that will examine changes in workplace health promotion activity over a two year period.  Study was based on a mail out survey examining the extent and nature of health promotion activities in the workplace. As well, the perception of benefits/constraints of workplace health promotion were also examined.	Three sets of results were presented based on sector size and health promotion activity. Results found that public sector workplaces were most active (80%) with health promotion activities while the least active were in the manufacturing and private service sectors. Large workplaces showed higher levels than small or medium ones.  In relation to smoking, smoking was restricted in all public sector workplaces, while this was the case with 63% of manufacturing and 74% of private service workplaces. Large workplaces were more likely to restrict smoking than smaller ones (89 compared with 62%) and more likely to provide smoking cessation support (31 and 7%, respectively).	As this is a Scottish study its findings are directly applicable to UK setting. However, this study took place before the implementation of smoke-free legislation in Scotland and its findings are somewhat dated as a result – and may be less relevant to Scotland today.	A well conducted study but it relies on self-report data. Missing data is also not discussed increasing the opportunity for bias. However, objectives were outlined well and the study had a good participation rate.
Scotland	Data from Market Location obtained in 1996					
Cross Sectional Survey						
2+						



13. Emmons (2005) Hunt (2003)	Ten health centres were paired on membership size and randomized within pairs to the intervention condition or usual care.	This study examines social-contextual factors in cancer prevention interventions for working class, multiethnic populations.	Intervention consisted of study endorsement from the participants clinician at a scheduled routine care visit, an initial in-person counselling session with a health advisor, 4 month follow up telephone counselling session, 6 sets of tailored materials written for low literacy audiences and links to relevant local activities.	Significant change was found among participants in the intervention health centres. Fruit and vegetable consumption increased by 3.3% (p=.005), red meat consumption increased by 11.8 % (p=.001), and multivitamin intake increased by 29.4 % (p=.001). No significant differences were found in relation to physical activity.	Although this is an American study, its discussion of how health promotion interventions can be tailored to consider social and contextual factors seem applicable to a UK setting, which also has a large working class, multiethnic population.	Study was well conducted but it was not clear how subjects were randomly selected for treatment. As well, the concealment method was not discussed.
USA RCT	N= 1088 intervention condition N=1131 control condition		Intervention targeted fruit and vegetable consumption, red meat consumption, multivitamin intake, and physical activity.			
1+	Eligibility: between 18-75 years old, have a well-care follow up visit planned with a participating provider, be able to speak and read English or Spanish, not have cancer at the time of enrollment, not be employed by the participating health centres and not be employed at a work site in a companion study. Participants also had to come from a neighbourhood that was predominantly working class or impoverished or low levels of education.		8 month follow up.			

14. Emmons (2000)	N=114; all worksites enrolled in the Working Well Trial (WTT) at baseline responded to the key informant survey.	Examines the association between key organisational characteristics hypothesised to be related to the adoption of innovations in organizations and baseline level of smoking policy restrictions and prevalence of smoking control activities at the 114 worksites that participated in the WTT, a national trial of worksite health promotion.	Compares the key organisational characteristics that are hypothesized to be related to smoking cessation activities in 114 worksites after a baseline survey.	Of the 114 worksites at baseline, 24% had a smoking ban, 54% allowed smoking only in designated smoking areas, 18% allowed smoking anywhere, except designated nonsmoking areas, and 4% did not have any smoking related policies. Among worksite characteristics, size was strongly related to cessation activities, with larger worksites more likely to offer smoking control activities. Worksites with a high percentage of blue-collar workers were more likely to have smoking control activities, while those with more white collar workers were slightly less likely to have activities to stop tobacco use. Worksites with high percentages of women were also more likely to offer smoking control activities. Among organisational structure constructs, companies that were highly centralized were more likely to offer smoking cessation assistance for their employees. Companies that scored high in interconnectedness were more likely to provide cessation activities. Companies in which leaders were favourable toward employee health were much more likely to provide tobacco control activities.	Although this is an American study, it is likely that similar organisational characteristics facilitate or inhibit the introduction of smoking cessation programmes in UK worksites. The findings of this study therefore appear to be broadly applicable to a UK setting.	This study was conducted well, missing data was accounted for and there was a high response rate.
USA	However 17 worksites had missing data. 97 worksites were included in the analysis.					
Cross Sectional Survey						
2++						

<p>15. Fisher (1990) International Meta-analysis 1+</p>	<p>Inclusion criteria: 1) study of worksite smoking cessation 2) reported long-term follow-up-cessation quit rates 3) included a control or comparison condition  20 studies met the inclusion criteria</p>	<p>To determine the effectiveness of worksite interventions for smoking cessation</p>	<p>Types of interventions covered: 1) bibliography (self-help written materials) 2) physician advice 3) multi-component behavioral methods 4) incentives 5) catch-all category  12 months follow up (minimum)  Quit Rate was the key outcome measure and was determined by the number of successful quitters/quitters plus non-quitters who started the programme.</p>	<p>An overall weighted mean effect size of <math>.21 \pm 0.7</math> was found, indicating a modest but significant overall effect (<math>P &lt; .01</math>). The weighted average follow-up quit rate from all interventions was 13% increase participation in rates were likely to be smaller worksite (<math>ES = .45 \pm .17</math>), which lasted 2 to 6 hours directly applicable to a UK setting.  Interventions conducted in smaller worksite (<math>ES = .42 \pm .13</math>), and which contained heavy smokers (<math>ES = -.28 \pm .07</math>) were associated with the largest effect sizes.</p>	<p>This is a meta-analysis of international studies and its findings that incentives do not increase cessation rates, although they do increase participation in rates are likely to be directly applicable to a UK setting.  The authors are clearly aware of some of the potential pitfalls of meta-analyses and have included only controlled studies with at least a year of follow up. However, it is not clear whether quit rates are based on self-reported success or biochemical validation (it appears both) and the authors do not explicitly discuss how 'successful quitting' was measured.  Trial methodology, but analysed data from entire workplace staff at baseline and follow-up, thus those who left work between those time points were not included. New employees might smoke less, or heavy smokers more likely to leave work if policy very restrictive—less likely to take job. Could over or underestimate intervention effects depending on movement of smokers in and out of workplace. However, results CO-validated &amp; solid study overall.</p>
<p>16. Gritz (1998) USA RCT 1+</p>	<p>N=4663 female; n=10919 males sampled from 90 blue collar worksites, randomized matched pair design for Working Well Trial. Non-random sample of worksites.  12313 men: 65.2% blue collar; 34.8% white collar; 48.5% high school or less; 51.5% more than high school; 89.9% white, 4.5% Hispanic, 4.0% Black, 1.6% other. 5523 women: 76.4% blue collar, 23.6% white collar; 56.9% high school or less, 43.1% more than high school; 89.4% White, 4.2% Hispanic, 2.8% Black, 3.5% other.</p>	<p>1. To compare characteristics of male and female quitters who were enrolled in Working Well trial (regardless of randomisation) and 2. effects of intervention on cessation rate among men and women.  80% power to detect 6 % difference in smoking prevalence in cross-sectional study.  Funded by the US National Cancer Institute</p>	<p>Intervention activities geared towards individuals, such as posters, interactive events, self-assessments, and to the organization, such as: smoking restrictions or prohibitions.  Control sites documented any health promotion actives that took place during the trial; some cites distributed posters and brochures as a minimal intervention.  Cross sectional baseline and follow-up data collected from all those present in the workplace at 2 year interval. Attrition not reported.</p>	<p>Outcome: self-reported abstinence from smoking for 6 months  Adjusted for occupation and education: Women in intervention vs. women in control group: AOR=1.47, p=0.047, 95%CI: 1.01-2.15. Men in intervention vs. men control: AOR=0.98, 95%CI: 0.77-1.35. Men vs. women in intervention: AOR=1.14, 95%CI: 0.83-1.56. Men vs. women in control: AOR=0.76, 95%CI: 0.54-1.08.</p>	<p>Although this is a US study, similar gender differences exist in men's and women's attitudes and behaviours in the UK. Therefore, the findings of this study are likely to be broadly applicable to a UK setting.  New employees might smoke less, or heavy smokers more likely to leave work if policy very restrictive—less likely to take job. Could over or underestimate intervention effects depending on movement of smokers in and out of workplace. However, results CO-validated &amp; solid study overall.</p>

17. Hey (2005) International Structured review 1++	Adult smokers, either gender, in any setting. The authors did not include trials aimed exclusively at adolescent smokers or trials aimed at pregnant smokers.	To assess the effects of competitions and incentives as aids to smoking cessation. The following questions were addressed: 1. Do competitions, contests and incentives reduce the prevalence of smoking and relapse? 2. Does the amount and type of incentive affect cessation and relapse prevention? 3. Do incentives improve recruitment to smoking cessation programmes, both within the community and within the workplace? 4. Does the amount and type of incentive affect recruitment? 5. Are incentives and competitions more or less effective in combination with other aids to recruitment, cessation and relapse prevention? 6. How great is the risk of disbenefits arising from the use of competitions and incentives, e.g. false claims, ineligible participants?	Contests, competitions, incentive schemes, lotteries, raffles, and contingent payments, to reward cessation and continuous abstinence in smoking cessation programmes.	None of the studies demonstrated significantly higher quit rates for the incentives group than for the control group beyond the six-month assessment. There is no clear evidence that participants who committed their own money to the programme did better than those who did not, or that different types of incentives were more or less effective. There is some evidence that although cessation rates have not been shown to differ significantly, recruitment rates can be improved by rewarding participation, which may be expected to deliver higher absolute numbers of successful quitters.	This is an international review of the literature and its findings are likely to be directly applicable to a UK setting.	Although the Cochrane review fails to consider the differential effectiveness of workplace interventions based on factors such as sex, gender, ethnicity, age, etc, aside from this there are no methodological concerns regarding the review.
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18. Moher (2005) International Structured Review 1++	Adults over the age of 18, in employment, who smoked.	<p>1. To categorize workplace interventions.</p> <p>2. To assess the extent to which different kinds of workplace smoking programmes help smokers to reduce or stop cigarette consumption. The authors also wished to determine whether workplace smoking programmes reduce the exposure of non-smoking employees to ETS.</p> <p>3. To compare the effectiveness of different kinds of workplace smoking programmes in helping employees to stop or reduce smoking.</p>	<p>1. Smoking cessation interventions aimed at individuals in the workforce.</p> <p>2. Interventions aimed at the workforce as a population.</p>	<p>Group programmes, individual counselling and NRT increased cessation rates in comparison to no treatment or minimal intervention controls. Self-help materials were less effective.</p> <p>Tobacco bans decreased cigarette consumption during the working day but their effect on total consumption was less certain. There was a lack of evidence that comprehensive programmes reduced the prevalence of smoking. Competitions and incentives increased attempts to stop smoking, though there was less evidence that they increased the rate of actual quitting.</p>	<p>This is an international review of the literature and its findings are likely to be directly applicable to a UK setting.</p>	<p>Although the Cochrane review fails to consider the differential effectiveness of workplace interventions based on factors such as sex, gender, ethnicity, age, etc, aside from this there are no methodological concerns regarding the review.</p>
19. Mulcahy (2005) Republic of Ireland Cohort study 2+	<p>Hospitality workers (N=35) in 15 venues in Galway city. 53% female, 13% male; 43% between 22-30 and 40% between 31-40.</p> <p>Eligibility criteria: non-smokers from non-smoking or restricted smoking households.</p>	<p>To investigate whether the Irish smoking ban has had an impact on second-hand smoke exposures for hospitality workers.</p> <p>Funding source: Health Service Executive, Western Area, Irish Cancer Society, Irish Heart Foundation.</p>	<p>Saliva cotinine concentrations were taken from a cohort of workers and they also completed questionnaires 2-3 weeks before the ban and 4-6 weeks after the ban was implemented.</p>	<p>Cotinine concentrations reduced by 69%, from 1.6 ng/ml to 0.5 ng/ml median (SD 1.29p &lt; 0.005). Overall 74% of subjects experienced decreases (rang 16-99%), with 60% showing a halving of exposure levels at follow up. Self reported exposure to SHS at work showed a significant reduction from a median 30 hours a week to zero (p &lt; 0.001). However, although passive smoking was reduced it was not completely eliminated as it is still possible for those working to be exposed to smoke migrating from outdoor areas.</p>	<p>This study discusses the effects of the Irish smoking ban and its results are therefore directly applicable to the UK setting and the effectiveness of the upcoming legislation in England.</p>	<p>This is a good study with very solid outcome measures. However, it relies on a small sample of hospitality workers and a convenience sampling approach was used. It is therefore unclear how representative the results of the study are.</p>

20. Olsen (1991)	N=1,097 participants of Smoking Cessation Incentive Program (SCIP) N=1,174 non participants	To compare the long-term smoking cessation rates over a 5-year time period between SCIP participants and non-participants.	Intervention: Smoking Cessation Incentive Programme (SCIP). Included a buddy programme, nicotine-containing chewing gum, American Lung Association self-help material and group clinics, and incentive prizes.	SCIP participants who had quit the longest were more likely to be manager ( $p<0.01$ ), older ( $p<0.01$ ), have quit smoking for at least 30 days sometime prior to the worksite programme ( $p<0.05$ ), have used the buddy system ( $p<0.05$ ). The interaction highlighted that 66% of managers who quit smoking >5 years had quite for >30 days prior to SCIP compared to with 23% of those managers who did not quit.	Smoking cessation interventions at the workplace have some effect on smoking cessation. Results demonstrate heterogeneity of employee participation and success.	No methodological concerns. There is a very high response rate and they used reliable outcome measures (salivary cotinine testing).
Texas, USA	SCIP participants were more often females, whites, managers, professionals, smokers of one or less than one pack per day, and smokers who had tried to quit at least 2 times or more.	Demographic, tobacco habits before SCIP and SCIP methods were also evaluated.	Compared smoking cessation rates between 1984 and 1989 of SCIP participants and non-participants.	Cotinine analysis was used to verify ex-smokers of a year or more: Participants were 2.3 times more likely to be long-term nonusers of tobacco than non-participants. However, cessation rates for those who had been smoke free for under 4 years were similar for participants who remained smokers at the end of SCIP and non-participants.		
Cohort study	Eligibility for participants: a) smokers who responded to the 1984 questionnaire, b) smokers who were misclassified or did not respond to the 1984 questionnaire, c) smokers who were either newly hired or transferred employees during the 1-year-long SCIP programme. Non participants represented those employees who identified themselves as smokers in the 1984 questionnaire but did not participate in SCIP.		7,516 employees in total were surveyed in 1984; 28.3% identified as smokers.			
2++	Non-participants were used a controls.		1,204 SCIP non-participants were identified in the 1984 questionnaire, 1,174 were re-evaluated in 1989.	1,113 SCIP participants were identified in 1984, 1,097 were re-evaluated in 1989.		
			Follow up: a total of 79% of the participants and 76% of the non-participants were remained employed with the company.			

<p>21. Parry (2000) Scotland Cross-sectional 2+</p>	<p>N=3592 46.9% (1675) were male and 53.1% (1898) were female. Males smoked significantly less than the females (P=0.005). Manual staff contained the highest percentage of smokers (44% vs. 17.3% among all staff) (p&lt;0.001)</p>	<p>To investigate if and how smoking bans may have the unintended consequence of relocating smoking elsewhere and consider implications for smoker and non-smokers.  Funded by the Research Unit in Health and Behavioural Change in Scotland.</p>	<p>Total ban on smoking in University buildings and in University vehicles except on University grounds (avoiding obstruction of entrances to buildings.  61% of total sample returned completed questionnaires. Response rates among staff varied: 62.8% among academic staff; 74.4% among clerical staff; 60.6% among technical staff; and 46.5% among manual staff.</p>	<p>Changes in smoking behaviour differ according to whether the focus is upon daytime consumption or smoking outside work. Day time smokers were more likely to cut down or stop while at work while outside of work smokers claiming an increase in consumption is greater than the combined percentage of those claiming a reduction or quitting. This suggests compensatory smoking. 76.8% reported an increase of smoking on University property and 80.2% indicated an increase in entrances and steps. The main objection by non-smokers is the increase in passive smoking at entrances.</p>	<p>Although dealing with a localized smoking ban, this is a Scottish study and its findings appear to be directly applicable to an English setting in the context of national smoke-free legislation.  Results from only the surveys were presented. While findings seem valid, people who were disgruntled with the ban may have been more likely to fill out surveys in order to express their dissatisfaction.</p>
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22. Sorensen (1997) USA Cross Sectional Survey 2++	N=351 worksites reporting to both the baseline and final surveys  Results based on two variables: N=290; adoption of a smoking ban between baseline and follow up among sites that did not have a ban at baseline N= 214; offering smoking cessation services among those worksites that did not offer any smoking cessation services	To assess worksite characteristics predictive of tobacco-control policy adoption and cessation resource provision between baseline and final surveys.	Comparison between baseline and final surveys to determine characteristics of worksites that adopted a smoking cessation programme.	Of the 351 worksites that answered both the baseline and final surveys, 290 (89%) did not have a smoking ban at baseline. In addition, 61% (n=214) of worksites at baseline offered no cessation aid, assistance or support.  Of the 290 worksites that not have a smoking ban at baseline, 34% had adopted a smoke free policy by the time of the final survey. Characteristics of worksites more likely to adopt programmes included: having more females, and offering health promotion activities. Manufacturing businesses were significantly less likely than businesses other than service and wholesale/retail businesses to adopt policies.  Of the 214 worksites that did not offer cessation aid or resources at baseline, 36% had offered cessation services by the time of the final survey. Adoption of cessation programmes was significantly more likely among worksites employing 100-249 workers than 20-99, those employing men, those offering other types of health promotion activities, and those with high rates of turnover.	Although this is an American study, it is likely that similar worksite characteristics facilitate or inhibit the introduction of smoking information on missing data cessation programmes in UK worksites. The findings of this study therefore appear to be broadly applicable to a UK setting.	This study was well conducted, had a high response rate and was conducted using telephone surveys (therefore, lack of information on missing data not as relevant).
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<p>23. Stockton (2000)</p> <p>USA</p> <p>Interrupted time series</p> <p>2++</p>	<p>N=844 individuals from 63 companies (out of 400 contacted by letter). 532 female participants and 312 male participants. Male and female participants were about the same age at baseline (38), higher percentage of men were married and had college degrees than the women.</p>	<p>To identify gender-specific patterns in smoking behaviour and examine gender differences in order to facilitate our understanding of how men and women quit smoking.</p> <p>Funded by the National Institute of Heart, Lung, and Blood</p>	<p>3 tobacco cessation interventions: a) self-help manuals, b) self-help manuals and incentives, c) self help manuals, incentives and support groups</p> <p>Smoking status was collected before the intervention, 3-weeks posttest the intervention, 6 months, 12 months, 18 months and 24 months following the intervention.</p> <p>Missing data rates across conditions were significantly different at all assessments except 6 months: posttest <math>p &lt; 0.024</math>, 12 months <math>p &lt; 0.002</math>, 18 months <math>p &lt; 0.001</math>, and 24 months <math>p &lt; 0.001</math>.</p>	<p>At 2 year assessment 14.3% (532) of females and 13.5% (312) of males reported abstinence. Male participants smoked cigarettes with a higher nicotine content and smoked a greater number of cigarettes per day. Females reported having made more previous attempts to quit, less confidence about quitting, greater effort to quit, greater worry about smoking-related illness, and that they would be less likely to quit on their own if this programme were not offered. Females did tend to report receiving higher levels of general social support, as well as partner support for quitting smoking; however, greater support did not lead to higher quit rates.</p>	<p>Although this is a US study, similar gender differences exist in men's and women's attitudes and behaviours in the UK. Therefore, the findings of this study are likely to be broadly applicable to a UK setting.</p> <p>No methodological concerns. Well conducted study, uses CO validation to confirm self-reported smoking status.</p>
<p>24. Strobl (1998)</p> <p>Britain</p> <p>Cross-sectional</p> <p>2-</p>	<p>31 smoking and ex-smoking nurses in a British teaching hospital; convenience sample</p>	<p>To examine changes in smoking behaviour 9 months after the introduction of a workplace restriction</p>	<p>Workplace ban on all indoor smoking at the hospital, except for the 'social club' where nurses could smoke indoors.</p> <p>Wilcoxon test.</p>	<p>Reduction in number of cigarettes consumed per day while at work as a result of the restriction was not significant (<math>p = 0.07</math>).</p> <p>52% reported not being fully compliant with ban.</p> <p>20% would challenge someone breaching ban.</p>	<p>Conducted at an English hospital and relevant to study population. However, the study deals only with a hospital smoking ban, rather than national smoke-free legislation.</p> <p>Extremely small convenience sample, seemingly high amount of missing data, measures not well described.</p>

25. Waranch (1993)	262 participants in hospital-sponsored smoking cessation programmes.	To assess the influence of the smoking ban on the participation of employees in different types of worksite-sponsored stop-smoking programmes.	5 smoking cessation programmes: groups, 2 types of manuals ( <i>Freedom from smoking for you and your family</i> - American Lung Association and <i>Life Signs</i> - Health Innovations Inc.), one-hour clinics, brief individual counselling	One year CO validated cessation rate of 8.4% in total across all cessation programmes.	Although this is a U.S. study there could be similar effect on England's Stop Smoking Services after the implementation of the bar and restaurant bans.	Of the estimated 2000 smokers in the hospital only 13.1% chose to participate in smoking cessation programmes. No analysis was done to compare those who chose to participate and those who did not.
Johns Hopkins Hospital, USA	Self selected into programmes.	Funding not mentioned.	1 year follow-up; 71% follow up rate for all participants (186/263). Follow up rates by intervention: groups = 65/88, manuals = 33/59 for <i>Freedom...</i> and 34/59 for <i>Life Signs</i> . One hour clinics=22/23, brief counselling 32/33. Brief counselling had best follow up at 96%.	No sig. decrease in the number of cigarettes smoked from baseline to final follow-up (P=<0.001).		
Cohort study	Those in the multi-component and <i>Life Signs</i> groups smoked sig. more than those in the <i>Freedom...</i> group at baseline. Those in the multi-component group had sig. fewer quit attempts than those in the <i>Freedom...</i> or <i>Life Signs</i> groups.			Attendance at a group programme quadrupled during the 12 months following the announcement of the impending ban and returned to near per-ban levels in the subsequent 12 months.		
2+						

26. Warner (1996)	* Based on a simulation N=10,000 ( 3160 smokers)	Examine the health and economic implications of a workplace smoking-cessation programme by using a simulation model that includes consideration of long-term as well as short term implication and evaluation of effects of employee turnover and benefits derived by both the firm and the broader community.	To examine the effects of a 5 year work-site smoking cessation programme, the simulation was run in two forms: a cohort model (which does not include the replacement of workers who die, retire leave) and a full firm model that replaces them.	Smoking cessation was found to be a sound economic investment for the simulated firm. This is especially true when long term benefits are included, with an eventual benefit-cost ration of 8.75 (after 50 years). Saving life-years at a cost of \$894 each, the programme is more cost-effective than most pf the conventional medical care covered by the firms insurance. Using the full model, the simulated programme by year five will accumulate benefits up to \$1.03 million, including a small benefit in reduced medical payments to retirees. Cumulative programme costs equal \$595, 870. As a result, the programme generates net benefits of nearly \$440, 000.	This is an American study and because of the different nature of the US and UK healthcare systems, the findings of this study are not directly applicable to a UK setting.	Study was well conducted however it is based on a simulated model. As a result, applicability to the real world is unknown. However, efforts were made to consider and alter findings based on a number of real life variables.
USA	Average age 41.9, 58.6% male, 31.6% smokers, 27.4% former smokers, 41% never smokers		To analyze the effects of the programme, the model was run with and without the programme and then results were compared.	The intervention only addresses a fraction of the costs that smoking imposes on the firm.		
Economic Evaluation	-Simulation considered blue collar manufacturing work force  -Age/gender distribution based on data from the national work force Bureau of Labour Statistics. -Smoking status assigned based on blue collar respondents to the National Health Interview Survey (1990).		Outcome measures included intervention costs, and behavioural (smoking cessation), health, and financial benefits. These outcomes were used to calculate cost-effectiveness, and net cost savings (benefit-cost).			
2+						

27. Willemsen (1999)	N=885 in 4 "enriched environment worksites" (Intervention)	Examine the effects of a health education campaign and attention to smoking policy that accompanied a worksite smoking cessation programme on smoking employees who did not take part in the cessation programme.	Intervention: worksites received smoking cessation methods (i.e. self help manuals and group courses) plus educational anti-smoking campaign and smoking policy changes.	Point prevalence quit rates were 8% (18/239) in the "enriched environment" condition and 11% (22/199) in the control worksites (not significant). Non-responders were counted as smokers. Logistic regression analysis revealed no effect of treatment on quit attempts, nor on the posttest smoking status, controlling for baseline differences. Regression analyses revealed no significant effects of specific exposure variables either.	Although this is an American study, it is likely that workers who do not choose to participate in worksite smoking cessation programmes have broadly similar characteristics – whatever their geographic location. It therefore appears that the findings of this study are broadly applicable to a UK setting.	This was a good quality study overall and although it relies on self-reported data, the authors convincingly argue that incorporating the bogus pipeline procedure heightened the validity of the self-reported data. However, the authors argue that the measures used to assess programme exposure were rather crude and may not have been able to detect an effect if one existed.
Case Control	N=595 in 4 control worksites					
2+	Smoking prevalence in enriched environments was 32% and 38% in the control worksite	Respondents in the enriched environment were less often white-collar workers, worked in shifts more often, and less often had subordinates.	Control: worksites received minimal cessation programme and no anti-smoking health education activities and no policy changes.	The effect of health education on smoking policy on cognitive variables was examined with a series of linear regression analysis. No overall effect was found from treatment on any of the cognitive variables, using p<as the cut off point. No significant associated were found between exposure variables and cognitive variables, using the same criteria.		
	Worksites with more than 250 employees were considered for inclusion.	Hypotheses: "enriched environment" (intervention) would result in more favourable cognitions towards quitting smoking, more attempts to quit smoking and higher quit rates.	18 months between follow up			
			Compare changes in attempts to quit smoking between "enriched environment" and control			