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Reducing social inequalities in smoking:
can evidence inform policy? A pilot study

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Abstract

Objective

To assess the potential contribution of evidence from existing systematic reviews of effectiveness to answering the question: what works in reducing social inequalities in smoking?

Data source

The Cochrane Library (2002/4).

Study selection

Systematic reviews of the effectiveness of community-based tobacco control interventions, and all the primary studies included in one of these reviews.

Data extraction

Reviews and primary studies were assessed for intent to assess the social distribution of intervention effects, information about the social inclusiveness or targeting of interventions, baseline sociodemographic data collected on participants, and estimates of effect size stratified by sociodemographic variables.

Data synthesis

Only one review aimed to examine outcomes stratified by sex, age or socioeconomic status, and these aims were only achieved with respect to sex. Sociodemographic data about participants were frequently collected in primary studies, but not used to compare intervention effects between social groups.

Conclusions

There may be scope for using existing research more effectively to contribute to evidence-based policy to reduce social inequalities in smoking — by explicitly seeking stratified outcome data in new systematic reviews, by re-analysing original datasets, and/or by meta-analysis of individual participant data.

What this paper adds

What is already known on this subject?

Most research on the effectiveness of community-based tobacco control interventions has focused on achieving overall reductions in smoking, but smoking is closely associated with social disadvantage. We lack good evidence of what interventions are effective in reducing social inequalities in smoking. Systematic reviews are increasingly viewed as the most robust source of evidence of effectiveness, but their utility for answering this important policy question is uncertain.

What does this study add?

Existing systematic reviews in the Cochrane Library have either not sought, or not been able to synthesise, evidence to answer this question. Sociodemographic data have been collected on participants in primary studies but these have not been used to evaluate the differential effectiveness of interventions in different social groups. A new approach to systematic reviewing and/or a reanalysis of existing primary data may be able to contribute new insights from existing evidence to help to identify interventions which are effective in reducing inequalities.

Introduction

In many countries, smoking is persistently associated with social disadvantage and reducing social inequalities in smoking has become a political priority. Is there any evidence that current tobacco control policies will help to achieve this? Simply applying or intensifying interventions known to reduce overall smoking behaviour will not necessarily be effective among disadvantaged groups.¹ It is, however, equally plausible that other policies and interventions could help to reduce inequalities.²

Mackenbach and Bakker have assembled evidence of successful interventions to reduce health inequalities in a recent book.³ In this book, Platt and colleagues have argued that by concentrating on reducing overall tobacco consumption, we are missing the chance to tackle health inequalities.⁴ After reviewing a selection of intervention studies and stratifying them according to whether or not they were targeted on, or effective in, disadvantaged groups, they concluded that there was little direct evidence to suggest that either demand- or supply-side measures were likely to affect inequalities in tobacco use. Their conclusions echo those of the Acheson report on inequalities and health produced for the UK government in 1998.¹

What can be done about the lack of evidence to inform policy in this area? Designing and conducting new primary research takes time. Systematic reviews are increasingly viewed as the most robust source of evidence of the effectiveness of public health interventions. We investigated the potential for using existing systematic reviews in the Cochrane Library to answer the question: what works in reducing social inequalities in smoking?

Methods

We searched the Cochrane Tobacco Addictions Group reviews in the Cochrane Library (2002/4) ⁵ for completed reviews of the effectiveness of community-based tobacco control interventions. We analysed the content of each report for:

- evidence that the social distribution of intervention effects had been considered
- information about the social inclusiveness or targeting of the interventions
- information about the social composition of the target or study population
- information about baseline sociodemographic data collected on participants
- stratification of estimates of effect size by sociodemographic variables.

We then chose one of the Cochrane reviews (Community interventions for preventing smoking in young people) ⁶ for more detailed analysis, in which we sought the same information from all the primary studies included in that review. We chose the topic of prevention in young people because smoking is a habit that is often established early in life, its uptake is associated with socioeconomic status, and the review on that topic contained a suitable number of primary studies for a pilot analysis. Although it can be difficult to measure socioeconomic status in young people, we wished to establish the potential usefulness of primary studies in this area rather than simply assuming that no evidence would be available.

Results

Evidence from systematic reviews

We found six relevant completed Cochrane reviews.⁶⁻¹¹ The reviews covered preventing young people from smoking through interventions in communities, schools and the mass media and through tobacco retailers, and reducing adult smoking through interventions in communities and public places.

Most reviews included some studies of interventions targeted on higher-risk groups, such as girls, inner city communities, ethnic minorities, or the children of parents with low incomes or low levels of educational attainment.

In five of the six reviews we found no evidence of any intention to consider the social distribution of effects, and no attempt to stratify summary outcome measures by any sociodemographic variable.^{6, 8-11}

One review (Community interventions for reducing smoking among adults) did specifically aim to examine outcomes stratified by sex, age and socioeconomic status "where available", but these aims were only achieved with respect to sex.⁷ Only changes in smoking prevalence could be pooled across studies: the estimated decline in smoking prevalence was greater in women than men.

The reviewers also mentioned other relevant findings from the primary studies. Three studies had reported differences in process measures between social groups. Two had reported differences in outcome measures: one found that quit rate was particularly increased among younger women and women with low incomes; another found that smoking prevalence fell among whites, women under 35, and those with higher incomes but not among men or African Americans.

The most recent Cochrane review (School-based programmes for preventing smoking) included 76 studies, of which ten reported outcomes stratified by sex.¹¹ Those studies whose results suggested greater effectiveness among girls were balanced by studies suggesting greater effectiveness among boys.

Evidence from primary studies of community interventions for preventing smoking in young people

Thirteen studies (14 papers) were included in this review (table).¹²⁻²⁵ None had aimed to assess the social distribution of intervention effects, although social inequalities in smoking had been considered in the design of four studies. In three of these cases, the intervention had been targeted on higher-risk groups: a black inner city community,¹⁶ those attending continuation high schools,²³ or those attending clubs in deprived communities.²²

Most studies gave little or no detailed information about the social composition of the target populations. One study provided data on the distribution of income, ethnicity and educational attainment.¹³

Baseline data on age and sex had been collected on participants in all the studies. A variety of other socioeconomic variables had also been included (table). Most studies had considered these variables as potential confounders, using them either to match participants or communities with controls or as covariates in a multivariate analysis of intervention effects. Five studies reported outcomes stratified by sex. No study reported outcomes stratified by any other sociodemographic variable.

Discussion

Existing Cochrane reviews do not present evidence on the differential effectiveness of community-based tobacco control interventions in different socioeconomic groups. This probably reflects the fact that most primary research has not reported, or sought to establish, how the effects of interventions are distributed between groups. We therefore need to design primary research that aims explicitly to assess the effects of interventions on inequalities,²⁶ but if we are to meet new targets for reducing social inequalities in smoking²⁷ we also need to extract as much insight as possible from existing evidence.²⁸ This might involve extracting stratified data when it is presented in primary studies, encouraging authors to submit additional unpublished analyses,²⁹ meta-analyses of individual participant data, or post-hoc reanalysis of original datasets - although the potential for bias in this latter approach is recognised.³⁰

In summary, we need further development of systematic review methods (in particular, methods of identifying and synthesising relevant research on health inequalities), and improvements in the reporting of primary studies, to ensure that evidence of differential impacts is not lost.

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Study	Baxter ¹²	Biglan ¹³	Davidson ¹⁴	Gordon ¹⁵	Kaufman ¹⁶	Murray ^{17,18}	Pentz ¹⁹	Perry ²⁰	Piper ²¹	St Pierre ²²	Sussman ²³	Vartiainen ²⁴	Winklebly ²⁵
Study aims included assessing the social distribution of intervention effects													
Design or setting of study involved explicit consideration of social inequalities in smoking					✓					✓	✓		✓
Social composition of the target or study population was described:													
Race or ethnicity		✓			✓								✓
Income or wealth		✓					✓		✓	✓			
Educational status or attainment		✓									✓		
Urbanicity				✓	✓								
Baseline socio-demographic data were collected on participants:													
Age or school grade	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sex	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Race or ethnicity		✓			✓		✓		✓	✓	✓		✓
Preferred first language											✓		
Parental socio-economic status					✓		✓	✓	✓		✓		
Young person's income				✓									
Urbanicity or place of residence				✓			✓		✓				
Family or household composition		✓							✓				
Parental educational attainment									✓		✓		✓
Own educational attainment		✓											
Analysis of intervention effects was stratified by socio-demographic group*:													
Sex	✓	✓	✓					✓				✓	

*apart from age

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