Youth Smoking in Ireland:

A special analysis of the Health Behaviour in School-aged Children (HBSC) study

D Evans, A O'Farrell, A Sheridan, P Kavanagh.

Report prepared on behalf of the Tobacco Free Ireland Programme, Health Service Executive

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Foreword

We are pleased to introduce this Special Analysis of the Health Behaviours of School-Aged Children Study 2014, which focuses on youth smoking.

Ireland has made progress in preventing smoking initiation in children and young people. This is especially positive since vulnerability to initiation and to addiction is high in this group. Furthermore, early initiation of smoking sets children and young people up for significant lifetime exposure to the harmful effects.

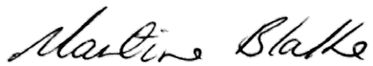
A welcome commitment to bring the tobacco epidemic to an endgame has been made by government through *Tobacco Free Ireland*. To achieve this, we need to strengthen and develop our current work in preventing smoking initiation, but we also need to work smarter, making best use of available research and information to reinforce our grip on this complex and evolving problem. This report helps build an evidence-base for action.

Identifying demographic factors independently associated with youth smoking enables us to take more focussed approaches. The various challenges faced by children and young people who smoke is worrying: greater likelihood of engaging in other risky behaviours; poorer health and wellbeing; and more difficult relationships with parents, peers and school. While the role of smoking in developing these challenges may be debated, the cause for concern is plain and requires a broad-based response, tackling smoking in conjunction with wider supports. Positively, the effectiveness of various tobacco control measures in preventing smoking initiation in youth is documented. However, there is scope for improvement. For example, many children and young people continue to be able to access tobacco like any other retail product.

We are grateful to the Health Promotion Research Centre, National University of Ireland, Galway, for providing access to the Health Behaviours of School-Aged Children Study dataset. We would like to acknowledge and thank members of the HSE Tobacco Research Group for their commitment to this work: David Evans, Anne O'Farrell and Aishling Sheridan. The insights they have developed on the significant continuing challenge of tackling youth smoking in Ireland will inform and support the HSE *Tobacco Free Ireland* Programme priorities in the short and medium term. We are pleased to share these results with partners for their consideration and hope that the discussion it generates will enable us to build broad-based action for a Tobacco Free Ireland.

Dr Paul Kavanagh

Consultant in Public Health Medicine,
HSE Tobacco Free Ireland Programme

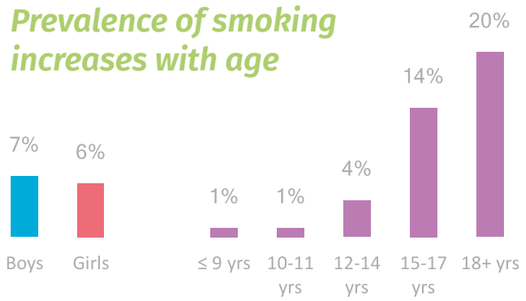


Ms Martina Blake

Programme Lead,
HSE Tobacco Free Ireland Programme

Youth Smoking in Ireland

Prevalence of smoking increases with age



5.9%
of schoolchildren aged 9+ years currently smoke

YOUTH SMOKING

OLDER

LOWER SOCIAL CLASS

Health and wellbeing of schoolchildren who smoke:

- *Poorer self-reported health*
- *Poorer self-reported happiness with life*
- *Experience more health complaints*
  - *1 in 2 experience irritability/bad temper*
  - *1 in 3 reported 'feeling low'*
  - *1 in 3 report difficulties in getting to sleep*
- *More likely to dislike school*
- *More difficult relationships with teachers*
- *More difficult relationships with family & friends*

Schoolchildren who smoke are:

12 *times more likely to have consumed alcohol in the last month*

39 *times more likely to have consumed cannabis in the last month*

Restrictions on Smoking reported by Smokers

4 *times more likely to report no smoking restrictions in their household*

2.5 *times more likely to report no smoking restrictions in their family car*

Knowledge of health risks of smoking

Access to cigarettes and packaging

Smokers find it easy to purchase cigarettes for themselves, or to get somebody to purchase cigarettes for them

Half of smokers have read warnings on cigarette packs

One in ten smokers reported not having a cigarette because of a warning, compared to one in two non-smokers

Table of Contents

1. Introduction . . . 8
   - 1.1 So, what is the problem? . . . 8
   - 1.2 Why did we do this? . . . 9
   - 1.3 How did we do this? . . . 10
2. Who is Smoking in Ireland? . . . 11
   - 2.1 Overall Patterns of Smoking . . . 11
   - 2.2 Age, Gender and Social Class . . . 12
   - 2.3 Demographic factors associated with current smoking . . . 13
3. How does smoking link with health and wellbeing? . . . 14
   - 3.1 Smoking and other health risk behaviours . . . 15
   - 3.2 Smoking and health and wellbeing status . . . 17
   - 3.3 Smoking and experience with family, school and bullying . . . 19
4. What is the impact of tobacco control measures? . . . 24
   - 4.1 Knowledge of harm and smoking status . . . 24
   - 4.2 Views on pack warnings and smoking status . . . 26
   - 4.3 Views on smoking restrictions and smoking status . . . 28
   - 4.4 Access to tobacco products and smoking status . . . 30
5. Discussion . . . 31
   - 5.1 Overall patterns of smoking in children and young people . . . 31
   - 5.2 Age and gender differences . . . 31
   - 5.3 Social Class differences . . . 32
   - 5.4 Risky health behaviours . . . 32
   - 5.5 Body image and misperceptions about smoking . . . 33
   - 5.6 Smoking and poor wellbeing . . . 33
   - 5.7 Health Complaints . . . 34
   - 5.8 Bullying and physical fights . . . 34
   - 5.9 Supportive School, Family, and Peers . . . 35
   - 5.10 Knowledge of Health Risks of Smoking . . . 36
   - 5.11 Warnings on Cigarette Packets . . . 37
   - 5.12 Smoking Restrictions . . . 37
   - 5.13 Access to Cigarettes . . . 38
6. Conclusions . . . 39
7. Appendix . . . 40

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We would like to thank the Health Promotion Research Centre, National University of Ireland, Galway, for providing access to the HBSC dataset. In particular, we would like to thank Dr Andras Kalto, Ms Lorraine Walker, and Professor Saoirse Nic Gabhainn. Special thanks to Claire Dunne and Fiona Kavanagh for proofreading, and for assistance throughout the project.

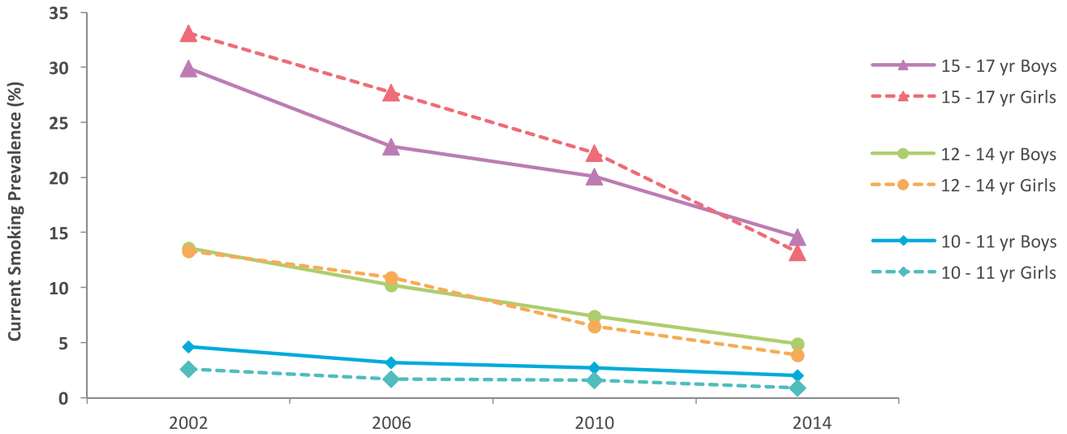
1. Introduction

1.1 So, what is the problem?

Although significant progress has been made in Ireland in the last decade in terms of reducing the prevalence of smoking (from 29% in 2006[1] to 22% in 2017),[2] tobacco still remains the leading cause of preventable death with over 100 people dying each week in Ireland from smoking related diseases.[3] The government has set a target to reduce smoking prevalence to less than 5% by 2025 and has highlighted the need for comprehensive tobacco monitoring.[3]

Further inroads in Ireland will require a twin focus on preventing smoking initiation and promoting smoking cessation. Smoking typically initiates in youth and, given the highly addictive properties of nicotine, a high proportion will continue smoking into adulthood with devastating health consequences.[4] Adult smoking patterns are usually established in adolescence.[5] Most smokers start to smoke before the age of 18.[6] Early onset of smoking increases the associated health risks.[4] It is also associated with heavier smoking and less likelihood of quitting.[7, 8] Preventing smoking initiation in youth, therefore, is a key focus for comprehensive tobacco control and continues to be a priority for the HSE Tobacco Free Ireland Programme. Recent progress in preventing youth initiation is illustrated in Figure 1.

Figure 1: Trends in current smoking prevalence in Children, 2002 to 2014, HBSC



Sources: HBSC, Smoking behaviour among Irish schoolchildren, Research Factsheets, 2002, 2006, 2010, 2014

1 Morgan, K., et al., SLAN 2007: Survey of lifestyles, attitudes and nutrition in Ireland: Main report. Dublin: Department of Health and Children. 2008.
2 Department of Health & IPSOS MRBI. Healthy Ireland Survey 2017 - Summary of Findings. www.healthyireland.ie
3 Department of Health, Tobacco Free Ireland, Report of the Tobacco Policy Review Group. 2013: Dublin.
4 United States Department of Health and Human Services, Preventing tobacco use among youth and young adults: A report of the Surgeon General. 2012, US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health: Atlanta, GA.
5 Johnston, V., S. Liberato, and D. Thomas, Incentives for preventing smoking in children and adolescents, in The Cochrane Library. 2012.
6 The Global Youth Tobacco Survey Collaborative Group, Tobacco use among youth: a cross country comparison. Tobacco Control, 2002. 11(3): p. 252-270.
7 Green, M.J., et al., Socioeconomic position and adolescent trajectories in smoking, drinking, and psychiatric distress. Journal of Adolescent Health, 2013. 53(2): p. 202-208. e2.
8 Tyas, S.L. and L.L. Pederson, Psychosocial factors related to adolescent smoking: a critical review of the literature. Tobacco Control, 1998. 7(4): p. 409-420.

1.2 Why did we do this?

For these reasons, it was decided to undertake a detailed analysis of existing secondary data on youth smoking in Ireland to inform policy and planning. This study primarily focuses on smoking among secondary school children. The HBSC provides detailed information in terms of attitudes, behaviours, and the lives of school children. Outside this, information is limited in Ireland on smoking patterns among adolescents. It was determined that a more detailed analysis of smoking patterns using comprehensive and representative population-based information collection through HBSC would prove valuable, particularly in terms of informing policy and developing initiatives to reduce smoking among adolescents. It is against this background that the study was undertaken.

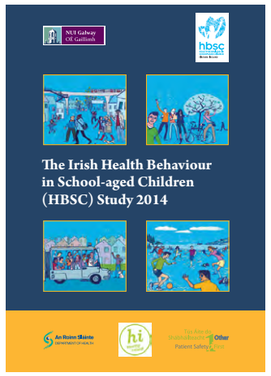
The aim of the study was to better inform tobacco control policy and planning in Ireland to tackle smoking among children and young people through describing smoking behaviour, relationship with health, wellbeing and life experience and the impact of current control measures. More specifically the study objectives were to:

1. Measure the prevalence of smoking among children and young people in Ireland, identifying demographic factors independently associated with smoking;
2. Measure the health, wellbeing and key facets of the reported life experience of children and young people who smoke, compare this with non-smokers, and identify factors associated with smoking independent of demographic factors;
3. Measure the impact of tobacco control measures on the smoking behaviour of children and young people independent of demographic factors;
4. Inform tobacco control and HSE Tobacco Free Ireland Programme planning to strengthen the prevention of smoking initiation and reduce prevalence among children and young people.

1.3 How did we do this?

The study involved a detailed analysis of the HBSC survey undertaken in 2014. This was obtained with permission from the Health Promotion Research Centre, NUIG.

Background to the Health Behaviour in School-aged Children (HBSC) Study



The Health Behaviour in School-aged Children (HBSC) Study is a cross-sectional survey undertaken by the National University of Ireland, Galway (NUIG) in collaboration with the World Health Organization (WHO), and funded by the Department of Health.[9, 10, 11] It is undertaken every four years in 44 countries and regions. The study focuses on young people's health, wellbeing, behaviours and their social context. In terms of smoking, it elicits information on smoking prevalence, exposure to second-hand smoke, and access to cigarettes.

A representative sample of children attending school (aged 9-18) was obtained from eight geographical regions in Ireland. A random stratified sample of primary and post primary schools was selected for inclusion in the study. The sample was proportionate to the distribution of pupils in each geographical region. Class groups within schools were subsequently selected. In primary schools this included third to sixth class groups, while in post-primary schools all except final year students were sampled. Following parental consent, a self-completion survey was administered to children by teachers in their classrooms. These were returned to the HBSC study team by post (using a Freepost envelope).

Statistical analysis

Data was disaggregated and analysed by smoking status for all children. A smoker was defined as anyone smoking tobacco monthly or more frequently. Different versions of the questionnaire were used for each class group, with slightly different questions used in some cases, or some questions were only asked to older aged classes (e.g. sexual activity). Where this is the case, the school class group that responded to the question is highlighted. The data was analysed in SPSS version 25 and JMP statistical package. For overall prevalence, weighted results are given. This data is probability weighted (using census data) to account for gender disparities in the response rate. For all other analysis, unweighted data is presented. Pearson's chi-square and independent t tests were used to compare smokers and non-smokers in terms of key variables. Respondents were given a score in terms of attitudes to fellow students, family help and emotional support, and knowledge of the health risks of smoking. Scores were generated by summing up responses to a series of statements. If a respondent did not complete all the statements used to generate scores, the median score across all respondents for that statement was used. Multivariate analyses including logistic and ordinal regression modelling were undertaken using discretionary backward elimination. Statistical significance was determined at the 0.05 level. Exact 95% confidence intervals were calculated for proportions of binomial variables and for regression adjusted odds ratios.

9 Gavin, A., et al., The Irish health behaviour in school-aged children (HBSC) study 2014. 2015, National University of Ireland, Galway.
10 Currie, C., S. Nic Gabhainn, and E. Godeau, The Health Behaviour in School-aged Children: WHO Collaborative Cross-National (HBSC) Study: origins, concept, history and development 1982-2008. International Journal of Public Health, 2009. 54(2): p. 131-139.
11 Kelly, C., et al., The Irish health behaviour in school-aged children (HBSC) study 2010. 2012, National University of Ireland, Galway and Department of Health, Government of Ireland, Dublin: Dublin.

2. Who is Smoking in Ireland?

Key Findings

- A total of 16% of children aged 9+ years had smoked cigarettes in their lifetime. Overall, 6% of schoolchildren aged 9+ years were classified as current smokers.
- Among schoolchildren aged 10 years and older, the likelihood of being a current smoker increased with increasing age (13 years and older) and being in a lower social class (based on parental occupation).

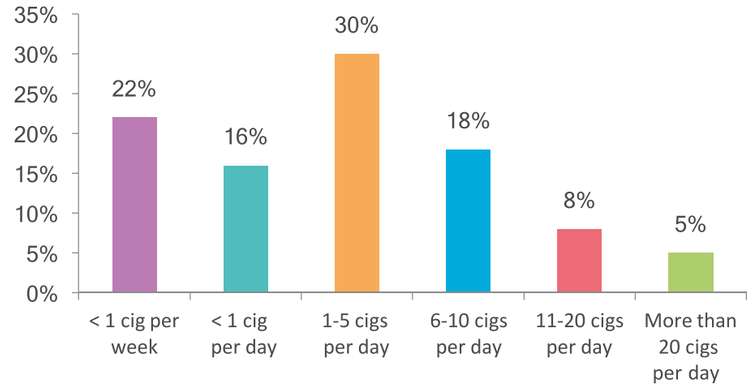
A total of 59% of invited schools agreed to participate in the study. Responses were received from 85% of schoolchildren in participating schools, giving a total of 13,611 respondents.[9] In terms of school type, 31% attended secondary schools, with 45% attending primary schools. The remainder attended community and comprehensive (12%) and vocational schools (11%). The majority (56%) of participating schools were in urban areas, with 45% in rural areas. The majority of schools were mixed gender (72%) with 7% all boys and 22% all girls.

A larger proportion of girls (58%) completed the survey compared to boys (42%). The majority of respondents were less than 15 years of age (69%) with 35% aged 12-14 years and 30% aged 15-17 years. The average age was 13.3 years. Children from immigrant families represented 16% of respondents with 2% reporting being members of the Traveller community. Overall, although there are gender disparities, the data is representative in terms of the population distribution by region and social class.[9]

2.1 Overall Patterns of Smoking

A total of 16% of respondents had smoked cigarettes in their lifetime. Almost half of lifetime smokers (48%) had smoked in the previous 30 days. Overall, 6% of schoolchildren were classified as current smokers (anyone smoking tobacco monthly or more frequently). Of these, 54% smoked every day, with 19% smoking at least once a week, and 27% smoking less often than once a week. Figure 2 shows that 31% smoked over five cigarettes per day, with 48% smoking 1-10 cigarettes per day.

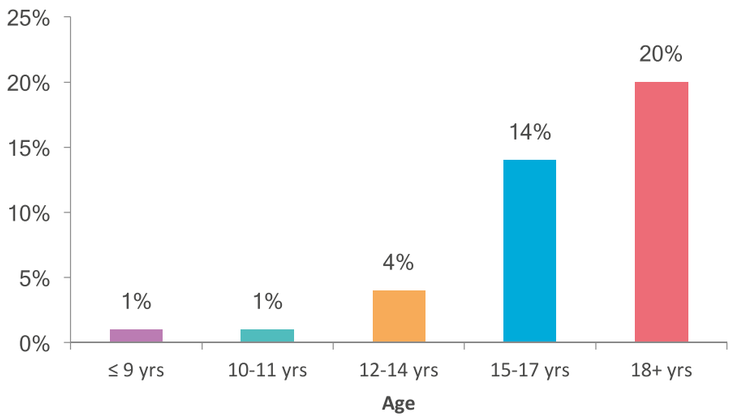
Figure 2: Number of cigarettes consumed by smokers



2.2 Age, Gender and Social Class

Figure 3 shows that smoking prevalence rises with increasing age. Prevalence is greatest for those 18 or older (20%) and those 15-17 (14%), with 1% under 12 years of age smoking. This pattern is statistically significant (Pearson's χ^2 = 674.738, df = 4, p<0.001).

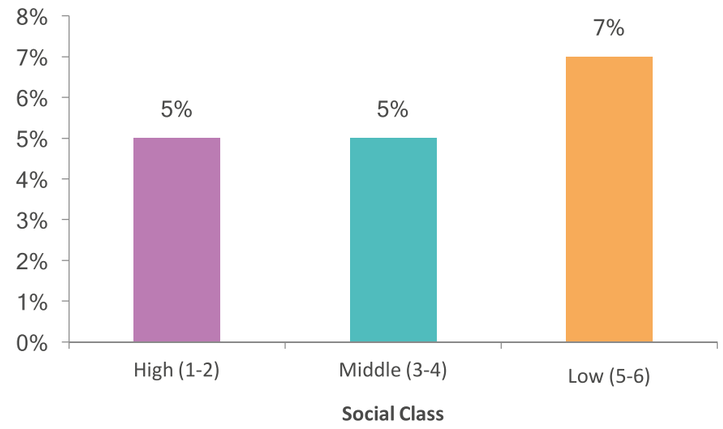
Figure 3: Smoking prevalence, by age



In terms of gender, a higher proportion of boys smoked (6.6%) than girls (5.8%). This pattern was not statistically significant (Pearson's χ^2 = 2.923, df = 1, p = 0.087).

Children were classified by social class using the highest parental occupation. Figure 4 shows smoking prevalence is highest among those from lower social class group (7%, versus 5% for middle and high social class group). This pattern is statistically significant (Pearson's χ^2 = 6.570, df = 2, p = 0.037).

Figure 4: Smoking prevalence, by social class



2.3 Demographic factors associated with current smoking

Multiple regression was undertaken to identify the independent association between gender, age, and social class (those under 10 excluded as numbers too small to permit meaningful analysis) and current smoking status. This is shown in Table 1. This shows that smokers are more likely to be older (age 13 or older, OR = 5.7) and from lower social classes (5-6, OR = 1.4), with gender differences not being statistically significant (p>0.05).

Table 1: Independent demographic factors associated with current smoking among schoolchildren (aged 10+ years)

	Schoolchildren 10+ years		
Factors	**Odds ratio**	**95% CI**	**p value**
Gender (male versus female)	1.15	0.97, 1.36	p=0.11
Age (older versus younger)	5.73	4.78, 6.90	p<0.0001
Social Class (low versus middle and high)	1.37	1.07, 1.74	p<0.05

The factors included in this model were: age, gender, social class

3. How does smoking link with health and wellbeing?

Key Findings

After accounting for differences in age, gender and social class, compared with non-smoking, smokers were:

- Almost 12 times more likely to have consumed alcohol and almost 39 times more likely to have consumed cannabis in the last month.
- Almost 7 times more likely to have reported ever having had sex.
- More likely to report being on a diet. 2 times more likely to think that they were too fat and 52% less likely to think that they were about the right size.
- Over 3 times more likely to have reported fair/poor health and were over 2 times more likely to report having at least one health complaint.
- Over 3 times more likely to have reported not being happy with life.
- Over 2 times more likely to have difficulty speaking to father/stepfather in the last month and over 2 times more likely to have difficulty speaking to mother/stepmother in the last month; were more likely to report poor scores regarding family help and emotional support.
- Over 3 times more likely to report disliking school than non-smokers.
- Over 2 times more likely to have been bullied in the last month and more likely to have reported bullying others in the last month.
- More likely to have been in a fight in the last 12 months than non-smokers.

3.1 Smoking and other health risk behaviours

Alcohol and cannabis consumption is shown in Table 2 (excluding 3rd and 4th class). It can be seen that a larger proportion of those that are current smokers also consumed alcohol in the last 30 days (72% of smokers versus 13% of non-smokers). This pattern is statistically significant (Pearson's χ^2 = 1360.013, df = 1, p< 0.001). In addition, a significantly larger proportion of those who were smokers had also used cannabis in the last 30 days (39% compared to 1%, Pearson's χ^2 = 2463.882, df = 1, p< 0.001). Controlling for age, gender and social class, smokers were almost 12 times more likely than non-smokers to have consumed alcohol (OR=11.6, 95% CI 9.4-14.4, p< 0.0001) and almost 39 times more likely than non-smokers to have consumed cannabis in the last month (OR=38.6, 95% CI 29.3-51.2, p< 0.0001).

Table 2: Alcohol and cannabis consumption, by smoking status*

Alcohol consumed in last 30 days	Smoker		Non-smoker		Total	
	No.	%	No.	%	No.	%
Yes	512	71.6	1330	12.8	1842	19.3
No	203	28.4	7510	87.2	7713	80.7
Total	**715**	**100.0**	**8840**	**100.9**	**9555**	**100.0**
Cannabis consumed in last 30 days	**Smoker**		**Non-smoker**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Yes	283	39.1	110	1.1	393	4.1
No	440	60.9	8829	98.9	9269	95.9
Total	**723**	**100.0**	**8939**	**100.0**	**9662**	**100.0**

* excluding 3rd and 4th class

Regarding sexual activity, the response rate on this question was low with 45% of those who were asked the question giving a response; so cautious interpretation is required. Of those who responded (excluding 3rd and 4th class) 24% reported that they had ever had sex. A total of 60% of smokers had ever had sex whereas 19% of non-smokers had ever had sex. This pattern was statistically significant (Pearson's χ^2 = 484.497, df = 1, p< 0.001). There were no significant differences in the proportion of boys and girls that smoked that reported having sex (p>0.05). Controlling for age, gender and social class, smokers were almost 7 times more likely than non-smokers to have reported ever having had sex (OR=6.9, 95% CI 5.6-8.5, p< 0.0001).

Respondents (excluding 3rd and 4th class) were asked if they were on a diet and how they perceived their body in terms of being fat, thin, or the right size. It can be seen from Table 3 that 17% of respondents were on a diet or doing something to lose weight, with a larger proportion of smokers on a diet (23% versus to 17%) than non-smokers. This pattern is statistically significant (Pearson's χ^2 = 18.717, df = 1, p< 0.001). Further analysis was undertaken to explore gender-patterning of the relationship between smoking status and dieting. Differences between smokers and non-smokers were not significant for boys (12% compared to 11% respectively; Pearson's χ^2 = 0.773, df = 1, p = 0.379) but were significant for girls (31% compared to 21% respectively; Pearson's χ^2 = 27.045, df = 1, p<0.001). Controlling for age, gender and social class, smokers were 1.4 times more to likely than non-smokers to report being on a diet (OR=1.4, 95% CI 1.2-1.8, p< 0.001).

Table 3: Body perception and diet, by smoking status

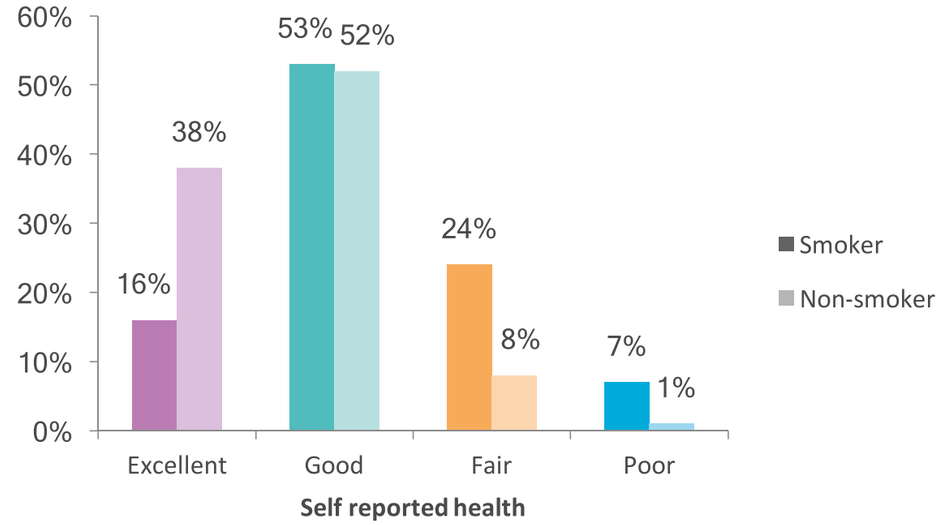
On diet or doing something to lose weight	Smoker		Non-smoker		Total	
	No.	%	No.	%	No.	%
Yes	180	22.5	1581	16.5	1761	17.0
No	619	77.5	7976	83.5	8595	83.0
Total	**799**	**100.0**	**9557**	**100.0**	**10356**	**100.0**
Body perception	**Smoker**		**Non-smoker**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Much too thin	19	2.4	135	1.4	154	1.5
A bit too thin	79	10.0	988	10.5	1067	10.4
About the right size	324	41.0	5651	59.8	5975	58.3
A bit too fat	275	34.8	2343	24.8	2618	25.6
Much too fat	94	11.9	336	3.6	430	4.2
Total	**791**	**100.0**	**9453**	**100.0**	**10244**	**100.0**

In terms of body perception, 30% of respondents perceive that they are too fat. A lower proportion of smokers perceive themselves to be 'about the right size' (41% versus 60% for non-smokers) while a larger proportion of smokers perceive themselves to be too fat (47% versus 28% for non-smokers). A minority (12%) of both smokers and non-smokers perceive themselves to be 'too thin.' These patterns are statistically significant (Pearson's χ^2 = 198.1663, df = 4, p< 0.001). Differences between smokers and non-smokers were significant for boys (Pearson's χ^2 = 64.705, df = 4, p<0.001) and for girls (Pearson's χ^2 = 149.085, df = 4, p<0.001). Controlling for age, gender and social class, smokers were 2.1 times more likely than non-smokers to think that they were too fat (OR=2.1, CI 1.7-2.5, p< 0.0001) and 52% less likely than non-smokers to think that they were about the right size (OR=0.48, CI 0.40-0.57, p< 0.0001).

3.2 Smoking and health & wellbeing status

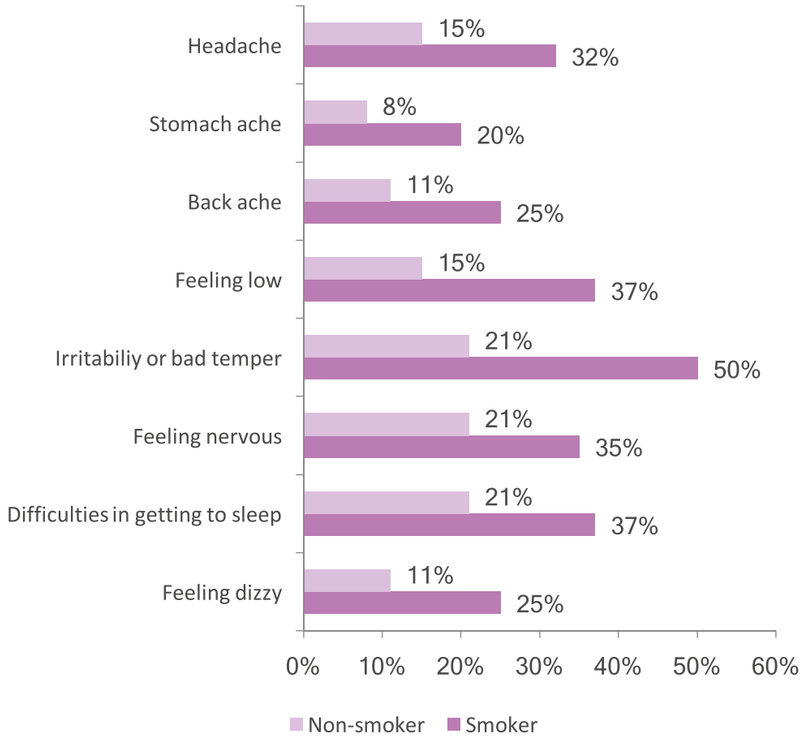
It can be seen from Figure 5 that a larger proportion of smokers report fair or poor health compared with non-smokers (31% versus 9% respectively). This pattern is statistically significant (Pearson's χ^2 = 500.692, df = 3, p< 0.001). Controlling for age, gender and social class, smokers were 3.5 times more likely than non-smokers to have reported fair/poor health (OR=3.5, 95% CI 2.9-4.2, p< 0.0001).

Figure 5: Self-reported health, by smoking status



Eight health complaints were shown to respondents (except 3rd and 4th class) who were asked how often they had been experienced in the last six months (Figure 6). For all complaints, compared with non-smokers, a greater proportion of smokers experience them more than once a week. Controlling for age, gender and social class, smokers were two and half times more likely than non-smokers to report having at least one health complaint (OR=2.5, 95% CI 2.1-3.1, p<0.0001). The health complaints experienced more than once a week by the greatest proportion of smokers included irritability or bad temper (50% compared to 21% for non-smokers), feeling low (37% compared to 15% for non-smokers), and difficulties in getting to sleep (37% compared to 21% for non-smokers); these are common symptoms associated with nicotine use and withdrawal.

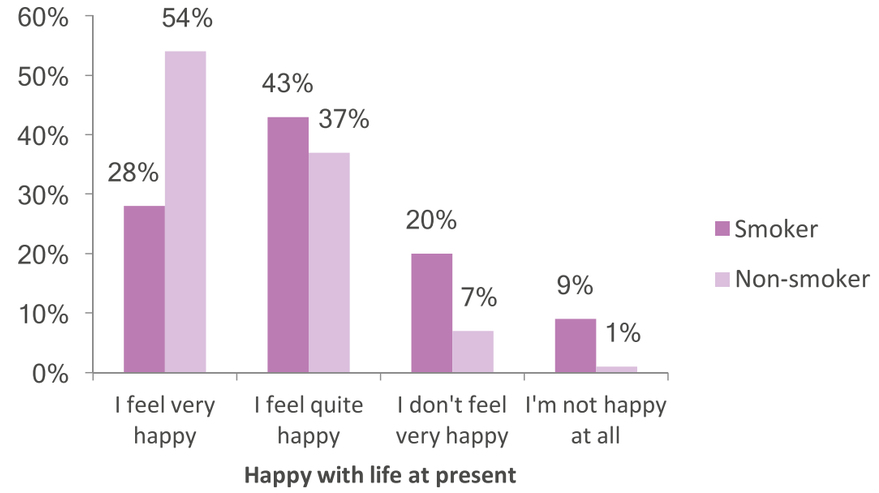
Figure 6: Health complaints experienced more than once a week, by smoking status



Pearson's Chi Square comparing frequency of health complaints for smokers and non-smokers was significant in the case of each complaint (p<0.001).

In terms of happiness with life, Figure 7 shows that a larger proportion of smokers are not happy with their life at present compared with non-smokers (29% versus 8% respectively). A larger proportion of non-smokers are happy than smokers (91% versus 71% respectively). This pattern is statistically significant (Pearson's χ^2 = 522.752, df = 3, p< 0.001). Controlling for age, gender and social class, smokers were 3.3 times more likely than non-smokers to have reported not being happy with life (OR=3.3, 95% CI 2.7-4.1, p< 0.0001).

Figure 7: Happiness with Life, by smoking status



3.3 Smoking and experience with family, school and bullying

Respondents (except 3rd and 4th class) were asked how easy it was to talk to family members about things that bother them (Table 4). Key findings are presented here and other findings are set out in the Appendix.

A larger proportion of smokers found it difficult or very difficult to talk to parents and step-parents. These patterns are statistically significant (p<0.001). Controlling for age, gender and social class, smokers were 2.1 times more likely than non-smokers to have difficulty speaking to their father/stepfather in the last month (OR=2.1, 95% CI 1.7-2.5, p< 0.0001) and 2.3 times more likely than non-smokers to have difficulty speaking to their mother/stepmother in the last month (OR=2.3, 95% CI 1.9-2.8, p< 0.0001).

Table 4: Experience of talking to family about things causing bother, by smoking status

Father	Smoker		Non-smoker		Total		Statistical significance
	No.	%	No.	%	No.	%	
very easy or easy	348	44.2	8022	66.9	8370	65.5	Pearson's χ^2 = 208.288, df = 2, p< 0.001
difficult or very difficult	308	39.1	3187	26.6	3495	27.3	
don't have or see this person	132	16.8	784	6.5	916	7.2	
Total	**788**	**100.0**	**11993**	**100.0**	**12781**	**100.0**	
Stepfather or mother's boyfriend)*	**Smoker**		**Non-smoker**		**Total**		**Statistical significance**
	No.	**%**	**No.**	**%**	**No.**	**%**	
very easy or easy	87	13.0	671	8.1	758	8.4	Pearson's χ^2 = 63.916, df = 2, p< 0.001
difficult or very difficult	91	13.6	588	7.1	679	7.5	
don't have or see this person	489	73.3	7025	84.8	7514	84.1	
Total	**667**	**100.0**	**8284**	**100.0**	**8951**	**100.0**	
Mother	**Smoker**		**Non-smoker**		**Total**		**Statistical significance**
	No.	**%**	**No.**	**%**	**No.**	**%**	
very easy or easy	484	63.1	9842	82.3	10326	81.2	Pearson's χ^2 = 175.232, df = 2, p< 0.001
difficult or very difficult	249	32.5	1833	15.3	2082	16.4	
don't have or see this person	34	4.4	277	2.3	311	2.4	
Total	**767**	**100.0**	**11952**	**100.0**	**12719**	**100.0**	
Stepmother (or fathers girlfriend)*	**Smoker**		**Non-smoker**		**Total**		**Statistical significance**
	No.	**%**	**No.**	**%**	**No.**	**%**	
very easy or easy	70	10.9	545	6.7	615	7.0	Pearson's χ^2 = 34.347, df = 2, p< 0.001
difficult or very difficult	59	9.2	434	5.4	493	5.6	
don't have or see this person	513	79.9	7106	87.9	7619	87.3	
Total	**642**	**100.0**	**8085**	**100.0**	**8727**	**100.0**	
* = except 3rd and 4th class							

Family help and emotional support were assessed by asking respondents to rate four statements on a seven point scale. Mean scores are shown in Table 5. It can be seen that mean scores are significantly lower among smokers for each statement (p<0.001), indicating lower levels of family help and emotional support.

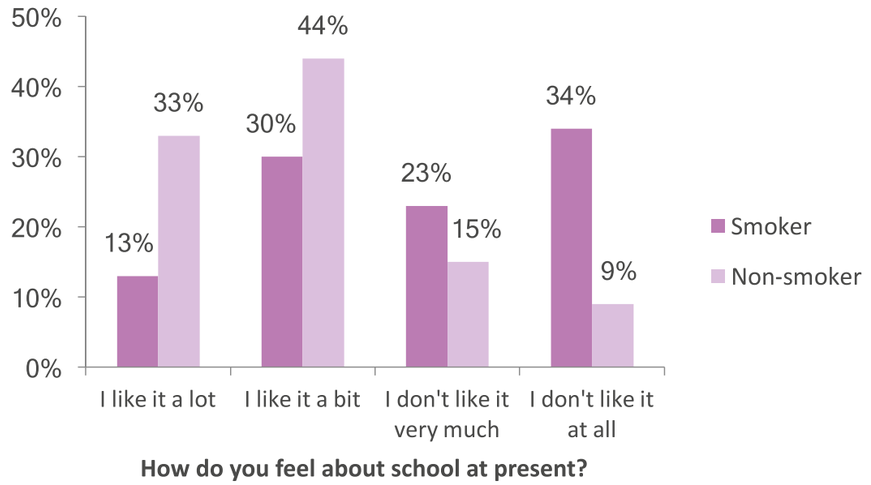
Table 5: Mean scores for statements about family help and emotional support, by smoking status (1 = very strongly disagree, 7 = very strongly agree)

Family help and emotional support	Smoker Mean	Non-smoker Mean	Total Mean	Statistical Significance
My family really tries to help me	4.67	5.33	5.28	Independent T test, t = -8.377, p< 0.001
I get the emotional help and support I need from my family	4.31	5.06	5.00	Independent T test, t = -8.996, p< 0.001
I can talk about my problems with my family	4.06	4.95	4.88	Independent T test, t = -10.544, p< 0.001
My family is willing to help me make decisions	4.61	5.28	5.23	Independent T test, t = -8.201, p< 0.001

The statements about family help and emotional support were summed up to give a total score. After controlling for age, gender and social class, smokers were 1.7 times more likely than non-smokers to report lower levels of family help and emotional support (OR=1.7, 95% CI 1.4-2.0, p<0.0001).

In terms of attitudes to school, it can be seen from Figure 8 that smokers more frequently report negative views about school. For example 57% of smokers do not like school at all, or do not like it very much compared to 23% of non-smokers. This pattern is statistically significant (Mann Whitney U test = 33026712.5, p< 0.001). Controlling for age, gender and social class, smokers were 3.5 times more likely than non-smokers to report disliking school (OR=3.5 , 95% CI 3.0-4.2, p< 0.0001).

Figure 8: How respondents feel about school at present, by smoking status



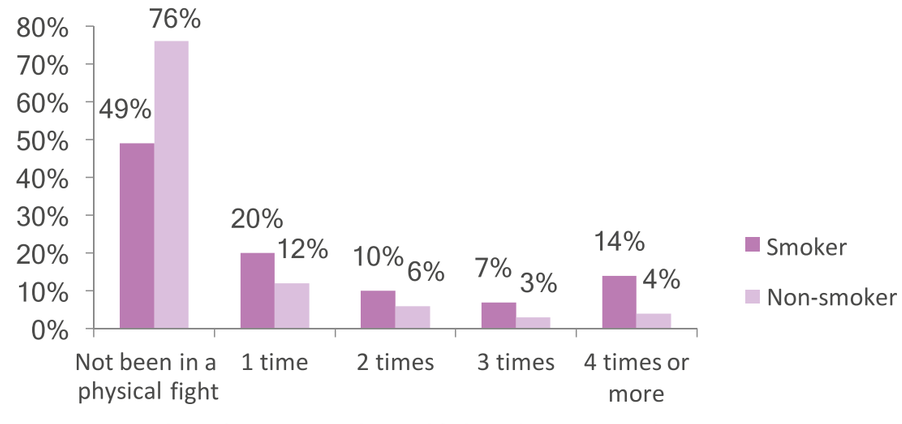
Having been given a definition of bullying, 28% of all respondents reported that they had been bullied at school in the past couple of months, while 12% had bullied others. Table 6 shows that a larger proportion of smokers report being bullied in the last couple of months compared to non-smokers (34% versus 27%). This pattern is statistically significant (Pearson's χ^2 = 34.976, df = 4, p< 0.001). Similarly, a larger proportion of smokers have reported bullying others in the last couple of months (27% versus 11%). This pattern is also statistically significant (Pearson's χ^2 = 186.816, df = 4, p< 0.001). Controlling for age, gender and social class, smokers were 2.4 times more likely than non-smokers to report been bullied in the last month (OR=2.4, 95% CI 1.9-2.8, p< 0.0001) and 1.5 times more likely than non-smokers to have reported bullying others in the last month (OR=1.5, 95% CI 1.3-1.8, p<0.0001).

Table 6: Frequency of being bullied and having bullied others at school in the past couple of months, by smoking status

Been bullied	Smoker		Non-smoker		Total	
	No.	%	No.	%	No.	%
I have not been bullied at school in the past couple of months	526	65.9	8903	72.9	9429	72.5
It has only happened once or twice	170	21.3	2318	19.0	2488	19.1
Two or three times a month	37	4.6	451	3.7	488	3.8
About once a week	26	3.3	258	2.1	284	2.2
Several times a week	39	4.9	275	2.3	314	2.4
Total	**798**	**100.0**	**12205**	**100.0**	**13003**	**100.0**
Bullied others	**Smoker**		**Non-smoker**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**
I have not bullied others at school in the past couple of months	600	75.8	10739	88.7	11339	87.9
It has only happened once or twice	133	16.8	1131	9.3	1264	9.8
Two or three times a month	20	2.5	110	0.9	130	1.0
About once a week	13	1.6	70	0.6	83	0.64
Several times a week	26	3.3	53	0.4	79	0.61
Total	**792**	**100.0**	**12103**	**100.0**	**12895**	**100.0**

In terms of physical fights, 26% (excluding 3rd and 4th class) reported that they had been in a physical fight in the last 12 months. A larger proportion of smokers had been in a physical fight compared to non- smokers (51% versus to 24%). This pattern was statistically significant. (Pearson's χ^2 = 258.915, df = 1, p< 0.001). Figure 9 shows that smokers are involved in more physical fights. This pattern is statistically significant (Mann Whitney U test = 2664287.5, p<0.001). Controlling for age, gender and social class, smokers were 3.3 times more likely than non-smokers to have been in a physical fight in the last 12 months (OR=3.3, 95% CI 2.8-4.0, p< 0.0001).

Figure 9: Number of times in a physical fight in last 12 months



4. What is the impact of tobacco control measures?

Key Findings

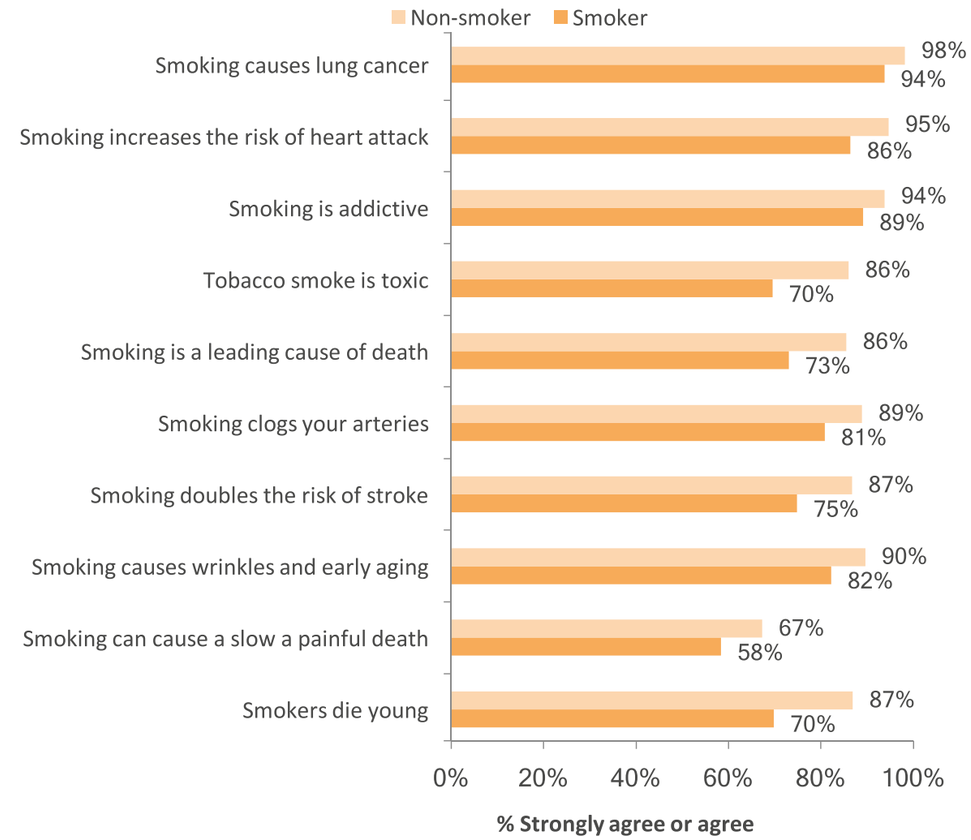
After accounting for differences in age, gender and social class, compared with non-smoking, smokers were:

- Less likely to have good knowledge of the harms of smoking.
- Over 3 times more likely to agree that cigarette packs looked cool, less likely to agree that cigarette packs looked disgusting and less likely to agree that cigarette packs looked boring.
- Over 3 times more likely to report that they had no smoking restrictions in their households and were over 2 times more likely to report that they had no smoking restrictions in their family cars.
- Over 2 times more likely to report that they found it easy to purchase cigarettes and over 2 times more likely to report that they found it easy to get someone to purchase cigarettes for them.

4.1 Knowledge of harm and smoking status

A number of knowledge statements were presented to respondents (2nd to 5th class) who were asked to report their level of agreement or disagreement. Figure 10 shows that the majority agreed with all of the statements (range: 66%-98%). The knowledge statement with the largest level of agreement referred to smoking causing cancer (98%) whereas the lowest level of agreement was for the statement referring to smoking causing a slow painful death (66%). In comparing knowledge statements by smoking status, it can be seen that a lower proportion of smokers strongly agreed or agreed (correct response) with statements than smokers.

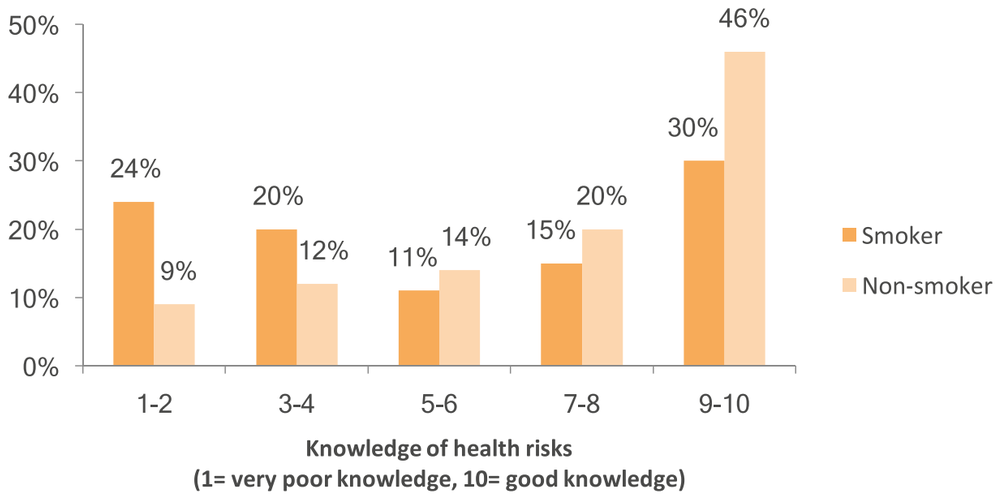
Figure 10: Agreement to knowledge statements, by smoking status (2nd-5th class)



Pearson's Chi Square comparing frequency of agreement with statement for smokers and non-smokers was significant in the case of each statement (p<0.001).

Figure 11 details knowledge of health risk score by smoking status with smokers reporting lower levels of knowledge. Controlling for age, gender and social class, smokers were 62% less likely than non-smokers to score high (5+) on the health knowledge risk score (OR=0.38, 95% CI 0.32-0.47, p< 0.0001).

Figure 11: Knowledge of health risk score, by smoking status

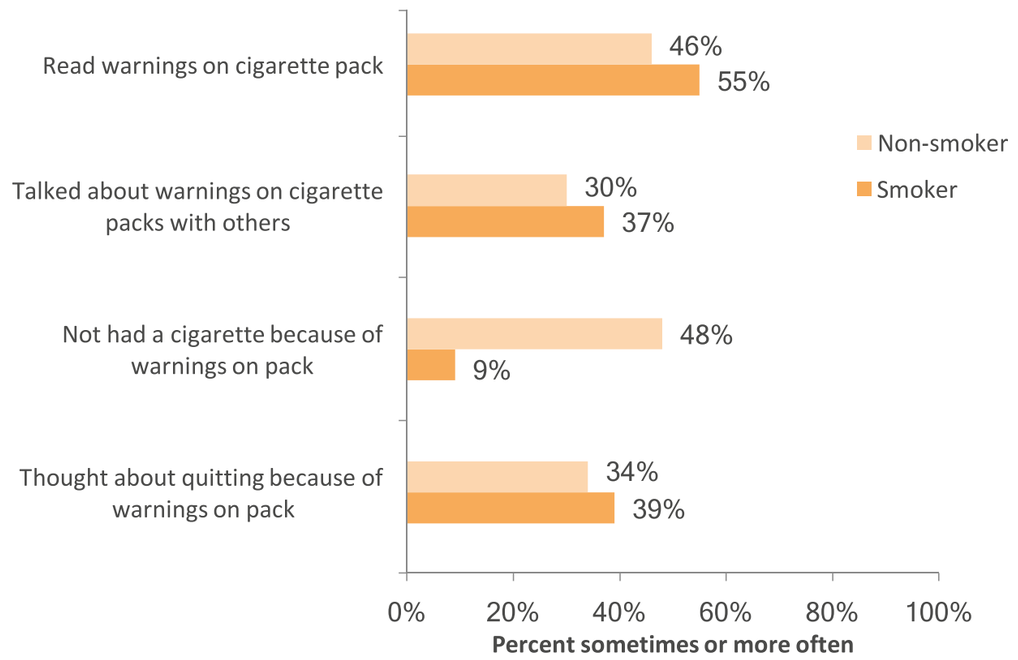


4.2 Views on pack warnings and smoking status

Respondents from 2nd-5th class were asked a number of questions about the warnings on cigarette packs. A total of 68% had seen or looked at a cigarette pack in the last six months. These respondents were given a number of statements in terms of behaviours relating to cigarette packs and asked how often they had occurred.

Figure 12 shows that a larger proportion of smokers read (55% versus 46%) and talked about (37% versus 30%) warnings on cigarette packs. Nearly half (48%) non-smokers reported that they had not had a cigarette because of pack warnings (versus 9% for smokers). In addition 39% of smokers had thought about quitting because of pack warnings.

Figure 12: Frequency of undertaking behaviours regarding cigarette packs, by smoking status (2nd-5th class)



Mann Whitney U test comparing reported behaviours of smokers and non-smokers all p<0.001.

Those who had looked at cigarette packs in the last six months were asked to rate their agreement or disagreement to a number of statements about the look of cigarette packs (Table 7). Over two thirds (70%) agreed or strongly agreed that they looked disgusting, while 43% agreed or strongly agreed that they looked boring with 6% agreeing or strongly agreeing that they looked cool. A larger proportion of smokers agreed or strongly agreed that cigarette packs look cool (13% versus 5%) whereas a larger proportion of non-smokers agreed or strongly agreed that cigarette packs look disgusting (73% compared to 50%) or boring (46% compared to 29%). These patterns were statistically significant (Mann Whitney U test, p< 0.05). Controlling for age, gender and social class, smokers were 3.6 times more likely than non-smokers to agree that cigarette packs looked cool (OR=3.6, 95% CI 2.5-5.0, p< 0.0001) and 65% less likely than non-smokers to agree that cigarette packs looked disgusting (OR=0.35, 95% CI 0.28-0.43, p< 0.0001) and 56% less likely than non-smokers to agree that cigarette packs looked boring (OR=0.44, 95% CI 0.38-0.55, p<0.0001).

Table 7: Agreement or disagreement to statements about the look of cigarette packs, by smoking status (2nd-5th class)

Look cool	Smoker		Non-smoker		Total		Statistical* significance
	No.	%	No.	%	No.	%	
strongly agree or agree	63	12.7	145	4.5	208	5.6	Mann Whitney U test = 710796 p< 0.001
not sure	94	18.9	260	8.1	354	9.6	
strongly disagree or disagree	305	61.4	2625	81.9	2930	79.1	
cannot comment	35	7.0	176	5.5	211	5.7	
Total	**497**	**100**	**3206**	**100**	**3703**	**100**	
Look disgusting	**Smoker**		**Non-smoker**		**Total**		**Statistical* significance**
	No.	%	No.	%	No.	%	
strongly agree or agree	249	49.5	2426	72.5	2675	69.5	Mann Whitney U test = 757782.5 p= 0.004
not sure	112	22.3	387	11.6	499	13.0	
strongly disagree or disagree	109	21.7	398	11.9	507	13.2	
cannot comment	33	6.6	133	4.0	166	4.3	
Total	**503**	**100**	**3344**	**100**	**3847**	**100**	
Look boring	**Smoker**		**Non-smoker**		**Total**		**Statistical* significance**
	No.	%	No.	%	No.	%	
strongly agree or agree	140	28.5	1467	45.5	1607	43.3	Mann Whitney U test = 649916.5 p< 0.001
not sure	163	33.1	855	26.5	1018	27.4	
strongly disagree or disagree	139	28.3	609	18.9	748	20.1	
cannot comment	50	10.2	292	9.1	342	9.2	
Total	**492**	**100**	**3223**	**100**	**3715**	**100**	
* excluding those who responded “cannot comment”							

4.3 Views on smoking restrictions and smoking status

Table 8 shows that over three quarters (76%) of respondents (except 3-4th class) reported that smoking was not allowed in the family home with over a third (34%) of these also reporting that no-one was allowed to smoke outside the house. A larger proportion of smokers reported that there were no household smoking restrictions (11% versus 4%) whereas a larger proportion of non-smokers reported that no-one is allowed to smoke inside or outside the house (35% versus 23%). This pattern is statistically significant (Pearson’s χ^2 162.630 df = 5, p< 0.001). Controlling for age, gender and social class, smokers were 3.6 times more likely than non-smokers to report that there were no smoking restrictions in their households (OR=3.6 , 95% CI 2.5-5.0, p< 0.0001).

In terms of smoking in the family car, over three quarters (77%) stated that there were restrictions with 62% reporting that no-one was allowed to smoke in the family car. A larger proportion of smokers reported that there were no rules or restrictions for smoking in the family car (7% versus 3%); whereas a larger proportion of non-smokers reported that no-one is allowed to smoke in the family car (63% versus 54%). This pattern is statistically significant (Pearson’s χ^2 = 128.449 df = 44, p< 0.001). Controlling for age, gender and social class, smokers were 2.5 times more likely than non-smokers to report that there were no smoking restrictions in their family car (OR=2.5, 95% CI 1.7-3.6, p< 0.0001).

Table 8: Smoking restrictions in home and family car, by smoking status*

Smoking in your home	Smoker		Non-smoker		Total	
	No.	%	No.	%	No.	%
No one is allowed to smoke inside or outside the house	177	22.9	3188	34.9	3365	34
No one is allowed to smoke inside, but outside is OK	302	39.0	3859	42.3	4161	42
Adults are allowed to smoke anywhere in the house	64	8.3	360	3.9	424	4.3
Adults are allowed to smoke in some rooms	86	11.1	635	7.0	721	7.3
There are no rules or restrictions on smoking	86	11.1	358	3.9	444	4.5
Something else	59	7.6	722	7.9	781	7.9
Total	**774**	**100.0**	**9122**	**100.0**	**9896**	**100.0**
Smoking in family car	**Smoker**		**Non-smoker**		**Total**	
	No.	%	No.	%	No.	%
No one is allowed to smoke	423	54.3	5861	62.7	6284	62.0
Smoking is allowed as long as the window is down	184	23.6	1363	14.6	1547	15.3
There are no rules or restrictions	58	7.4	232	2.5	290	2.9
I never drive in cars with people who smoke	35	4.5	886	9.5	921	9.1
Don’t know	79	10.1	1008	10.8	1087	10.7
Total	**779**	**100.0**	**9350**	**100.0**	**10129**	**100.0**
* = except 3rd and 4th class						

4.4 Access to tobacco products and smoking status

Those in 2nd-5th class were asked about purchasing cigarettes (Table 9). Just under a third of respondents (29%) reported that it would be easy or very easy to purchase cigarettes at most shops in the area where they lived and went to school. A larger proportion of smokers found it easy or very easy to purchase cigarettes (49% versus 26% for non-smokers). This pattern is statistically significant (Mann Whitney U test = 963262, p< 0.001). Controlling for age, gender and social class, smokers were 2.6 times more likely than non- smokers to report that they found it easy to purchase cigarettes (OR = 2.6, 95% CI 2.2-3.8, p< 0.0001).

In addition 59% reported it would be very easy or easy for them to get someone else to buy cigarettes for them. A larger proportion of smokers found it easy or very easy to get someone else to purchase cigarettes for them (77% versus 56% for non-smokers). This pattern is also statistically significant (Mann Whitney U test = 1024928.5, p< 0.001). Controlling for age, gender and social class, smokers were 2.7 times more likely than non-smokers to report that they found it easy to get someone to purchase cigarettes for them (OR=2.7, 95% CI 2.2-3.8, p<0.0001).

Table 9: Ease of purchasing cigarettes, by smoking status*

For you to buy cigarettes	Smoker		Non-smoker		Total	
	No.	%	No.	%	No.	%
Very easy or easy	307	49.3	1116	26.4	1423	29.4
Neither	136	21.8	1010	23.9	1146	23.6
Very difficult or difficult	180	28.9	2098	49.7	2278	47.0
Total	**623**	**100.0**	**4224**	**100.0**	**4847**	**100.0**
For you to get someone else to buy cigarettes for you	**Smoker**		**Non-smoker**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Very easy or easy	478	76.8	2352	56.2	2830	58.8
Neither	77	12.4	870	20.8	947	19.7
Very difficult or difficult	67	10.8	965	23.0	1032	21.5
Total	**622**	**100.0**	**4187**	**100.0**	**4809**	**100.0**

* 2nd to 5th class

5. Discussion

The detailed analysis of the HBSC survey has provided a valuable insight into smoking patterns among schoolchildren in Ireland. The key issues emerging from the study will now be discussed.

5.1 Overall patterns of smoking in children and young people

This secondary analysis reports a current smoking prevalence among children aged 9+ years of 5.9%. It includes a wider age group that reported on by the HBSC for the purposes of cross-country comparison. HBSC (2014) reports that 8% of children aged 10-17 years currently smoke. This represents a 33% decrease compared to 2010, when smoking prevalence was 12%. This figure is also low compared to the adult population (23%).[12] However, the fact that over half of schoolchildren that smoke were daily smokers, with 31% smoking over five cigarettes per day is of concern. There is also a strong possibility that even small levels of smoking will lead to addiction. Studies have found that the biological changes of tobacco dependence among adolescents can occur well before daily smoking, and for some within a day of first inhaling.[13, 14, 15, 16]

Comparisons between countries show that there is considerable variation in smoking prevalence among children and adolescents. Compared to the other 42 countries that took part in the HBSC study in 2014,[17] Ireland has the 6th lowest rate for 15 year old schoolchildren (11%). Prevalence rates between countries ranged from 3% (Armenia) to 55% (Greenland). The Global Youth Tobacco Survey of students aged 13-15 years in 61 countries[18] reported a median (past 30 day) tobacco prevalence of 10.7%. The prevalence ranged from 1.7% (Sri Lanka) to 35% (Timor-Leste).

5.2 Age and gender differences

The study found that smoking prevalence increased with age. This pattern was also experienced (for weekly smoking) in all but one of the countries that took part in the HBSC study for boys and all but three countries for girls.[19] Prevalence rates sharply increase from the age of 15 onwards. The US Surgeon General Report on tobacco use among young children notes that adolescents and young adults are particularly vulnerable to tobacco use.[4] Studies have shown that adolescents take more risks than children or adults.[20] Adolescents and adults reason about risk in similar ways.[20] However psychosocial capacity (e.g. resistance to peer influence, impulse control, emotion regulation, delay of gratification) does not fully develop until adulthood. This affects the decision making capability of adolescents. When faced with risky decisions, adolescents are more sensitive than adults to rewards, but similar or less sensitive in terms of potential costs. Initiatives targeting knowledge, attitudes, and

12 Ipsos MRBI, Healthy Ireland Survey 2016, Summary of Findings. 2016, The Stationary Office: Dublin.
13 DiFranza, J.R., et al., Development of symptoms of tobacco dependence in youths: 30 month follow up data from the DANDY study. Tobacco Control, 2002. 11(3): p. 228-235.
14 DiFranza, J.R., et al., Symptoms of tobacco dependence after brief intermittent use: The development and assessment of nicotine dependence in youthâ€“2 study. Archives of Pediatrics and Adolescent Medicine, 2007. 161(7): p. 704-710.
15 DiFranza, J.R., et al., Initial symptoms of nicotine dependence in adolescents. Tobacco Control, 2000. 9(3): p. 313-319.
16 Gervais, A., et al., Milestones in the natural course of onset of cigarette use among adolescents. Canadian Medical Association Journal, 2006. 175(3): p. 255-261.
17 The HBSC Ireland Team, Smoking behaviour among schoolchildren in Ireland, HBSC Ireland 2014, Research Factsheet 1 2016.
18 Arrazola, R., et al., Current Tobacco Smoking and Desire to Quit Smoking Among Students Aged 13-15 Years- Global Youth Tobacco Survey, 61 Countries, 2012-2015. MMWR. Morbidity and Mortality Weekly Report, 2017. 66(20): p. 533-537.
19 Inchley, J., et al., Growing up unequal: gender and socioeconomic differences in young peoples's health and well-being, Health Behaviour in School-aged Children (HBSC) Study: International Report from the 2013/2014 Survey. 2016, WHO Regional Office for Europe: Copenhagen.
20 Steinberg, L., Risk taking in adolescence: New perspectives from brain and behavioral science. Current Directions in Psychological Science, 2007. 16(2): p. 55-59.

beliefs, while a foundation to tobacco control, can be limited in effectiveness because adolescents do not lack knowledge or understanding of risky behaviour; better approaches limit opportunities for immature judgement to have harmful consequences (e.g. limiting access to tobacco products and raising the price of cigarettes). These issues should be taken into consideration when developing initiatives targeted at adolescents.

In terms of gender, there were no significant differences in smoking prevalence (8% for boys and 7% for girls). This was also the pattern across most countries that took part in the HBSC study,[19] although there were some variations. By contrast, the Global Youth Tobacco Study[6] found that smoking prevalence overall across 61 countries was higher among males (median = 14.6% compared to 7.5% for females). This suggests that broad-based initiatives designed for boys or girls would be appropriate in an Irish context.

5.3 Social Class differences

Smoking has been shown to be more prevalent among socioeconomically disadvantaged adults.[21, 22] Among children, the US Surgeon General Report found higher smoking among lower socioeconomic status youth.[4] It is also a key factor influencing smoking initiation among young people.[4, 23] This pattern was also found among Irish schoolchildren in the current study, although other reports that used subsets of the data analysed here did not find this relationship.[9] There was no consistent pattern among the other countries that took part in the HBSC study.[19] The inconsistency in terms of the relationship between social class and youth smoking has been attributed to the difficulty in assessing socioeconomic status among adolescents.[21] In the current study, social class was based on the highest reported parental occupation. In the US Surgeon General Report parental education was used as a proxy for socioeconomic status.[4] Hiscock et al note that measures such as occupation and educational attainment are not relevant to adolescents.[23] Differing definitions of smoking have also been shown to impact on the association with social class.[24] These issues should be taken into consideration when interpreting the findings.

5.4 Risky health behaviours

While smoking itself is a risk taking behaviour,[20] it has also been found that adolescent involvement in one risky behaviour is associated with involvement in others.[25, 26] Several studies have shown a significant association between tobacco use, alcohol consumption, and risky sexual activity.[27] In addition, a number of other studies have shown that tobacco use is associated with a range of problem behaviours including use of alcohol, cannabis, and hard drugs.[25, 28] These patterns are exhibited among Irish schoolchildren in the current study, with a larger proportion of smokers than non-smokers also consuming alcohol or cannabis, and having had sex.

21 Brown, T., S. Platt, and A. Amos, Equity impact of interventions and policies to reduce smoking in youth: systematic review. Tobacco Control, 2014. 23: p. e98-e105.
22 Kunst, A., K. Giskes, and J. Mackenbach, Socio-economic Inequalities in Smoking in the European Union: Applying an Equity Lens to Tobacco Control Policies: for the EU Network on Interventions to Reduce Socio-economic Inequalities in Health. 2004: Erasmus Medical Center Rotterdam.
23 Hiscock, R., et al., Socioeconomic status and smoking: a review. Annals of the New York Academy of Sciences, 2012. 1248(1): p. 107-123.
24 Sweeting, H. and P. West, Social class and smoking at age 15: the effect of different definitions of smoking. Addiction, 2001. 96(9): p. 1357-1359.
25 United States Department of Health and Human Services, Preventing tobacco use among young people: A report of the Surgeon General. 1994: US Department of Health and Human Services.
26 McAloney, K., Clustering of sex and substance use behaviors in adolescence. Substance Use and Misuse, 2015. 50(11): p. 1406-1411.
27 Coleman, C., et al., Multiple health risk behaviors in adolescents: an examination of Youth Risk Behavior Survey data. American Journal of Health Education, 2014. 45(5): p. 271-277.
28 Myers, M.G. and J.F. Kelly, Cigarette smoking among adolescents with alcohol and other drug use problems. Alcohol Research and Health, 2006. 29(3): p. 221.

Coleman et al highlight engaging in multiple risk factors is of concern as each individual risk factor increases the impact on health.[27] There is a need to consider youth initiatives designed to address multiple risk factors.

5.5 Body image and misperceptions about smoking

Adolescents can become dissatisfied with their body image due to the physical, social, and emotional changes that occur during this period.[29] Studies have shown that adolescents can initiate smoking due to the belief that it helps them to lose weight, particularly among girls.[30, 31] Okeke et al suggest that smoking is used by those with body weight concerns to control weight and to achieve a desirable body during adolescence.[32] This helps to explain the current study findings that a significantly larger proportion of those that smoked had a negative perception of their body weight, were on a diet, or were classified as being underweight or overweight. This pattern exists both for boys and girls in terms of body perception, predominantly girls in terms of being on a diet, and predominantly boys in terms of self-reported BMI. These findings highlight the need to address body image, weight concerns, and the use of smoking for weight control in developing initiatives designed to reduce smoking initiation among schoolchildren.

5.6 Smoking and poor wellbeing

For all the indicators that were employed to assess overall health and wellbeing (self-reported health, happiness with life, happiness with the way you are), unfavourable ratings were reported by a significantly larger proportion of smokers than non-smokers. Zullig et al found similar patterns in terms of life satisfaction.[33] Smoking may reduce an adolescent's life satisfaction or alternatively when an adolescent's life circumstances change, she or he may engage in risk taking behaviours such a smoking in the misperception that it will improve it. There is little evidence in the study findings to suggest that overall health and wellbeing is improved among adolescents that smoke. Indeed it has been shown that quality of life and subjective wellbeing improves among smokers that quit.[34, 35] Information about the overall impact of smoking on health and wellbeing may be helpful in counteracting perceptions often experienced among adolescents that cigarettes are enjoyable or relaxing.[36] This is important since the tobacco industry has been effective in promoting smoking through promulgating misperceptions about smoking, including its benefits in stress reduction and greater life success.

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30 French, S.A., et al., Weight concerns, dieting behavior, and smoking initiation among adolescents: a prospective study. American Journal of Public Health, 1994. 84(11): p. 1818-1820.
31 Robinson, L.A., et al., Predictors of risk for different stages of adolescent smoking in a biracial sample. Journal of Consulting and Clinical Psychology, 1997. 65(4): p. 653-662.
32 Okeke, N.L., et al., The Associations of Body Image, Anxiety, and Smoking Among Mexican-Origin Youth. Journal of Adolescent Health, 2013. 53(2): p. 209-214.
33 Zullig, K.J., et al., Relationship between perceived life satisfaction and adolescents substance abuse. Journal of Adolescent Health, 2001. 29(4): p. 279-288.
34 Piper, M.E., et al., Smoking Cessation and Quality of Life: Changes in Life Satisfaction Over Three Years Following a Quit Attempt. Annals of Behavioral Medicine, 2012. 43(2): p. 262-270.
35 Weinhold, D. and F.J. Chaloupka, Smoking status and subjective well-being. Tobacco Control, 2016. 26(2): p. 195-201.
36 Lee, W.T., et al., Relationships between Body Image, Body Mass Index, and Smoking in Korean Adolescents: Results of a Nationwide Korea Youth Risk Behavior Web-based Survey. Asian Pac J Cancer Prev, 2015. 16(15): p. 6273-8.

5.7 Health Complaints

Physical, psychological, and psychosomatic health complaints are common among adolescents.[37, 38] These have been shown to be associated with adolescent smoking. For example, studies have found that adolescent smokers experience more headaches,[39] backaches,[40] sleep disorders,[41] and symptoms of nicotine dependence (irritability, cravings, depressed mood, difficulties concentrating, restlessness).[42] This pattern was found in the current study with significantly more smokers than non-smokers experiencing all eight health complaints (that were included in the study) more than once a week. This pattern has also been reported for the US HBSC study.[41] These findings help explain the negative impact on overall health and wellbeing that was described in this analysis. Wong et al[43] suggest that some subjective health complaints reflect a lack of wellbeing and health and are antecedent to problem behaviours such as smoking. The US HBSC study[40] suggest that adolescent smoking may be a method of coping with health complaints. Informing and educating adolescents in terms of effective coping strategies to overcome a range of different health complaints may help prevent smoking initiation among adolescents. In addition, it is important to note that smoking addiction may be the cause of health complaints, an issue that has also been raised by the US HBSC study.[40] Whatever the primary reason for the association between smoking and adolescent health complaints is, improving knowledge levels among schoolchildren, parents, and teachers may help prevent smoking initiation. This should be considered when developing initiatives to reduce adolescent smoking.

5.8 Bullying and physical fights

Bullying in schools is a significant problem worldwide[44] and can have lasting long-term physical and emotional consequences.[45] It takes many forms including physical, verbal, relational (e.g. social exclusion, rumour spreading) and cyber bulling.[46] Vievo et al note that across countries approximately 20-30% of students frequently experience bullying, either as a perpetrator or as a victim.[46] This is consistent with this study which found that 28% of schoolchildren had been bullied at school in the past couple of months, with 12% being perpetrators of bullying. Those that had been bullied or had bullied others were also more likely to have been in a physical fight in the last 12 months. This pattern was also found in the US HBSC study.[47] The study findings also showed that smoking was significantly associated with bullying, both in terms of the perpetrator and the victim. Morris et al note that bullying is associated with a number of problem behaviours. In terms of smoking, they found that smoking was associated with bullying, but not for victims of bullying.[48] Earnshaw found that students who experienced more race based bullying were more likely to have initiated smoking in the previous two years.[44] They suggest that those bullied may experience more anger and less self-control, which in turn is associated with substance use such as smoking. They also note that substance and tobacco use has been shown to act as a coping mechanism for those experiencing discrimination. A study of Italian adolescents using HBSC data[49] found that bullies and victims were at an increased risk of smoking. The authors suggest that the distress from being victimised provokes emotional and behavioural disorders which leads to alcohol and tobacco use. They also state that those involved in one problem behaviour may be likely to be involved in other deviant behaviours such as substance use. Schoolchildren clearly need to be protected against the harmful effects of bullying. Earnshaw notes that studies have shown that family, friends, and teachers can enhance resilience to bullying, lessening the impact of bullying on negative outcomes.[44] They highlight the positive role of such factors (supportive family and friends, positive school experiences, and positive relationships with competent adults, feeling supported by teachers) in reducing the initiation of a wide range of health risk behaviours. Measures to prevent and build resilience to bullying should be developed and targeted at parents, teachers, and schoolchildren.

5.9 Supportive School, Family, and Peers

Having a supportive school, family and peer environment have been identified by the World Health Organisation (WHO) as key factors that help protect adolescents from health risk diseases.[50, 51] Viner et al note that supportive family, school, and peers are fundamental in terms of young people's health and helping them to reach their full potential.[52] These issues were examined in the current study which examined family and school experiences. For all measures employed, responses from those that smoked were significantly less favourable. Similar results have also been found for HBSC studies in other countries.[53, 54, 55] A number of other studies have shown the importance of supportive environments on smoking and other 'high risk' behaviours. For example Arunqachalam and Nguyen found that a positive and supportive family environment and school attachment reduced the risk of smoking, alcohol consumption, and violence.[56] Resnick et al found that parent-family and perceived school connectedness were protective against smoking and several other high risk behaviours.[57] The study findings demonstrate the important role school, family, and peers can have on smoking patterns and has implications in terms of the types of initiatives that could be considered. For example, if someone feels alienated from

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39 Milde-Busch, A., et al., Associations of Diet and Lifestyle With Headache in High-School Students: Results From a Cross-Sectional Study. Headache: The Journal of Head and Face Pain, 2010. 50(7): p. 1104-1114.
40 Botello-Harbaum, M., et al., Cigarette smoking status and recurrent subjective health complaints among United States school-aged adolescents. Child: Care, Health and Development, 2011. 37(4): p. 551-558.
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42 DiFranza, J., et al., Initial symptoms of nicotine dependence in adolescents. Tobacco Control, 2000. 9(3): p. 313-319.
43 Wong, M.M., K.J. Brower, and R.A. Zucker, Childhood sleep problems, early onset of substance use and behavioral problems in adolescence. Sleep Medicine, 2009. 10(7): p. 787-796.
44 Earnshaw, V.A., et al., Teacher Involvement as a Protective Factor from the Association between Race-Based Bullying and Smoking Initiation. Social Psychology of Education : An International Journal, 2014. 17(2): p. 197-209.
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51 World Health Organisation, Health for the World's Adolescents, A Second Chance in the Second Decade. 2014, Department of Maternal, Newborn, Child and Adolescent Health: Geneva.
52 Viner, R.M., et al., Adolescence and the social determinants of health. The Lancet, 2012. 379(9826): p. 1641-1652.
53 Lemma, P., et al., Well-being in 15-year-old adolescents: a matter of relationship with school. Journal of Public Health, 2014. 37(4): p. 573-580.
54 Pfortner, T.-K., et al., Does the association between different dimension of social capital and adolescent smoking vary by socioeconomic status? a pooled cross-national analysis. International Journal of Public Health, 2015. 60(8): p. 901-910.
55 Zaborskis, A. and D. Sirvyte, Familial determinants of current smoking among adolescents of Lithuania: a cross-sectional survey 2014. BMC Public Health, 2015. 15(1): p. 889.
56 Arunachalam, D. and D.Q.V. Nguyen, Family connectedness, school attachment, peer influence and health-compromising behaviours among young Vietnamese males. Journal of Youth Studies, 2016. 19(3): p. 287-304.
57 Resnick, M.D., et al., Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. JAMA, 1997. 278(10): p. 823-832.

school, it is unlikely that they will be receptive to school based smoking education programmes.[58] The study findings suggest however that they may be more responsive to initiatives designed to create supportive environments. Indeed this may help reinforce more specific measures that target smoking. Consideration should be given to developing education programmes (in partnership with the Department of Education and Science) that focus on building supportive relationships. Within schools this could build on the existing SPHE (Social, Personal and Health Education) programme. For teachers, it could be incorporated into on-going staff training and development, who could then develop training and information sessions for parents, particularly in DEIS (disadvantaged) schools. Existing programmes should be reviewed to establish the extent to which building supportive relationships is addressed and whether there is a need for them to be expanded. This approach could help reduce smoking prevalence among schoolchildren, in addition to other high risk behaviours.

5.10 Knowledge of Health Risks of Smoking

A key element of tobacco control policy has been to improve knowledge and awareness of the health risks of smoking.[59] Studies have shown that knowledge improvements have led to reduced smoking initiation, increased cessation and abstinence, and also help support other policy measures such as smoking restrictions and tax increases.[60] It is therefore promising that the study findings suggest that the vast majority of schoolchildren are aware of the dangers of smoking, with knowledge levels broadly similar to countries such as Canada, Australia, USA, and the UK.[61] However, the results also suggest that there are knowledge gaps in terms of specific areas of knowledge. For example, while 98% of schoolchildren agreed or strongly agreed that smoking causes cancer, only 85% agreed or strongly agreed that smoking doubles your risk of stroke. Other studies have also shown knowledge gaps in terms of health risks such as stroke and heart disease.[60, 62] This emphasises the need to improve knowledge levels in terms of all the key health risks associated with smoking, in addition to the risk of lung cancer, where high levels of awareness were found among schoolchildren in the current study. Yang et al and Dawood et al suggest that smokers may underestimate the risks of smoking in an attempt to reduce inconsistencies between their attitudes, beliefs, and behaviour (cognitive dissonance theory), and to protect themselves from worry.[60,62] Slovic notes that there is a denial of risk among adolescent smokers with a tendency for them not to see the risks associated with smoking the next cigarette or from smoking regularly for the next few years.[63] Krosnick et al in three US studies found that people think of smoking in terms of relative risk, which was underestimated both by smokers and non-smokers.[64] Perceptions of relative risk were associated with smoking status, smoking onset and smoking cessation. They suggest that future initiatives should focus on informing individuals about how much smoking increases their relative health risks (e.g. compared to non-smokers) for various undesirable health outcomes of cigarette consumption. Initiatives designed to improve knowledge levels among schoolchildren need to consider the way health risks are presented to help prevent its underestimation.

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61 Hammond, D., et al., Effectiveness of cigarette warning labels in informing smokers about the risks of smoking: findings from the International Tobacco Control (ITC) Four Country Survey. Tobacco Control, 2006. 15(suppl 3): p. iii19-iii25.
62 Dawood, O.T., et al., Knowledge and perception about health risks of cigarette smoking among Iraqi smokers. Journal of Pharmacy and Bioallied Sciences, 2016. 8(2): p. 146-151.
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64 Krosnick, J.A., et al., Perceptions of health risks of cigarette smoking: A new measure reveals widespread misunderstanding. PloS one, 2017. 12(8): p. e0182063

5.11 Warnings on Cigarette Packets

Health warnings on cigarette packs provide graphic and textual information (in Irish and English) about a range of health risks associated with smoking plus information to help people quit. The study found that these warnings are accessible to children with over two thirds of 2nd to 4th class schoolchildren having seen or looked at a cigarette pack in the last six months. It is also promising that the majority of these children had read and talked about the warnings, and three quarters of smokers had not had a cigarette on at least one occasion because of the warnings. Warnings had a significantly greater impact on smokers than non-smokers, and they would have had greater exposure to them. It has been estimated that a pack a day smoker could be exposed to these warnings more than 7000 times a year.[4] This shows the potential that warnings may have in helping encourage existing smokers to quit. In addition, as 85% who had looked at or had seen a cigarette pack in the last six months were non-smokers, it also shows the benefit of the warnings in terms of helping to prevent smoking initiation. In terms of the look of cigarette packs, over two thirds thought they looked disgusting and did not look cool while 43% thought they looked boring. At the time of the study pictorial warnings covered 45% of the back of the pack.[65] These, combined with the textual warnings, may have contributed to the overall negative perception of the look of the cigarette pack. Whilst this is promising, it must be noted that 6% thought the packs looked cool and 13% did not think they looked disgusting, with significantly more smokers expressing these beliefs. This demonstrates the need to continue efforts to ensure that cigarette packs are not attractive to schoolchildren. Since the study was undertaken, the size of pictorial warnings has increased to 65% of the front and back of the pack (May 2016),[66] along with the introduction of plain packaging (washout period for existing packs ends in September 2018).[67] It is important for this legislation to be fully implemented and enforced. These measures will hopefully reduce the appeal of cigarettes to schoolchildren.

5.12 Smoking Restrictions

Exposure to second-hand smoke (SHS) is a significant health hazard.[68] Children's bodies are still developing which makes them particularly vulnerable to SHS.[69] As smoking in the home and cars are key potential sources of exposure to SHS, the HBSC study sought information on restrictions on smoking in these locations. The study found that smoking was not allowed in over three quarters of the homes of schoolchildren and 62% of family cars. Fong et al found that 20% of homes in Ireland in 2004 did not allow smoking in the home.[70] Evans et al found that in 2005 smoking was not allowed in 50% of Irish homes and 75% of cars.[71] Kabir et al found that 15% of Irish children (aged 13-14) were exposed to smoking in cars in 2007.[72] Although studies are not directly comparable (due to differing questions and study design), the findings do indicate that there is an increasing

65 Government of Ireland, Public Health (Tobacco) (General and Combined Warnings) Regulations 2011, S.I. No 656 of 2011, Office of the Attorney General. 2011, Government of Ireland: Dublin.
66 The European Parliament and Council of the European Union, Directive 2014/40/EU of the European Parliament and of the Council of 3 Apriil 2014 on the approximation of the laws, regulations and admuinistreative provisions of the member States concerning the manufacture, presentation and sale of tobacco and related products and repealing Directive 2001/37/EC. Official Journal of the European Union, 2014. L127: p. 1-38.
67 Government of Ireland, Public Health (Standardised Packaging of Tobacco) Act 2015 (Commencement) order 2017, S.I. No. 115 of 2017. 2017: Dublin.
68 Allwright, S., et al., A Report on the Health Effects of Environmental Tobacco Smoke (ETS) in the Workplace. 2002, Health and Safety Authority, Office of Tobacco Control, .
69 U.S. Department of Health and Human Services, The health consequences of involuntary exposure to tobacco smoke, A report of the Surgeon General. 2006: Rockville, MD
70 Fong, G., Hyland, A, Borland, R , Hammond, D, Hastings, G, McNeill, A, Anderson S, Cummings, KM, Allwright, S, Mulcahy, M, Howell, F, Clancy, L, M E Thompson, ME, Connolly, G, Driezen, P, Reductions in tobacco smoke pollution and increases in support for smoke-free public places following the implementation of comprehensive smoke-free workplace legislation in the Republic of Ireland: findings from the ITC Ireland/UK Survey. Tobacco Control 2006. 15(suppl 3): p. 51-58.
71 Evans, D.S., C. Byrne, and M. Mulcahy, Smoking in the Home, Attitudes and Perceptions and the Impact of the 2004 Irish Smoking Ban. 2006, Health Service Executive: Castlebar.
72 Kabir, Z., et al., Second-hand smoke exposure in cars and respiratory health effects in children. European Respiratory Journal, 2009. 34(3): p. 629-633.

recognition over time of the dangers of SHS in homes by the majority of people living in Ireland. However there does remain scope for improvement, particularly for smoking in cars which may have increased. A number of studies of other countries overall have shown more smoking restrictions than found in the HBSC study. For example, a study of US adults in 2009/2010 found that 81% of homes and 74% of vehicles had smoke free restrictions.[73] A study of 10-11 year old children in Wales found that smoking was not allowed in 74% of homes and 89% of family cars.[74] The need to reduce SHS is also highlighted by the fact that the HBSC study found that SHS exposure was greater among children that smoke. Similar patterns have also been found in other studies.[75, 76] Kusel et al found that living in a smoking household significantly increased the risk of future regular smoking in children.[77] Smoking in vehicles is a particular concern because levels can be excessive due to vehicles primarily being enclosed spaces. Semple et al found that average exposure to air quality indicators over a typical journey where there was smoking was several times greater than indoor air quality guidelines.[78] The need to further reduce SHS exposure has been recognised by the Irish government which has banned smoking in cars where children are present (January 2016). Although enforcement may be difficult, it may help de-normalise smoking in cars and indeed homes where children are present. To help further reduce SHS exposure in homes and in vehicles, initiatives should be developed to further raise awareness of the dangers of smoking in these locations, particularly for children.

5.13 Access to Cigarettes

Since 2001, the minimum age to purchase cigarettes in Ireland is 18 years. Retailers are required by law to ask for identification when selling cigarettes. The study found that in 2014 just under a third (29%) of children in 2nd-5th class stated that it would be very easy for them to buy cigarettes. Accessibility to cigarettes is also significantly greater among schoolchildren who smoke. These findings are disappointing as youth accessibility to cigarettes is an important determinant of tobacco use.[79] Underage sales are monitored by HSE Environmental Health Services. Unpublished data on test purchases suggest that in 2016 93% of retailers are requesting identification prior to selling cigarettes. This suggests that schoolchildren may also be purchasing cigarettes from other sources. The current study found that 59% of 2nd-5th class children stated that it would be very easy or easy for them to get someone else to buy cigarettes for them. Children could be purchasing cigarettes from illegal sources, and also from other children. Hughes et al in a study of English schoolchildren found that in addition to retail outlets such as newsagents and off-licences, children also accessed cigarettes through friends, family, neighbours, and street sellers.[80] It is estimated that 10% of cigarettes are illegal (20.6 million packs).[81] Children could be accessing these cigarettes which may be easier to purchase than from retail outlets which are required to ask for proof of identification. There is a need to consider ways to reduce access to cigarettes from social networks such as friends and family, in addition to continued efforts to combat the illegal trade. This should be undertaken in conjunction with continued enforcement of the minimum age restrictions on the sale of tobacco.

73 King, B.A., S.R. Dube, and D.M. Homa, Smoke-Free Rules and Secondhand Smoke Exposure in Homes and Vehicles Among US Adults, 2009-2010. Preventing Chronic Disease, 2013. 10: p. E79.
74 Moore, G.F., et al., Prevalence of smoking restrictions and child exposure to secondhand smoke in cars and homes: a repeated cross-sectional survey of children aged 10-11 years in Wales. BMJ Open, 2014. 5(1).
75 Wakefield, M.A., et al., Effect of restrictions on smoking at home, at school, and in public places on teenage smoking: cross sectional study. BMJ, 2000. 321(7257): p. 333-337.
76 Clark, P.I., et al., Impact of Home Smoking Rules on Smoking Patterns Among Adolescents and Young Adults. Preventing Chronic Disease, 2006. 3(2): p. A41.
77 Kusel, J., B. Timm, and I. Lockhart, The impact of smoking in the home on the health outcomes of non-smoker occupants in the UK. Tobacco Induced Diseases, 2013. 11(1): p. 3.
78 Semple, S., et al., Secondhand smoke in cars: assessing children's potential exposure during typical journey conditions. Tobacco Control, 2012. 21(6): p. 578-583.
79 Doubeni, C.A., et al., Perceived Accessibility as a Predictor of Youth Smoking. The Annals of Family Medicine, 2008. 6(4): p. 323-330.
80 Hughes, S.K., et al., Smoking behaviours, access to cigarettes and relationships with alcohol in 15- and 16-year-old schoolchildren. European Journal of Public Health, 2010. 21(1): p. 8-14.
81 Revenue Commissioners, Ipsos MRBI, and National Tobacco Control Office, Illegal tobacco products Research Surveys 2016. April 2017.

6. Conclusions

Progress has been made in Ireland in preventing smoking initiation in children and young people. This is positive, because vulnerability to initiation and to addiction is high in this group, and sets children and young people up for significant lifetime exposure to the harmful effects of smoking, the single biggest burden on public health. The government has made a welcome commitment in Ireland to bring the tobacco epidemic to an endgame through Tobacco Free Ireland. Continuing to focus on initiation prevention will be critical to success.

Through identifying demographic factors independently associated with smoking, it will enable us to take a more focussed approached to the problem.

Critically, this report develops a clear and stark picture of the various challenges faced by children who smoke: increased likelihood of engaging in other risky behaviours; poorer health and wellbeing, including experience of symptoms readily identifiable as being nicotine-related; and more difficult relationships with parents, peers and school. While the role of smoking in developing these challenges may be debated, the cause for concern is plain to see and requires a broad-based response to these children's needs, which includes tackling their smoking in conjunction with wider supports.

Positively, the report documents the effectiveness of various tobacco control measures in preventing smoking initiation in youth. However, it also describes scope for improvement since, despite progress, many children and young people continue to be able to access tobacco like any other retail product.

There is simply no better way to secure good health in the future than to prevent children and young people from smoking today. While we need to work harder, to achieve a Tobacco Free Ireland we also need to work smarter, making best use of available research and information to reinforce our grip on this complex and evolving problem. Making best use of existing information through secondary analysis of large datasets is, as demonstrated throughout this report, a good starting place. This report informs and supports the HSE Tobacco Free Ireland Programme priorities in the short and medium term for tackling youth smoking. We are pleased to share these results with partners for their consideration and hope that the discussion it generates will enable us to build broad-based action for a Tobacco Free Ireland.

7. Appendix

Figure A: Happy with the way you are in last week

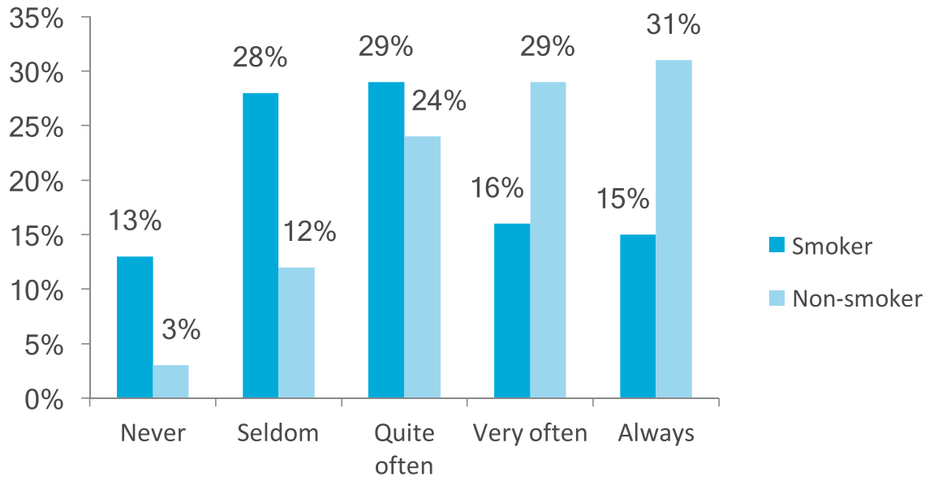


Figure B: Proportion strongly agree or agree to statements about school, by smoking status

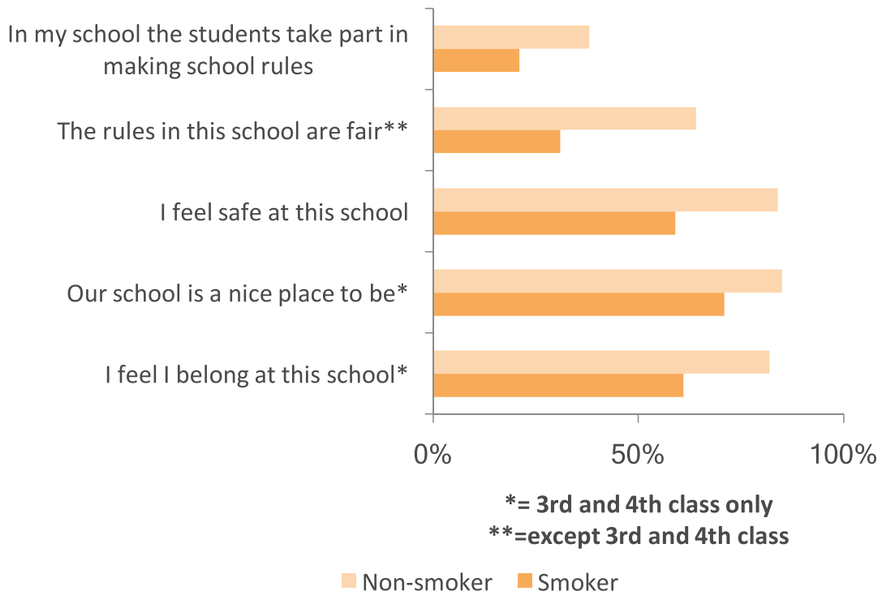


Figure C: Proportion strongly agree or agree to statements about teachers in school, by smoking status

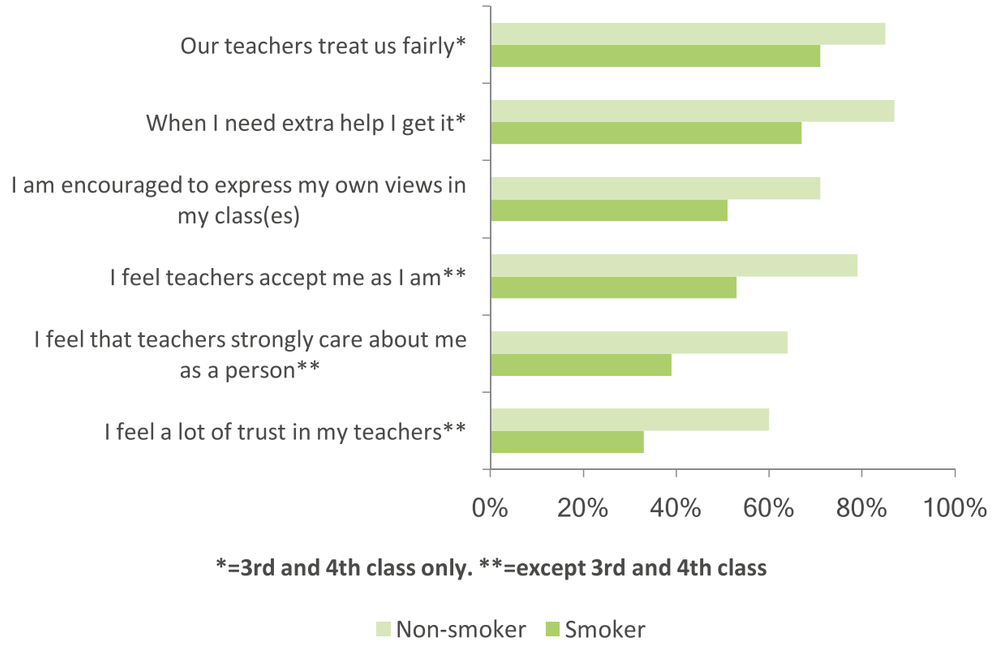
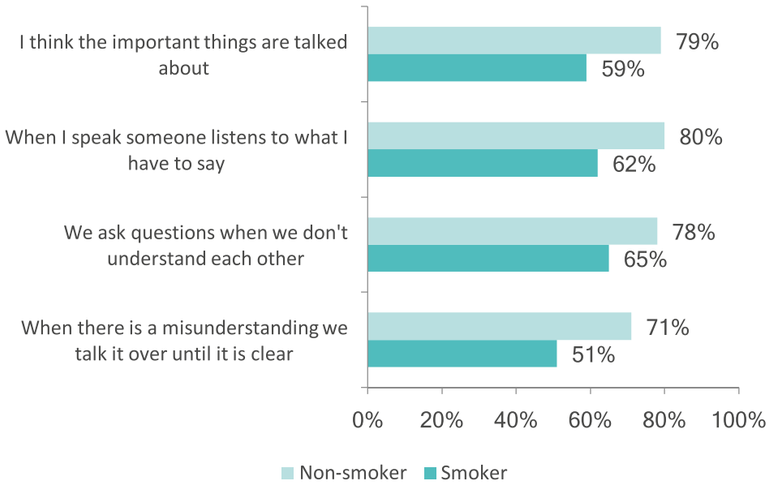


Figure D: Proportion strongly agree or agree to statements about fellow students, by smoking status

Figure E: Proportion strongly agree or agree to statements about family communication by smoking status



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