What Are the Effects of Tobacco Policies on Vulnerable Populations?

A Better Practices Review

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ABSTRACT

Background: While comprehensive tobacco policies have reduced the prevalence of smoking in Canada, some groups remain vulnerable to tobacco use and display high rates of smoking. This article reviews three types of tobacco policies – tax and price, smoking location restrictions and sales restrictions – and examines the consequences for Aboriginal people, youth and low-income people.

Methods: A better practices review model was used to assess the strength of studies published between 1990 and 2004 that examined the effects of these tobacco policies on the three vulnerable populations of interest. A total of 72 studies were assessed and 42 judged medium or high strength. A gender-based and diversity analysis was applied to assess the differential impacts on females and males and/or diverse characteristics within these populations. Intended and unintended consequences were examined.

Findings: Few studies assessed the potential or differential effects of tobacco policies on the three selected populations. In these, it was difficult to disentangle the effects of each policy in a comprehensive tobacco control environment, and there is need for improved indicators and greater attention to sex and gender analysis.

Conclusions: Research is required to measure the intended and unintended impacts of tobacco policies on populations vulnerable to tobacco use. There are problems in assessing these studies that could be resolved with more precise indicator development. An equity-based framework for assessing the effects of tobacco policies is needed that is conceptually linked to health determinants and inequities. The article concludes with a set of recommendations for research, evaluation, policy and ethics arising from this review.

MeSH Terms: Tobacco; policy; gender; low-income population; adolescent; Indigenous population

La traduction du résumé se trouve à la fin de l'article.

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Comprehensive tobacco control policies have been successful in reducing tobacco use in many developed countries, including Canada. These policies usually involve population-level implementation and analysis, and include policies that limit advertising, increase price and tax, establish smoking restrictions, and 'denormalize' tobacco use. The success of this approach has been measured in population-based statistics, reflecting overall encouraging trends in initiation, maintenance and cessation. From 1965 to 2004, the percentage of Canadians who smoke has declined from about 50% to 20%, reflecting the impact of increased tobacco control and the comprehensive approach.^{1,2}

However, in Canada and many developed countries, smoking is now clearly associated with disadvantage and inequity.³⁻⁵ Although 20% of the Canadian population smokes,² certain sub-populations have higher prevalence, including Aboriginals (70%),⁶ low-income people (23%),⁷ and homeless people (69-75%).⁸⁻¹⁰ These patterns are also gendered, with females and males exhibiting differences in tobacco use. In addition, tobacco advertising received via US media sources increasingly targets vulnerable groups (youth, women, ethnocultural groups, gays and lesbians, etc.).

Comprehensive tobacco control policies clearly improve overall population health, including that of vulnerable groups. However, the design and implementation of broad-based policies do not accommodate inequities or adjust according to disadvantage. Further, given the limited research into the differential impacts of tobacco interventions among disadvantaged people,¹¹ there is little evidence on which to base future development of tobacco control policies.

Populations vulnerable to tobacco use

While the conceptual frameworks underlying health inequalities research remain underdeveloped,¹² "vulnerable" is a term reflecting a range of elements of social and economic life that contribute to or indicate risk of poor health. It reflects concepts such as disadvantage, inequity and social exclusion and is exacerbated by aspects of social position and the social determinants of health. 'Social position' refers to the

multiple locations that an individual may occupy, reflecting the interlocking structures of inequality.¹² In this article, vulnerable groups are those whose life circumstances or group membership reflect inequities or norms that make them more likely to use tobacco and less likely to successfully quit.

These concerns are forefront in global tobacco control. In the preamble to the Framework Convention on Tobacco Control (FCTC),¹³ the authors were “deeply concerned” about indigenous peoples’ use of tobacco, and “alarmed” about the increases in girls’ and women’s use, gender-specific risks, and the escalation in smoking among children and youth. These concerns permeate Article 4 of the FCTC, which states that the participation of indigenous peoples, the recognition of gender-specific risks, and the engagement of civil society are key principles in developing appropriate tobacco control policies.

For these reasons, it is important to consider the impact of tobacco use programs and policies on vulnerable and disadvantaged groups. In this article, derived from a larger report by Greaves et al.,¹⁴ we assess the effectiveness of three aspects of tobacco control policy (sales restrictions, taxation and pricing, restrictions on location of smoking) and the extent to which these policies have differential impacts on three vulnerable populations of female and male smokers (youth, Aboriginal peoples and people living on low income). In so doing, we acknowledge multiple social locations that individuals may occupy.

METHODS

A comprehensive review of the literature was undertaken to identify studies on the effectiveness of three tobacco control policies: taxation of tobacco products, restrictions on sales, and restrictions on locations where smoking is permitted. A number of databases (PubMed, PsychInfo, Women’s Studies International, LexusNexis, Ingenta, ProQuest, Health Canada) were used to identify empirical literature published (or conducted, if unpublished) between 1990 to July 2004. It was not possible to determine with certainty whether funding had been received from the tobacco industry to carry out any of the research included in this review. Although many experimental

articles explicitly stated that they had *not* received support from these sources, it is not known whether other published research could have been industry-funded. Inclusion criteria were: i) exploration of the impact of at least one of the three aspects of tobacco control policy of interest; ii) a test of one of the outcome measures of interest: tobacco initiation or cessation, prevalence of smoking, number of tobacco sales, number of quit attempts, intent to quit, stage of change; and iii) the study population included either the general population, or one of the vulnerable populations of interest: youth, Aboriginal peoples, people living on low income. The review focussed primarily on evidence from Canada, United States, Australia and United Kingdom.

A Better Practices model¹⁵ was applied to systematically assess evidence of the effectiveness of each policy. Each study was independently evaluated by two of the researchers, using criteria such as suitable control group(s), appropriate measures, outcomes, statistical analyses, attrition rates, and sources of bias to assign a study score. Each study was classified by study design, with each design representing a different strength as a source of evidence (see Appendix). Once classified, each study was further rated as high, medium, or low level strength. To determine the level of strength, each study score was divided by the highest possible score for that design and multiplied by 100 to calculate a percentage (i.e., Study Score/Maximum Score x 100). Level of strength was classified as follows: High >85%; Medium 70-84%; Low <69%. These ratings were then discussed and agreed upon within the larger team.

Gender-based analysis (GBA)¹⁶ was carried out in order to gain broader understanding of the impact of tobacco control policies. GBA is a process whereby the differential impacts of policies, programs, legislation, and research are assessed for women and men, girls and boys.¹⁶ By doing GBA, social processes are considered, which facilitates policy responses that are both informed and equitable. Diversity analysis is a component of GBA that goes beyond gender to examine differences in socio-economic status, ethnicity, education, physical ability, sexual orientation, culture, age, and geographical location.¹⁷

This article focusses on areas where there is a dearth of research or conflicting results, and explores variations between studies. Where there were multiple studies that presented similar findings or well-established results, the article does not go into detail.

KEY FINDINGS

A total of 72 articles were reviewed and 42 were assessed as medium to high strength (see Appendix).

Sales restrictions

Twenty-four studies of the effects of sales restrictions were reviewed, of which thirteen were rated as medium or high. Sales restrictions, stipulated by Canada’s *Tobacco Act*, pertain to minimum age of requirement, point-of-sale advertising and health warnings, and are generally aimed at youth. Some provinces have additional restrictions, addressing issues such as fines for selling to minors, industry signage and promotions, and licencing of tobacco retailers. The Federal Tobacco Control Strategy aims to have 80% merchant compliance rate and Health Canada conducts annual evaluations. Sales restrictions were found to be an effective tobacco control measure in reducing the number of successful purchase attempts by minors when minimum age requirements were enforced.¹⁸⁻²⁴ In addition, these restrictions appear to slow the progression from being an occasional to an established smoker among those youth who do use cigarettes.²⁵ However, there is also evidence to suggest that these restrictions do not affect the general availability (i.e., non-commercial sources) of cigarettes for adolescents who smoke, and thus are not likely to affect the overall prevalence of teen tobacco use.^{19,26} Continuous enforcement is required to ensure high rates of retailer compliance.²²

It was difficult to determine any differential impacts of sales restrictions on diverse groups of adolescents due to study design and paucity of data. One exception is a study by Klonoff and colleagues²⁷ who found that Latino children were more likely to be sold cigarettes than White children, but older Black children of both sexes were sold cigarettes most often. In a study by Castrucci et al., girls were 58% more likely to be able to acquire cigarettes

TABLE I

Problems in Assessing Tobacco Policy

Problematic Area	Issue	Example
Disentangling the Policies	Comprehensive policies are implemented concurrently at the municipal, provincial, and federal levels, making it difficult to draw out their precise effects.	Smoking denormalization is targeted with smoking restrictions in workplaces and public spaces, and through anti-smoking advertisements.
Lack of Methodological "Gold Standard"	The lack of a "gold standard" in evaluating the impacts of policies makes the development of a uniform rating system quite difficult and policies directed at broad populations difficult to assess.	Study samples at the school or community level cannot be randomized to assess sales restrictions or location restrictions for adolescents.
Study Outcome Indicators	Selecting appropriate indicators to assess the effectiveness of tobacco policy is a challenge.	Is "number of successful purchase attempts" an accurate indicator of amount purchased or representative of teen smoking prevalence? Is "real price" a more realistic indicator in assessing tax and price effects?
Sex-Disaggregation and Gender-based and Diversity Analysis	There is little or no differentiation by sex and gender of the impact of current Canadian tobacco policies.	Sales restrictions – are there differences based on ethnicity, age, sex, urban/rural status?
Unintended Consequences of Policy	Once a study and policy is contextualized in the broader literature, other potential unintended consequences may emerge.	School and work smoking bans may protect students and teachers from ETS and assist in denormalizing smoking; however, students and women may have their safety compromised in leaving smoke-free areas to smoke.

by non-commercial sources than boys.²⁸ How such restrictions may differentially affect Aboriginal youth is unknown.

Location restrictions

Thirty studies of location restrictions (in workplaces, homes, schools) were reviewed, of which 19 were rated as medium or high. Notably, there is minimal literature concerning the impact of location restrictions on the three vulnerable populations of interest. However, studies suggest that complete workplace smoking bans have a moderate effect on smoking prevalence and partial bans have a smaller effect.²⁹⁻³¹ There is promising evidence that workplace bans may be associated with decreased smoking initiation among teens.³² Self-imposed smoking bans in the home for adult smokers may have a protective effect on smoking initiation and maintenance among adolescents,^{30,32,33} particularly girls.³⁴ Adults also benefit from home bans by smoking fewer cigarettes per day and showing a greater interest in quitting.³⁵ Any differential impacts on low-income earners and Aboriginal peoples remain largely unexamined.

Five articles on school smoking bans met our inclusion criteria and two were rated as medium (the rest rated as low). Results were inconsistent. Wakefield et al.³³ reported that bans lead to lower smoking prevalence among high-school students, yet Lewit et al.³⁶ found no significant impact.

Many unintended consequences of these policies have been identified, such as increased social stigma and increased visibility of smoking.³⁷⁻⁴⁰

Policy researchers have not considered gender and diversity, although these factors influence use of public and private space. For example, low-income women living in high-density areas may have limited access to safe outdoor space for smoking. Unintended consequences have been ignored, including increased social division between smokers and non-smokers⁴¹⁻⁴⁵ and the phenomenon of "compensatory" smoking after leaving a restricted area.⁴⁶

Pricing and taxation

Eighteen studies on pricing and taxation were reviewed, in which ten were rated as medium or high. There is clear evidence that higher price, via increased taxes, leads to substantial reductions in smoking.⁴⁷ In Canada, tobacco taxation was decreased in 1994 in response to increased cigarette smuggling. While the prevalence of smoking continued to decline in spite of the decreased tax, those provinces with higher provincial tax on cigarettes saw a higher rate of decline.⁴⁸ However, studies suggest that increases in tobacco taxes have differing levels of effectiveness depending on the subpopulation under consideration. Among adolescents, tax increases reduce smoking initiation and cigarette consumption, but do not necessarily increase rate of cessation.^{30,36,49-57} There is inconclusive evi-

dence as to whether women or men are more sensitive to cigarette tax increases. Some studies suggest that women are more responsive to increased price and taxation,^{58,59} while a Canadian study found that women and men are equally responsive.⁶⁰

There is little evidence about how smoking behaviour among Aboriginal peoples might be affected by tax increases. Tobacco is sold tax-free on-reserve; however, Aboriginal peoples living off-reserve do pay tobacco taxes.

DISCUSSION

There are several problems in assessing the effects of tobacco policy (see Table I). First, it is difficult to draw out the precise effects of each policy as they are often concurrently (and variably) implemented at various levels of government according to social and legal environments across jurisdictions. Second, there is a lack of a "gold standard" for evaluating the effectiveness of policy and appropriate study design varies with the type of policy. Third, in several studies, we questioned whether appropriate indicators were used to assess the policy's effectiveness. Fourth, many researchers failed to report sex-disaggregated data or perform GBA, thus making it impossible to determine how the outcome(s) may differ for women and men. Finally, the majority of the studies fail to consider the unintended consequences of tobacco con-

trol policy. For example, sales restrictions deter youth access to cigarettes via commercial but not social venues. Location restrictions may contribute to higher visibility or delayed compensatory smoking. Similarly, tobacco tax and price increases may affect household expenditures in low-income families. While these issues do not diminish the broad-based population health effects of tobacco policies, they are important for directing further research and policy that will address the impact on vulnerable populations.

CONCLUSION

Addressing the impact of tobacco policy on vulnerable populations in Canada is urgently required and should be a factor in designing future research, evaluation, policy and interventions. Future tobacco control policies would be enhanced by an understanding of the structural variables and pressures and how tobacco use is related to overriding health inequities and determinants. These approaches would benefit from engagement with smokers and vulnerable communities and should be informed by a social justice and/or ethical framework.⁶¹ This shift must include a gender and diversity framework to fully investigate and understand the structural and psychosocial issues connected to ongoing tobacco use.

Table II contains recommendations from this review of tobacco policy and vulnerable populations, addressing the difficulties of accurately assessing separate policies in a comprehensive tobacco policy environment, as well as suggesting better practices in measuring and evaluating policy with respect to vulnerable populations. While information and research from other countries is vital to our understanding of the trends and effects regarding tobacco use on vulnerable populations, evolving better practices in Canada must rest on assessing national research and analysis. Devising and evaluating specific better practices in tobacco programs and policies will require ongoing adaptation of these data.⁶²

REFERENCES

1. Health Canada. The national strategy: Moving forward. The 2003 progress report on tobacco control. Ottawa, ON: Ministry of Health, 2003.

TABLE II
Recommendations

Research

1. Develop better measures of the real price of cigarettes, taking into account inflation adjustments and more precise assessments of discretionary and disposable income.
2. Develop more accurate link between measuring sales and amount/numbers of tobacco units and estimating prevalence in youth.
3. Develop measures to differentiate traditional and non-traditional tobacco use among Aboriginal peoples.
4. Encourage research designs and approaches that will assist in disentangling the effects of tobacco policies.
5. Develop Requests for Applications (RFAs) from funding agencies to elicit more research on the full spectrum of effects of tobacco policies on vulnerable populations.
6. Develop an Aboriginal-specific policy research agenda on tobacco use.
7. Increase the inclusion of gender and diversity variables in all research on tobacco policy.
8. Expand existing surveillance data regarding tobacco use among ethnocultural groups in Canada.
9. Enhance quantitative analyses with qualitative investigations in all tobacco policy areas.
10. Develop standards for assessing research designs used to investigate the effects of policies in tobacco control.

Evaluation

1. Develop an evaluation framework for tobacco policies that includes measures of equity and places tobacco policy in a social justice framework.
2. Develop new and additional evaluation measures to reflect the concepts of latent and unintended consequences of tobacco policy (such as social access, social stigma, compensatory smoking, etc).
3. Develop new measures of the impact of tobacco policies on the broad determinants of health (such as income, housing, etc).

Policy

1. Assess the impact of the current tailored price and tax policy affecting Aboriginal people on reserve communities and Aboriginal people and non-Aboriginal people off reserve.
2. Assess the impact of the current policies regarding sales to minors with respect to social access.
3. Assess the feasibility of developing tailored tax and price policies for groups such as low-income smokers that might include offsetting high prices with vouchers for food and nicotine replacement therapies.
4. Investigate the issues related to earmarking tax revenue for health promotion efforts geared to vulnerable populations.

Policy Development

1. Engage with specific communities (Aboriginal, poverty advocacy, women, youth advocacy, etc.) regarding the appropriateness and efficacy of current tobacco control policies and the further refinement of same.
2. Develop community collaboration models that include smokers in assessing and developing tobacco policies and their implementation.

Ethics

1. Develop an ethical framework for the Canadian tobacco control program that recognizes both smokers and non-smokers as beneficiaries of tobacco policy.
2. Institute an ongoing requirement for comprehensive gender-based analysis and a diversity analysis of all future tobacco control program and policy development.

2. CTUMS. Canadian tobacco use monitoring survey: Summary of results for 2004. Ottawa: Health Canada: Tobacco Control Programme, 2004.
3. Barbeau EM, Leavy-Sperounis A, Balbach ED. Smoking, social class, and gender: What can public health learn from the tobacco industry about disparities in smoking? *Tobacco Control* 2004;13(2):115-20.
4. Graham H, Der G. Patterns and predictors of tobacco consumption among women. *Health Educ Res* 1999;14(5):611-18.
5. Sorensen G, Barbeau E, Hunt MK, Emmons K. Reducing social disparities in tobacco use: A social-contextual model for reducing tobacco use among blue-collar workers. *Am J Public Health* 2004;94(2):230-39.
6. Health Canada. 2000-2002 Report on tobacco control. On target. An update. Ottawa: Ministry of Health, 2003.
7. CTUMS. Canadian tobacco use monitoring survey: Summary of results for 2003. Ottawa: Health Canada: Tobacco Control Programme, 2003.
8. Connor SE, Cook RL, Herbert MI, Neal SM, Williams JT. Smoking cessation in a homeless population: There is a will, but is there a way? *J Gen Intern Med* 2002;17:369-72.
9. Sachs-Ericsson N, Wise E, Debrody CP, Paniucki HB. Health problems and service utilization in the homeless. *J Health Care for the Poor and Underserved* 1998;10(4):443-52.
10. Snyder LD, Eisner MD. Obstructive lung disease among the urban homeless. *CHEST* 2004;125:1719-25.
11. Ogilvie D, Petticrew M. Reducing social inequalities in smoking: Can evidence inform policy? A pilot study. *Tobacco Control* 2004;13(2):129-31.
12. Graham H, Kelly MP. Health inequalities: Concepts, frameworks, and policy. Briefing Paper. London: NHS, Health Development Agency, 2004.
13. World Health Organization. WHO framework convention on tobacco control. Geneva: WHO, 2003.
14. Greaves L, Johnson J, Bottorff J, Kirkland S, Jategaonkar N, McGowan M, et al. *Reducing Harm: A Better Practices Review of Tobacco Policy and Vulnerable Populations*. Vancouver, BC: BC Centre of Excellence for Women's Health, 2004.
15. CTCRI. Better solutions for complex problems: Description of a model to support better practices for health. Ottawa: CTCRI, 2002.
16. Status of Women Canada. Gender-based analysis: A guide for policy-making. Ottawa: Status of Women Canada, 1996 (revised 1998). Available

Appendix

Rating System and Number of Articles Retrieved

Maximum Possible Score for Each Research Design

Design	Maximum Score
Randomized Control Trial or Control Trial	14
Longitudinal Design	12
Cross-sectional Design	11
Cross-sectional Comparison Design	10 (after quality is adjusted)

Number of Rated Articles by Policy and Strength of Evidence

Strength of Evidence Rating	Policy		
	Sales Restrictions	Location Restrictions	Pricing and Taxation
Low	11	11	8
Medium and High	13	19	10
Total	24	30	18

RÉSUMÉ

Contexte : Les politiques antitabac intégrées ont réduit la prévalence du tabagisme au Canada, mais certains groupes demeurent vulnérables et affichent des taux de tabagisme élevés. Notre article examine trois types de politiques antitabac (les politiques fiscales et de prix, les politiques de restriction des lieux où il est permis de fumer, et les politiques de restriction des ventes de tabac) et leurs conséquences pour les Autochtones, les jeunes et les personnes à faible revenu.

Méthode : Nous avons utilisé un modèle d'examen des pratiques exemplaires pour évaluer la qualité des études publiées entre 1990 et 2004 portant sur les effets de ces politiques antitabac sur les trois populations vulnérables qui nous intéressent. En tout, nous avons évalué 72 études, dont 42 ont été jugées de qualité moyenne ou bonne. Au moyen d'une analyse de la diversité et de l'égalité, nous avons évalué les répercussions différentes sur les femmes et les hommes et/ou les diverses caractéristiques dans ces populations. Les conséquences prévues et imprévues ont été examinées.

Constatations : Peu d'études évaluent les effets possibles ou différents des politiques antitabac sur les trois populations sélectionnées. Dans ces études, il a été difficile de démêler les effets de chaque politique dans le cadre général de la lutte contre le tabagisme; de plus, il faudrait trouver de meilleurs indicateurs et accorder plus d'attention à l'analyse selon le sexe et à celle des rapports entre les sexes.

Conclusions : Il faudrait pousser la recherche pour mesurer les répercussions prévues et imprévues des politiques antitabac sur les populations vulnérables au tabagisme. Les problèmes d'évaluation des études publiées pourraient être résolus avec des indicateurs plus précis. Il faudrait un cadre d'évaluation des effets des politiques antitabac qui soit fondé sur l'égalité et qui soit conceptuellement lié aux déterminants de la santé et aux inégalités sur le plan de la santé. À la fin de l'article, nous formulons un ensemble de recommandations pour la recherche, l'évaluation, les politiques et les questions éthiques découlant de notre examen.

- online at: http://www.swc-cfc.gc.ca/pubs/gbguide/index_e.html (Accessed May 6, 2003).
- Health Canada. Exploring concepts of gender and health. Ottawa: Minister of Public Works and Government Services Canada, 2003.
 - Gemson DH, Moats HL, Watkins BX, Ganz ML, Robinson S, Heaton E. Laying down the law: Reducing illegal tobacco sales to minors in central Harlem. *Am J Public Health* 1998;88(6):936-39.
 - Jason LA, Ji PY, Anes MD, Birkhead SH. Active enforcement of cigarette control laws in the prevention of cigarette sales to minors. *JAMA* 1991;266(22):3159-61.
 - Jason LA, Billows WD, Schnopp-Wyatt DL, King C. Long-term findings from Woodridge in reducing illegal cigarette sales to older minors. *Evaluation & the Health Professions* 1996;19(1):3-13.
 - Jason L, Billows W, Schnopp-Wyatt D, King C. Reducing the illegal sales of cigarettes to minors: Analysis of alternative enforcement schedules. *J Appl Behav Anal* 1996;29(3):333-44.
 - Jason LA, Berk M, Schnopp-Wyatt DL, Talbot B. Effects of enforcement of youth access laws on smoking prevalence. *Am J Community Psychol* 1999;27(2):143-60.
 - Landrine H, Klonoff EA, Reina-Patton A. Minors' access to tobacco before and after the California STAKE Act. *Tobacco Control* 2000;9(Suppl 2):II15-17.
 - Ma GX, Shive S, Tracy M. The effects of licensing and inspection enforcement to reduce tobacco sales to minors in Greater Philadelphia, 1994-1998. *Addict Behav* 2001;26(5):677-87.
 - Rigotti NA, DiFranza JR, Chang Y, Tisdale T, Kemp B, Singer DE. The effect of enforcing tobacco-sales laws on adolescents' access to tobacco and smoking behavior. *N Engl J Med* 1997;337(15):1044-51.
 - DiFranza JR, Coleman M. Sources of tobacco for youth communities with strong enforcement of youth access laws. *Tobacco Control* 2001;10(4):323-28.
 - Klonoff EA, Landrine H, Alcaraz R. An experimental analysis of sociocultural variables in sales of cigarettes to minors. *Am J Public Health* 1997;87(5):823-26.
 - Castrucci BC, Gerlach KK, Kaufman NJ, Orleans CT. Adolescents' acquisition of cigarettes through noncommercial sources. *J Adolesc Health* 2002;31(4):322-26.
 - Farrelly MC, Evans WN, Sfeekas AE. The impact of workplace smoking bans: Results from a national survey. *Tobacco Control* 1999;8(3):272-77.
 - Gilpin EA, Stillman FA, Hartman AM, Gibson JT, Pierce JP. Index for US state tobacco control initial outcomes. *Am J Epidemiol* 2000;152(8):727-38.
 - Jeffery RW, Kelder SH, Forster JL, French SA, Lando HA, Baxter JE. Restrictive smoking policies in the workplace: Effects on smoking prevalence and cigarette consumption. *Prev Med* 1994;23(1):78-82.
 - Farkas AJ, Gilpin EA, White MM, Pierce JP. Association between household and workplace smoking restrictions and adolescent smoking. *JAMA* 2000;284(6):717-22.
 - Wakefield MA, Chaloupka FJ, Kaufman NJ, Orleans CT, Barker DC, Ruel EE. Effect of restrictions on smoking at home, at school, and in public places on teenage smoking: Cross sectional study. *BMJ* 2000;321(7257):333-37.
 - Proescholdbell RJ, Chassin L, MacKinnon DP. Home smoking restrictions and adolescent smoking. *Nicotine & Tobacco Res* 2000;2(2):159-67.
 - Norman GJ, Ribisl KM, Howard-Pitney B, Howard KA. Smoking bans in the home and car: Do those who really need them have them? *Prev Med* 1999;29(6 Pt 1):581-89.
 - Lewit EM, Hyland A, Kerrebrock N, Cummings KM. Price, public policy, and smoking in young people. *Tobacco Control* 1997;6(Suppl 2):S17-S24.
 - Ashley MJ, Northrup DA, Ferrence R. The Ontario ban on smoking on school property: Issues and challenges in enforcement. *Can J Public Health* 1998;89(4):229-32.
 - Northrup DA, Ashley MJ, Ferrence R. The Ontario ban on smoking on school property: Perceived impact on smoking. *Can J Public Health* 1998;89(4):224-28.
 - Pickett W, Northrup DA, Ashley MJ. Factors influencing implementation of the legislated smoking ban on school property in Ontario. *Prev Med* 1999;29(3):157-64.
 - Tubman JG, Soza Vento R. Principal and teacher reports of strategies to enforce anti-tobacco policies in Florida middle and high schools. *J School Health* 2001;71(6):229-35.
 - Farkas AJ, Gilpin EA, Distefan JM, Pierce JP. The effects of household and workplace smoking restrictions on quitting behaviours. *Tobacco Control* 1999;8(3):261-65.
 - Bottoff JL, Kalaw C, Johnson JL, Chambers N, Stewart M, Greaves L, Kelly M. Unravelling smoking ties: How tobacco use is imbedded in couple interactions. *Research in Nursing and Health* 2005;28(4):316-28.
 - Greaves L. *Smoke Screen: Women, Smoking and Social Control*. Halifax, NS: Fernwood; UK: Scarlet Press, 1996.
 - Johnson CC, Myers L, Webber LS, Boris NW. Profiles of the adolescent smoker: Models of tobacco use among 9th grade high school students: Acadiana Coalition of Teens against Tobacco (ACTT). *Prev Med* 2004;39(3):551-58.
 - Alexander C, Piazza M, Mekos D, Valente T. Peers, schools, and adolescent cigarette smoking. *J Adolesc Health* 2001;29(1):22-30.
 - Chapman S, Haddad S, Sindhusake D. Do workplace smoking bans cause smokers to smoke "harder"? Results from a naturalistic observational study. *Addiction* 1997;92(5):607-10.
 - Chaloupka FJ. The impact of proposed cigarette price increases. *Health Science Analysis Project*, 1998 (Policy Analysis No. 9), 1-18.
 - Hamilton VH, Levinton C, St-Pierre Y, Grimard F. The effect of tobacco tax cuts on cigarette smoking in Canada. *CMAJ* 1997;156(2):187-91.
 - Biener L, Aseltine RH, Jr., Cohen B, Anderka M. Reactions of adult and teenaged smokers to the Massachusetts tobacco tax. *Am J Public Health* 1998;88(9):1389-91.

50. Biener L, Harris JE, Hamilton W. Impact of the Massachusetts tobacco control programme: Population based trend analysis. *BMJ* 2000;321(7257):351-54.
51. Chaloupka FJ, Wechsler H. Price, tobacco control policies and smoking among young adults. *J Health Economics* 1997;16(3):359-73.
52. Dedobbeleer N, Beland FT, Contandriopoulos AP, Adrian M. Gender and the social context of smoking behaviour. *Soc Sci Med* 2004;58(1):1-12.
53. Farrelly MC, Pechacek T, Chaloupka F. The impact of tobacco control program expenditures on aggregate cigarette sales: 1981-2000. *J Health Economics* 2003;22(5):843.
54. Glied S. Youth tobacco control: Reconciling theory and empirical evidence. *J Health Economics* 2002;21(1):117-35.
55. Laugesen M, Swinburn B. New Zealand's tobacco control programme 1985-1998. *Tobacco Control* 2000;9(2):155-62.
56. Tauras JA, O'Malley PM, Johnston LD. Effects of price and access laws on teenage smoking initiation: A national longitudinal analysis. *ImpacTeen and Youth, Education & Society* 2001;44.
57. Wasserman J, Manning WG, Newhouse JP, Winkler JD. The effects of excise taxes and regulations on cigarette smoking. *J Health Economics* 1991;10(1):43-64.
58. Borren P, Sutton M. Are increases in cigarette taxation regressive? *Health Economics* 1992;1(4):245-53.
59. Farrelly MC, Bray JW, Pechacek T, Woollery T. Response by adults to increases in cigarette prices by sociodemographic characteristics. *Southern Economic J* 2001;68(1):156-65.
60. Stephens T, Pederson LL, Koval JJ, Macnab J. Comprehensive tobacco control policies and the smoking behaviour of Canadian adults. *Tobacco Control* 2001;10(4):317-22.
61. Wilson N, Thomson G. Tobacco taxation and public health: Ethical problems, policy responses. *Soc Sci Med* 2005;61:649-59.
62. Manske S, Maule C, O'Connor S, Lovato C, Harvey D. A call for action to support best practices in evaluation of comprehensive tobacco control evaluation strategies. *Chron Dis Can* 2003;24(1):32-37.

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Book Reviews/Recension

Implementation Research: A Synthesis of the Literature

Fixsen D, Naoom S, Blase KA, Friedman RM, Wallace F. *University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network. (FMHI Publication #231). 2005*

<http://nirn.fmhi.usf.edu/resources/publications/Monograph/>

Despite significant advances in evidence-based practice, researchers, policy-makers and clinicians alike remain bedeviled by the problems of turning the evidence into sustainable programs. It is all very well to say that the evidence has been gathered in, but how can it be implemented? The synthesis of the implementation literature by Fixsen and colleagues (available at the web address above) is a timely contribution to help address this important and neglected question.

The review is methodologically sound and commendably inclusive. Its scope and multidisciplinary nature are distinct strengths. The authors reviewed almost 2,000 citations from nine health and non-health databases. From this initial pool, over 700 articles representing an eclectic mix of disciplines (as far ranging as agriculture and engineering) were included in a comprehensive content analysis and synthesis. The authors recognize, correctly in our view, the significant commonalities across disciplines in turning research into practice, and the potential for integrated and cross-cutting service delivery (e.g.,

change in adolescent mental health would necessarily involve public health, education, juvenile justice and child welfare). They propose a transactional model of implementation, from early adoption to sustainability that acts to enhance co-incident of interests, mutual support and integration. They also usefully differentiate between intervention and implementation processes, and distinguish degrees of implementation from paper to process to performance.

Of course, articulating a model does not always make things simpler. But it serves us well by revealing the complexities of implementation, including different terminologies of 'implementation' to overcome. The report also identifies four principal characteristics of successful implementation (p.vi) related to:

- The selection, training and coaching of clinicians;
- Organizational infrastructure, including process and outcome measures;
- Full participation of communities and consumers; and
- Supportive political and regulatory environments.

Sustainable implementation requires the reflexive interplay of all these elements. Without any one of these components, programs would struggle to survive. All are necessary, but individually insufficient.

The authors offer a number of recommendations for policy-makers, researchers, and 'purveyors of well-defined practices and programs' that may take implementation research out of its infancy and assist with 'real world application'. They speak

of developing "communities of practice and science", but perhaps an integration of these into a community of 'practice science' or 'implementation science' is also a constructive way forward.

The synthesis is relevant to a wide readership, from policy decision-makers to researchers to on-the-ground clinicians. It would be a valuable resource to senior undergraduate or graduate students. The review presents the material logically. It does not over-simplify, nor complicate essential elements, and gives a framework for answering the trickiest question of them all: how is it done?

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