

Social mobility and smoking: a systematic review

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Abstract *The purpose of this study is to review the literature on longitudinal studies that have evaluated the effect of social mobility on the occurrence of smoking in various populations. Articles were selected from the web databases PubMed and Web of Science using the words: follow up, cohort longitudinal prospective, social mobility, social change life, course socioeconomic, smoking, and tobacco. Of the six studies identified in this review, four used occupational classification to measure social mobility. All six were carried out on the continent of Europe. The results indicate higher proportions of tobacco users among those with lower socioeconomic level during the whole period of observation (for all variables analyzed); and that people who suffered downward mobility, that is to say people who were classified as having a higher socioeconomic level at the beginning of life, tended to mimic habits of the new group when they migrated to a lower social group.*

Key words *Social mobility, Longitudinal study, Socioeconomic position, Tobacco use, Systematic review*

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Introduction

Tobacco use is an important modifiable risk factor for non-transmissible chronic diseases¹. The habit of smoking is responsible for one in every six deaths resulting from non-transmissible diseases² and is reported as the cause of approximately six million deaths per year in the world³.

The highest incidence of smoking in men is found in countries with low and average income, while for the whole population smoking is more prevalent in countries with high and average income¹. Evidence suggests that the use of tobacco is associated with economic, occupational^{4,5} and educational^{4,6} levels. Thus it is interesting to investigate whether this relationship is temporary, localized, or influenced by the path of an individual over the whole of his/her life – and hence the usefulness of longitudinal surveys to study the effect of exposures that can change over a given period.

Social mobility is a concept used in describing an individual's socioeconomic trajectory, and can be expressed through various concepts, including social 'class', income, wealth, occupational classification, education or other forms of social classification^{7,8}. It represents an individual's change from one category to another over a period of time. It is classified as: 'null' (when no change occurs); or 'upward' (when a person moves up one or more categories); or 'downward' (when a person moves down one or more classes)^{9,10}.

There are two types of social mobility: Intra-generational, when the mobility takes place in a single generation, and inter-generational, when the social category of the son or daughter is compared with that of the parents⁹. Inter-generational social mobility is a reflection of the distribution of opportunities in the population, such as the chance to occupy a given social position in light of the family's socioeconomic origin⁷.

The objective of this literature review, thus, was to identify longitudinal studies that had evaluated the effect of social mobility on the occurrence of smoking in different populations.

Methodology

Initially, to identify the terms of reference for the objective of the study, an exploratory search was made for the purpose of identifying keywords that are consistently related to articles on this area. A review of literature was then carried out

on the web databases *PubMed* and *Web of Science*. On *PubMed*, the search employed was (((“follow up”[All Fields] OR “cohort”[All Fields]) OR “longitudinal”[All Fields]) OR “prospective”[All Fields]) AND ((“social mobility”[All Fields] OR “social change”[All Fields]) OR “life course socioeconomic”[All Fields])) AND (“smoking”[All Fields] OR “tobacco”[All Fields]), and on *Web of Science*, Search term: (“follow up” or “longitudinal” or “cohort” or “prospective”) AND Search term: (“social mobility” or “social change” or “life course socioeconomic”) AND Search term: (“smoking” or “tobacco”). No limits of age, date or language were used.

The articles to be included in the study were selected independently by two revisors (JVSM and NPL). Figure 1 is a flow diagram of the selection of articles. First, the titles of all the articles found in the search were read. The second step was assessment of the summaries. The articles identified in these steps were selected for reading in full. The following were excluded: studies that did not estimate the effect of social mobility on the occurrence of smoking; publications in other idioms than Portuguese, English or Spanish; and studies with a cross-sectional methodology, that is to say those that did not consider the trajectory over the length of a life when evaluating socioeconomic position.

Divergences between the revisors were resolved based on discussion and consensus between the two, and the process of review was finalized on February 15, 2014.

Results

Initially, in the identification phase 68 articles were detected, of which seven were duplicates identified in the two databases reviewed. In the next phase, based on reading of titles and summaries, 11 studies were considered as potentially significant for this review and were read in full. After the reading, one article was excluded because it did not estimate the effect of social mobility on the occurrence of smoking, and four because they did not evaluate socioeconomic position in a longitudinal form.

Finally, six articles were included in this study (Figure 1).

The results of the literature review are shown in Chart 1, which describes the studies by author, location, year and sample, and also summarizes the exposure variable (social mobility), the outcome (smoking) and the principal results. The

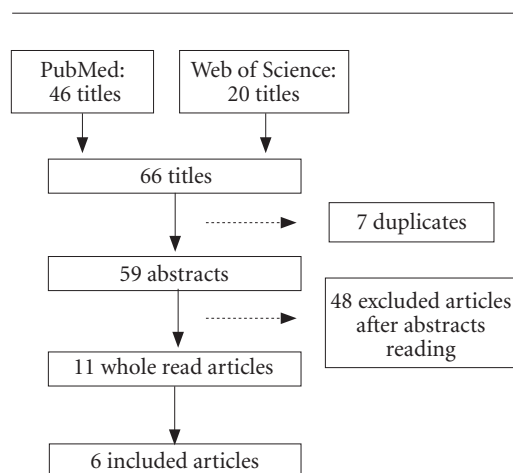


Figure 1. Study Selection Process Flowchart.

six articles described analyses of research carried out in Europe (three in Scotland, two in Finland and one in France). Four of them used classification by occupation as the social-demographic measure for social mobility, while the other two used level of schooling as the variable to assess inter-generational social mobility.

Two of the three studies conducted in Scotland gave results of the same cohort study.

One of these two studies evaluated the influence of social mobility on death from cardiovascular diseases and certain behavioral factors, including smoking. In this article three points in time were used for socioeconomic measurement, evaluating social mobility in two of the three points, but in different ways, including both inter- and intra-generational mobility (occupational class of the father vs. occupational class of the subject at the moment of death, occupational class of the father vs. occupational class of the subject when entering the employment market, occupational class of the subject when entering the employment market vs. occupational class at the moment of death)¹¹. The other study, of these two, evaluated social mobility through the measure of occupational category, divided into four categories, but at two points of the monitoring, generating 16 possibilities for the occupational trajectory and its contributions to six risk factors for cardiovascular diseases¹².

Only one study presented the average number of cigarettes consumed per day in relation to social mobility¹³, while another four used

the variable 'smoker' in the simple dichotomic form^{12,14-16} – *currently smokes* or *currently does not smoke* – and only one considered ex-smokers as within the classification of the variable *smokers*¹¹.

The articles included in this review show two types of people as having the highest occurrences of smoking^{11,15}: those who remained in the lowest social class over the whole of life; and those whose parents, or who themselves, belonged to higher social classes at the beginning of the monitoring than at the end – i.e. those that presented downward mobility^{12,14,16}, regardless of the measurement of social mobility used (schooling, income, or occupational classification). The highest average number of cigarettes consumed per day was found in the group that suffered downward mobility¹³.

Discussion

Although smoking is diminishing in countries of high income², all the studies brought together here are of European countries, and no Brazilian studies have been identified that evaluate the influence of social mobility on the habit of smoking. The Brazilian risk factor Monitoring system, Vigitel (the *Sistema de Vigilância de Fatores de Risco e Proteção para Doenças Crônicas por Inquérito Telefônico – Chronic Disease Risk Factors and Protection Telephone Monitoring System*) is a series of cross-sectional studies that makes it possible only to study trends of prevalence of smoking without association with social mobility. As well as showing a decline in smoking, the Vigitel surveys indicate Brazil as a global example of advances in anti-tobacco policy^{17,18}.

In France, in a cohort of workers of the French national electricity and gas company, as well as estimating the occurrence of smoking in accordance with social mobility, the authors assessed the influence of the smoking habit on social mobility, and the findings showed that those who smoked made less upward progress inside the company. As in other studies, in relation to the influence of social mobility on smoking, the prevalence of smoking was lower among those who were upwardly mobile, and in the analysis of level of occurrence, a result of the same effect was found¹⁵.

In the articles reviewed, the occurrence of smoking was shown to be greater in individuals whose position in the lower socioeconomic group was unchanged, and in those who suffered downward mobility, migrating to less favored

Chart 1. Epidemiological studies about social mobility and smoking according to author, place and publishing year, age group, sample size, and main results. Period 1994-2004.

Author/ Place/ Year	Sample/ Age	Social Mobility	Smoking	Main results
Paavola et al. ¹⁴ Finland 2004	903 men and women at 28 years old (outcome)	Educational intergenerational	Smoking No smoking	The greater smoking prevalence (52%) was verified in the group which parents educational level was high and the own level got lower. The smaller proportion (8%) observed was among those whose parents had low educational level and the own level ascended to the high scholarship group. The social mobility was not shown significantly associated with the smoking habit at 28 years old.
Ribet et al. ¹⁵ France 2003	4715 men between 43 and 53 years old	Intragenerational Occupational Classification	Smoking	Smoking was less frequent in individuals that got higher occupational level (24.1%) than those that kept stable (26.3%), being the chance of smoking, in this last group, significantly higher [OR: 1.2 (CI95% 1.0; 1.3); p<0.05]. The smoking incidence in the period from 1993 to 1999 was smaller in individuals that ascended professionally (2.5%) than those that kept stable (3.7%). The chance of smoking was higher in the static group [OR: 1.5(CI95% 1.0;2.4);p<0.08], however this difference was not statistically significant.
Pulkki et al. ¹³ Finland 2003	531 men and 688 women between 21 and 30 years old	Educational intergenerational	Average Number of cigarettes a day	The greater average number of cigarettes smoked a day was observed in men (11.5) and women (3.7) whose mobility was downward. In men, the minor consumption was in the group that kept stable with low scholarship (4.2) and, in women, those that kept high scholarship (1.7). The number of smoked cigarettes a day did not show association with the intergenerational educational mobility.
Hart et al. ¹¹ Scotland 1998	5567 men between 35 and 64 years old	Inter and intragenerational occupational classification	Smoking Former smoking No smoking	Either in intra and intergenerational mobility, the smaller prevalence of smokers was observed in the more favored category (not manual stable) and the greater prevalence was observed on those who belonged to the less favored group (manual stable). The former smoking proportion was greater in the more favored mobility category (not manual stable).

it continues

groups, suggesting that there is a strong relationship between low socioeconomic level and the habit of smoking, which is in line with the evidence already described in the literature^{4-6,19}.

A limitation of the present study, and also

of the bibliographical production in the area, is that the nomenclature used for social mobility is not a consensus among the studies that evaluate changes of class. Perhaps one of the reasons for this limitation is the large number of indicators

Chart 1. continuation

Author/ Place/ Year	Sample/ Age	Social Mobility	Smoking	Main results
Blane et al. ¹² Scotland 1996	5645 men between 35 and 64 years old	Intergenerational occupational classification	Smoking	Among the individuals that kept stable, the smoking habit prevalence was greater in those that were at IV and V social classes (64.4%) and smaller at I and II classes (45.5%). In those with mobility, the smoking prevalence seems to be closer to static strata, as in the groups of ascendent mobility, where it can be observed that the prevalence decreased as well as the it gets closer to the static strata in I and II classes.
Glendinning et al. ¹⁶ Scotland 1994	1171 men and women from 16 to 18 years old and 20 to 22.	Score between scholarship and occupational classification	Smoking	The greater smoking prevalence was in the group that descended, so, it passed to a less favored class, in men (47%) and women (47%). The individuals that kept stable in the average class (more favored class) were less likely to smoke, while those that kept out of average class had a greater smoking prevalence. In those with mobility, the proportion of smoking habit was greater with the ones that left average class and smaller with the ones that entered it.

by which social mobility can be measured, but it is certain that this is an obstacle to researching for studies. Although this review has been carried out based on the terms usually employed in the literature, indicated by a search of a data-base, it is believed that some studies may not have been identified, since as well as the reason described above, the search strategy used may have been restricted.

In Brazil there is a cohort study of births which deals with the subject, but the article was not found in the search, perhaps because of the nomenclature used by the authors to identify social mobility being 'change of income'. Although they are not part of this review, the results of that study are to the same effect as the findings in articles included here, since the authors indicate that there is a high concentration of smokers in the poorer groups²⁰.

The group of articles in the review shows that, as with other behavior variables, the prevalence of smoking among those who had an upward social mobility tends to be similar to the

prevalence of smoking in the stable group in the upper part of the distribution, in the same way that the proportion of smokers among those who had downward social mobility tends to be similar to that of the stable group in the lower part of the distribution. At the end of the review two other considerations remain: The importance of using a standardized terminology in studies dealing with socioeconomic trajectory; and the conclusion that people who migrate to a new social group tend to mimic the habits of the new group.

Collaborations

JVS Motta, NP Lima, MTA Olinto and DP Gigante participated equally in all stages of preparation of the article.

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