

RESEARCH PAPER

Preferences and practices among renters regarding smoking restrictions in apartment buildings

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Objective: This study assessed renters' preferences for official smoking policies in their buildings and their practices concerning restricting tobacco smoking in their apartments.

Design: Renters (n = 301) living in large apartment complexes in a suburb of Minneapolis, Minnesota, completed a mail survey.

Main outcome measures: The survey asked about the official smoking policies in place in their apartment buildings, their preferences for policies, whether they had smelled tobacco smoke coming into their apartments from without, and, if so, what they had done about it.

Results: The majority of non-smokers (79%) preferred that their building be smoke-free. When asked to identify the current smoking policy in their buildings, residents disagreed substantially. Most renters (60%) reported smoke-free policies in their own apartments and another significant proportion (23%) restricted smoking to certain areas or occasions or persons. 75% thought that enforcing a smoke-free policy for guests would not be difficult. 53% of those in non-smoking households had smelled tobacco smoke in their apartments; most of these reported being bothered by it. However, very few complained to the building owner or manager (15.5%) or to the smoker (6.9%).

Conclusions: The majority of non-smokers preferred that their buildings be smoke-free. A failure to report problems to apartment managers might be an impediment to instituting smoke-free policies in apartment buildings. The considerable disagreement among residents within apartment complexes about the current official smoking policy in their buildings suggests that policies are lacking or are not well communicated.

Exposure to environmental tobacco smoke (ETS) is associated with significant mortality and morbidity.^{1,2} It is a recognised cause of lung cancer and heart disease and is associated with a number of respiratory problems in both adults and children, including exacerbation of asthma and occurrences of lower respiratory symptoms.³

The home is an important site for ETS exposure. Studies have found adverse health effects attributable to ETS exposure in non-smokers who have a spouse who smokes³ and have indicated that the home is a major site of exposure to ETS in children.⁴ Awareness of the health risks of ETS exposure has translated into an increased interest in smoking restrictions in the home in the last decade. The percentage of Californians reporting smoke-free homes on the California Tobacco Surveys increased from 37.6% to 73.7% between 1992 and 1999.⁵ Borland and colleagues also reported increases from 1989 to 1997 in reports among Australians of going outside to smoke, discouraging visitors from smoking in the home, and avoiding smoking around children.⁶

As evidence of the health effects of ETS has mounted, there have been significant advances in public policy efforts to limit exposure to ETS. These efforts first targeted workplaces and public transportation and then addressed social venues such as restaurants. Policy efforts to decrease ETS exposure in the home have been quite limited, perhaps because they cross the boundary from public to private space. A strong case can be made for considering policy approaches to decreasing ETS exposure in multi-unit residential dwellings, however. Involuntary and unwanted exposure can occur in these dwellings: apartment buildings often include enclosed public areas where non-smokers can be exposed to ETS, and there is also a risk of smoke entering apartments through windows, air conditioners, holes around pipes and electric lines, gaps between floors and walls, and from hallways. Moreover, large numbers of people have the potential to be exposed to unwanted incur-

sions of ETS in multi-unit housing. The 2000 census indicated that a third of occupied housing units in the USA are rented; a considerable proportion of these are multi-unit housing.

Although exposure to ETS has clearly been established as a health risk, there is a question of how often incursions of ETS from outside a housing unit are of sufficient length and concentration to pose a significant health threat to apartment dwellers. Evidence indicates that the extent of the effect of ETS on health depends on the concentration of smoke in the environment, the length of exposure, and the vulnerability of the individual,⁷ and studies analysing typical smoke concentrations and length of exposure to ETS incursions into the homes of non-smokers have not been reported. There is no evidence that there is a safe level of exposure to ETS,⁸ however, and studies have indicated that even brief exposures can adversely affect non-smokers.⁹ For example, Otsuka and colleagues reported significant changes in endothelial function among healthy young non-smokers after just 30 minutes of exposure to ETS; function decreased to that found in habitual smokers.⁹ ETS incursions might be particularly harmful in homes with young children, since children are more vulnerable to the effects of ETS because of their higher relative ventilation rates which lead to a higher intake of smoke.¹⁰

Because interventions to decrease ETS exposure in the home are controversial, it is important to gauge current official smoking policies in apartment buildings and apartment dwellers' attitudes concerning smoking in public areas and their own policies regarding smoking in their units. A survey conducted recently in Canada identified subgroups of both smokers and non-smokers that varied in their attitudes and behaviours regarding ETS exposure.¹¹ Acceptance of restrictive apartment smoking policies will depend on the extent to which smoking and non-smoking tenants in apartment buildings and owners and managers recognise that ETS is a

health hazard and accept and enforce such policies. There has been little research concerning smoking policies currently in place in apartment buildings or the attitudes of apartment dwellers, however. In this study, renters living in large apartment complexes in Golden Valley, a suburb of Minneapolis, Minnesota, were surveyed to determine the official smoking policies in place in their buildings and their own policies about smoking in their apartments, and to assess renters' attitudes and practices concerning restricting tobacco smoking in their apartment buildings. The survey also examined the characteristics of renters to assess their relation to preferences for particular smoking policies.

METHODS

Sample

The seven largest apartment complexes in Golden Valley, a first ring suburb of Minneapolis, Minnesota, were selected for the survey. Golden Valley has a population of 20 300 (91% white, 3.6% African American, 2.7% Asian, and 1.8% Latino). Of 8450 occupied housing units in Golden Valley, 19% are rental units. The number of units in the complexes selected for study ranged between 36–108.

Survey procedure

One survey was mailed to each individual rental unit in January 2001. The initial mailing of the survey was followed two weeks later with a postcard requesting completion of the survey and thanking those who had already returned it. Four weeks after that, a second copy of the survey was mailed to those who had not yet returned the first copy. Of the 511 surveys mailed, 48 surveys were returned unopened, nine because the apartment was vacant and 39 because there was no such address. Surveys were returned from 65% ($n = 301$) of the remaining 463 households.

Measures

Sociodemographic variables

Sociodemographic variables collected included age, sex, and level of education.

Smoking status

The respondent's smoking status was determined by first asking whether he/she had smoked at least 100 cigarettes in his/her lifetime and, if so, whether he/she now smoked cigarettes every day, some days, or not at all. A respondent was considered a current smoker if he/she had smoked at least 100 cigarettes and reported that he/she smoked every day or some days. Use in the past 30 days of cigars, cigarillos or a pipe was also ascertained. The smoking status of others living in the unit was assessed by asking whether anyone living with the respondent smoked cigarettes, cigars, cigarillos, or a pipe. Finally, the respondent was asked how many of his/her friends smoked tobacco products: none; a few; less than half; about half; or most or all.

Policies, practices, and knowledge regarding ETS

Smoking policy: building—The respondent was asked which of the following best described the smoking policy in his/her apartment building: smoking is allowed anywhere; smoking is prohibited in public areas, but allowed in apartments; smoking is prohibited in all areas of the apartment building; or other.

Smoking policy: apartment—Whether smoking was allowed in the respondent's apartment was assessed with the choices: smoking is allowed only in certain situations; smoking is allowed anywhere in my apartment; and no one is allowed to smoke in my apartment. Those who responded that smoking was allowed in certain situations were asked to specify those situations (certain rooms; special occasions; particular people allowed to smoke; other).

Enforcement difficulty—The respondent was asked their perception of the difficulty of enforcing a smoke-free apartment policy if required by the lease (very hard; somewhat hard; not at all hard).

Avoiding ETS—The respondent's actions to avoid ETS exposure in his/her apartment was determined by a series of three questions: whether he/she had ever smelled tobacco smoking coming into his/her apartment from the hallway of other apartments; if yes, did this bother him/her (a great deal; somewhat; not at all), and had he/she ever tried to do something about it. Response options to the final question included nothing, nine specific actions (for example, caulked or weather stripped around doors; complained to the person who was smoking; kept windows closed) and other.

Policy preference—Preference for a smoking policy in his/her apartment building was assessed on a five point scale ranging from "Strongly prefer a policy making it a smoke-free building" to "Strongly prefer having no rules about smoking in the building."

Health beliefs—The respondent's opinion concerning whether breathing smoke from other people's cigarettes can cause health problems was assessed on a five point scale ranging from "Definitely yes" to "Definitely no."

Analyses

Analyses consisted of descriptive statistics and tests of the relations between respondent characteristics and each of the four primary policy and action variables: (1) subject preferences for a smoke-free building; (2) whether smoking was allowed in their apartment; (3) the extent to which they thought that enforcement of a smoke-free policy in their apartment would be difficult; and (4) whether breathing smoke from other people's cigarettes can cause health problems. The relations between respondent characteristics and each of these four variables were tested in χ^2 analyses and then in a multivariate logistic regression. For these sets of analyses, the outcome variables and the predictor variables other than age were recoded into two categories. In the first set of analyses, for example, those who strongly or somewhat preferred a smoke-free building were collapsed into a single category, and those who had no preference or who preferred no rules about smoking were collapsed into a single category. The resulting categories could be characterised as preferring a smoke-free building and not preferring a smoke-free building. Age was analysed as a three category variable (18–29, 30–49, 50+ years) in bivariate analyses and as a continuous variable in multivariate analyses.

RESULTS

Sample characteristics

Table 1 presents the sociodemographic characteristics of those who returned the survey. Respondents were almost equally divided between men and women. The median age was 34 years; 24.1% of participants reported being current cigarette smokers, and 17.4% were daily smokers. The overall smoking rate is somewhat higher than the recently reported prevalence of smoking in the Minneapolis–St Paul area ($19.5\% \pm 2.2\%$).¹² Smoking prevalence by age group is consistent with that reported for the USA in the 1998 National Health Interview Survey.¹³ Use of cigars, cigarillos or a pipe in the past 30 days was reported by 7.7%. Combining the information about cigarette smoking and other tobacco use, 26.3% of respondents used some form of tobacco that produced ETS in the past 30 days. There was at least one person who smoked tobacco products that produce smoke (that is, cigarettes, cigars, pipes, cigarillos) in 33.8% of households surveyed.

Apartment building policies regarding smoking

Only 7.1% of respondents reported that their building was smoke-free; 55.9% reported that public areas were smoke-free,

Table 1 Sociodemographic characteristics of respondents (n=301)

Characteristic	Overall %	% of smokers	% of non-smokers	p Value
Female	56.3	50.7	58.4	NS
Age (years)				
18–24	15.4	18.6	14.7	
24–44	50.0	54.3	48.4	
45–64	22.8	20.9	23.6	
65+	11.7	7.1	13.3	NS
Educational attainment				
High school/GED	9.6	20.8	6.2	
Vocational school	10.3	15.3	8.9	
Some college	26.9	23.6	28.3	
College/university degree	37.5	31.9	38.5	
Graduate/professional degree	15.6	8.3	18.1	0.001
Smoking status: cigarettes				
Non-smoker	75.8			
Daily smoker	17.4			
Occasional smoke	6.7			
Presence of a smoking roommate	14.7	27.8	10.7	0.001
Households with at least one smoker	33.8	100.0	12.5	0.001
Proportion of friends who are smokers				
None	15.3	1.3	20.6	
A few	51.8	32.1	58.9	
Less than half	11.6	16.7	10.1	
About half	14.3	32.1	7.8	
Most or all	7.0	18.0	2.7	0.001

NS, not significant.

but that smoking was allowed in apartments; 29.0% reported that there were no rules regarding smoking in their building; 8.1% reported some other policy; and 5.3% of respondents wrote a note on the survey that they did not know what their building's policy was. There was substantial disagreement in the reports of smoking policy among renters in the same apartment complex in six of the seven complexes, however. All subjects in the smallest complex reported the same smoking policy, a ban on smoking in public areas but not in apartments, but the maximum percentage of renters within a particular apartment complex agreeing on a particular current policy ranged from 42.9–83.3% in the other six complexes.

Actions to decrease ETS exposure

Forty-six per cent of participants (n = 140: 116 non-smokers and 24 smokers) had smelled tobacco smoke in their apartments that did not originate there; 89.9% of those who had smelled smoke reported being bothered by it. Respondents in non-smoking households were significantly more likely to report smelling incursions of tobacco smoke (53% in non-smoking households v 35% in households with smokers) and, if they smelled smoke, being bothered by it (97% in non-smoking households v 69% in households with smokers). Of the 116 non-smokers who had smelled smoke, 40.5% reported doing nothing; the remainder reported up to five actions. Actions taken most frequently were aimed at covering up the smell of smoke or blocking its entrance into the apartment (table 2). Only 6.9% reported that they had complained to the smoker.

Attitudes and practices regarding smoking in their apartment.

The majority of respondents (60.3%: 71.6% of non-smokers and 25.0% of smokers) reported not allowing smoking in their apartments. When asked how hard it would be to enforce a smoke-free policy with guests in their apartment if their apartment building were to adopt such a policy, most (77.4%: 86.4% of non-smokers and 49.3% of smokers) thought that this would not be difficult. When asked what smoking policy they would prefer in their apartment building, 37.3% strongly preferred a smoke-free building policy, 27.1% somewhat preferred such a policy, 15.9% had no preference, 8.1% some-

Table 2 Actions taken by non-smokers in response to smelling cigarette smoke coming into their apartment from outside their apartments (n=116)

Action	% of respondents*
None	40.5
Used an air freshener or scented candle	34.5
Kept the windows closed	26.7
Kept the windows open	20.7
Complained to the building owner or manager	15.5
Put a towel under the door	12.1
Used an "air cleaner" to remove smoke	7.8
Complained to the smoker	6.9
Caulked or weather stripped around doors	6.0
Closed off an exhaust fan	3.5
Other	12.9

*The sum of the percentages is greater than 100% since subjects could endorse more than one action.

what preferred having no rules about smoking in the building, and 11.5% strongly preferred having no rules about smoking in the building. As would be expected, there were pronounced differences between non-smokers and smokers in the policy preferences. While 79.0% of non-smokers either strongly or somewhat preferred a smoke-free policy, only 18.3% of smokers did so. Most respondents (88.3%: 94.2% of non-smokers and 69.4% of smokers) believed that exposure to environmental tobacco smoke either definitely or probably causes health problems.

Predictors of preferences for stronger smoking policies

Table 3 presents the results of the bivariate analyses of the relation between a variety of predictor variables and preference for a smoke-free building. These analyses indicate that preference for a smoke-free policy was not related to sex or age of participants, although there was a non-significant trend for participants in the 50+ age range to be more likely to report such a preference. Those with a college degree were significantly more likely to prefer a smoke-free policy than those with lower levels of education. Living with someone who was a smoker and having more than a few friends who were

Table 3 Predictors of preference for a smoke-free building

Characteristic	n	% preferring smoke-free	χ^2	p Value
Sex				
Male	167	65.3		
Female	130	63.1	0.153	NS
Age (years)				
18–29	104	62.5		
30–49	113	60.2		
50+	78	74.4	4.421	NS
College degree				
Yes	158	71.5		
No	140	55.7	8.057	0.005
Smoking status: cigarettes				
Non-smoker	217	79.0		
Smoker	71	18.3	86.672	0.001
Roommate smoking status				
No roommate smokes	253	67.6		
Roommate smokes	44	43.2	9.688	0.002
Proportion of friends who are smokers				
None or few	201	78.1		
More than a few	97	35.0	52.708	0.001

Table 4 Results of multivariate analyses of predictors of major outcome variables: odds ratios

Predictor	Prefer smoke-free building	Allows smoking in apartment	Enforcement seen as difficult	ETS seen as unhealthy
Greater age	0.993	1.028**	1.016	0.981*
Male sex	1.041	1.181	0.751	0.962
College degree	1.504	0.722	0.661	0.718
Current smoker	0.094**	5.843**	4.672**	0.156**
Friends smoke	0.300**	1.887*	1.978	0.546
Smoker in household	0.648	4.286**	2.237*	1.916

* $p < 0.05$; ** $p < 0.0005$.
ETS, environmental tobacco smoke.

smokers were each significantly related to preferring that their apartment building not have a smoke-free policy. When these predictor variables were tested together in a logistic regression model, the only significant relationships were that smokers (odds ratio (OR) 0.094) and those having friends who smoked (OR 0.300) were less likely to prefer a smoke-free building (table 4).

Predictors of behaviour and perceptions regarding personal smoking policies

Bivariate analyses of predictors of allowing smoking in the apartment indicated that sex and age of participant were not related to whether smoking was allowed in the apartment, but that those with a college degree were significantly less likely to allow smoking and that those who were current smokers, those with more than a few friends who were smokers, and those who lived with other smokers were significantly more likely to allow smoking. In the multivariate analysis, education dropped out as a significant predictor of allowing smoking, and greater age was found to be related to a greater likelihood of allowing smoking (table 4).

As shown in table 4, analyses of the predictors of the perceived difficulty of enforcing a smoking ban if the building were to go smoke-free and the belief that breathing environmental tobacco smoke can cause health problems showed similar patterns of results. Table 4 presents the results of a multivariate analysis for each of four outcome variables: (1) preference for a smoke-free apartment policy; (2) smoking policy in respondent's apartment; (3) perception that it would be difficult for the respondent to enforce a smoke-free policy; and (4) belief that breathing ETS can cause health problems.

For each outcome, all of the predictor variables were entered in a logistic regression. Values reported in the table are odds ratios of an outcome (for example, that the subject will prefer a smoke-free policy) given the condition specified (for example, that the subject is a smoker). Values that are not marked with an asterisk are not significantly different from 1.00, indicating that there is no relation between the predictor and the outcome variables.

Current smokers preferred a less stringent smoking policy, were more likely to allow smoking in their apartments, thought that enforcement of a total ban would be difficult, and were less likely to perceive exposure to ETS as bad for health. Having other smokers in the household and a larger proportion of friends who were smokers were similarly related to preferences, practices, and views of enforcement, but these variables were not related to perceptions of the effect of ETS on health. The only sociodemographic variable that was related to any of these four outcome variables independently of smoking status was age. Older respondents were more likely to allow smoking in their apartments and were less likely to believe that exposure to ETS was detrimental to health.

DISCUSSION

This study represents a first look at apartment dwellers' attitudes concerning smoking policies in public and private areas of multi-unit dwellings. The survey found a widespread belief that ETS exposure causes health problems and an interest in restricting smoking in their buildings. The majority of non-smokers (79.0%) preferred that their apartment building be smoke-free and another 15.2% had no preference. Most

renters (71.6% of non-smokers and 25.0% of smokers) reported no smoking policies in their own apartments and another significant proportion restricted smoking to certain areas or occasions or allowed only certain persons to smoke in their apartments. Enforcement of smoking policies in their own apartment was not an issue for most renters; 86.4% of non-smokers and 49.3% of smokers thought that enforcing a smoke-free policy for guests would not be difficult.

An examination of predictors of preferences for restrictive smoking policies and beliefs about the effect of ETS on health indicate that current smokers are significantly less likely to prefer a smoke-free building policy and to believe that ETS exposure has negative effects on health and significantly more likely to allow smoking in their apartments and see enforcement of smoking restrictions with visitors to their apartment as more difficult. Having a greater proportion of friends who smoke and having a smoker in the household other than the respondent were also associated with negative attitudes toward smoking restrictions, independently of personal smoking status. It should be noted that, although smokers tended to have less favourable attitudes about smoking restrictions, differences on these issues was not simply a difference between smokers and non-smokers; 18.3% of cigarette smokers were in favour of restrictive policies and 21.0% of non-smokers were not. This finding is consistent with that of Poland and colleagues¹¹ that there are significant gradients across smokers and non-smokers in knowledge of the effects of ETS and support for restrictions on smoking. Interestingly, older persons were more likely to allow smoking in their apartment and less likely to believe that ETS exposure was unhealthy.

Despite the majority preference for a smoke-free building, only 7.1% of respondents reported that their building was smoke-free. In addition, the response to this question indicated that there was some confusion about building-wide policies. Several respondents indicated that they did not know the smoking policy in their building and there was considerable disagreement among residents within apartment complexes about the current policy. These findings suggest that policies are lacking, or are not well communicated.

An impediment to instituting smoke-free policies in apartment buildings might be a failure to report problems with exposure to ETS. More than a third of renters surveyed had been bothered by ETS originating outside their apartment. Very few (15.5%) of those who had been bothered had notified their building manager or owner about these incidents, and even fewer (6.9%) complained to the smoker responsible. Building managers and owners may be unaware that ETS exposure is a problem for those living in their buildings and smokers themselves might be unaware how much their smoking bothers others around them.

This study had limitations that should be considered when assessing the results. First, the sample was restricted to large apartment complexes in a single suburb in a large metropolitan area. It is unclear whether the results could be generalised to other communities. Second, the return rate of 65% was respectable, but it is low enough to raise a question about whether the sample was representative. Finally, there was no systematic method for selecting the adult in the household who would complete the survey. In response to the latter two limitations, however, it is reassuring that the prevalence of smoking found in the survey was somewhat greater than the prevalence in the Minneapolis–St Paul area¹² and similar to the prevalence in the USA¹³ for particular age groups; it does not appear that non-smokers were more likely to complete the survey.

In summary, the results of this study indicate that a majority of apartment dwellers are interested in limiting exposure to ETS in apartment buildings, but that this desire is probably not communicated to smokers or to apartment owners and managers. Encouraging apartment dwellers to express their

What this paper adds

Occupants of multi-unit residential dwellings can be at risk of involuntary and unwanted exposure to environmental tobacco smoke (ETS) coming from outside their apartments. For the most part, the few published studies that have broached this topic have been considerations of possible regulatory and legal approaches; studies of residents' experience with ETS in their homes and their preferences and practices regarding ETS incursions have not been reported.

The results of this survey of occupants of multi-unit residential dwellings found that ETS incursions from outside the apartment do occur and that although most non-smokers who notice them are bothered by them, they generally do not make their reaction known by complaining to the smokers responsible or to apartment managers or owners. A large majority of non-smokers voiced a preference for a smoke-free policy in their multi-unit dwelling. These findings suggest that policy approaches to ETS exposure in multi-unit residential dwellings should be seriously considered.

opinions about ETS exposure and educating both smokers and non-smokers about the health effects of ETS might be a useful first step in changing smoking policies in multi-unit residential dwellings. The level of interest in smoke-free policies among non-smokers also suggests that it might be time to consider legal strategies for addressing ETS incursions in multi-unit residential dwellings. Kline has outlined both administrative avenues for regulation of ETS incursions and legal grounds for bringing these issues to court in the USA.¹⁴ The emerging evidence concerning the effect of ETS on health combined with the health protection language in state regulations gives many states the authority to regulate ETS in these dwellings. Individuals can also bring the issue of ETS incursions to court based on a variety of legal grounds, which are based on commonly understood rights of tenants to live in premises fit for human occupation and free from identifiable and preventable health threats.

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