

# Is Child Health at Risk While Families Wait for Housing Vouchers?

| Joshua Sharfstein, MD, Megan Sandel, MD, Robert Kahn, MD, MPH, and Howard Bauchner, MD

Although the link between substandard housing and poor health has been recognized for more than a century,<sup>1</sup> research now demonstrates significant associations between cockroach allergen and asthma,<sup>2</sup> between lead paint and chronic neurologic damage,<sup>3</sup> between substandard homes and fatal fires,<sup>4</sup> and between unaffordable rent and inadequate childhood nutrition<sup>5</sup> and growth.<sup>6</sup>

Families who live in housing units subsidized through the federal Section 8 program are protected by annual inspections that document adherence to strict housing codes and spend about 30% of their income on rent.

However, the average waiting time for Section 8 was 28 months in 1998, with more than 660 000 families on 18 sampled metropolitan waiting lists.<sup>7</sup> To our knowledge, the child health implications of waiting for housing assistance have not been studied.

We surveyed families due to receive Section 8 vouchers at the Boston Housing Authority in the summer of 1999. Our survey included standardized questions from the American Housing Survey,<sup>8</sup> the National Health Interview Survey,<sup>9</sup> and the National Health and Nutritional Examination Survey.<sup>10</sup> Respondents were also asked, "Do you believe that your living conditions or the expense of your living conditions has affected any of the health problems of [your child]?" We obtained an exemption from the Boston University institutional review board for our survey.

We approached 158 of 170 eligible families; 74 (46.8%) participated. Families reported high rates of 17 housing hazards in their pre-Section 8 living conditions (Table 1). Of 33 families living with more than 2 housing hazards, 24.2% reported a child with fair or poor health status, as com-

pared with 9.8% of 41 families living with fewer hazards (relative risk [RR]=2.5, 95% confidence interval [CI]=0.8, 7.5). Thirty-three percent of families living with more than 2 hazards reported a child with limited activity, as opposed to 14.6% of families living with fewer hazards (RR=2.3, 95% CI=0.9, 5.5).

Participants reported that 44.8% of children had suffered health consequences as a result of housing conditions. These health consequences included emotional disorders (e.g., "He's very tense in his room because he thinks the people we share an apartment with are going to scold or hit him") and asthma (e.g., "The ceiling has mold all over; there is no heat in the hallway and bathroom; no window in the bathroom; rats everywhere; kids can smell the rats and can't do anything about it").

Despite this study's limitations, we directly assessed the risks facing families poised to benefit from a policy intervention: the Section 8 voucher. These risks appear to be substantial. In an additional analysis involving data from the 1998 Boston-area American Housing Survey, we determined that families in our study reported significantly worse housing conditions than did Boston-area families already living in voucher-assisted apartments (Table 1).

These findings merit attention, given the national crisis in regard to safe and affordable housing. Families in more than 5.3 million households, including 4.5 million children, spend over 50% of their available income on rent, live in substandard conditions, or both.<sup>7</sup> Policymakers cannot ignore the growing evidence that housing policies have important health consequences.<sup>11-13</sup> This study suggests that expanding access to vouchers may immediately improve the health of America's children. ■

**TABLE 1—Housing Hazards in Boston Families Waiting for Housing Vouchers in Summer 1999 and Comparison With Boston Families Living in Voucher-Supported Apartments: The 1998 American Housing Survey (AHS)**

Housing Hazard	Study Sample, %	AHS Sample, %
Evidence of rats in past 3 months	35.1	22.1*
No heat for more than 24 hours during past winter	31.0	18.7*
Absence of running water in past 3 months	24.3	6.1*
Inside leaks in past 12 months	21.6	14.6
Holes in walls	21.6	10.8*
All toilets broken for period in past 3 months	18.9	5.4*
Peeling paint	17.6	10.8
Major trash in streets	13.5	3.5*
Outside leaks in past 12 months	12.5	14.3
Exposed wires	11.0	0.0*
Holes in floors	5.4	2.7
Neighborhood crime a problem <sup>a</sup>	19.4	
Uncovered radiator <sup>a</sup>	15.3	
Evidence of roaches <sup>a</sup>	24.3	
Significant mold <sup>a</sup>	16.9	
Lead paint <sup>a</sup>	12.3	
Not enough food owing to expense of rent <sup>a</sup>	25.9	

<sup>a</sup>No comparison sample available.

\* $P < .05$ .

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## Contributors

J. Sharfstein and M. Sandel conceived and designed the project, coordinated data collection, and wrote the brief. R. Kahn and H. Bauchner contributed substantially to the design of the project and editing of the brief.

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## References

1. Britten RH. The relation between housing and health. *Public Health Rep.* 1934;49:1301–1313.
2. Rosenstreich DL, Eggleston P, Kattan M, et al. The role of cockroach allergen and exposure to cockroach allergen in causing morbidity among inner-city children with asthma. *N Engl J Med.* 1997;336:1356–1363.
3. Landrigan PJ, Todd AC, Wedeen RP. Lead poisoning. *Mt Sinai J Med.* 1995;62:360–364.
4. Parker DJ, Sklar DP, Tandberg D, et al. Fire fatalities among New Mexico children. *Ann Emerg Med.* 1993;22:517–522.
5. Meyers A, Rubin D, Napoleone M, et al. Public housing subsidies may improve poor children's nutrition. *Am J Public Health.* 1993;83:115.
6. Meyers A, Frank DA, Roos N, et al. Housing subsidies and pediatric undernutrition. *Arch Pediatr Adolesc Med.* 1995;149:1079–1084.
7. *Waiting in Vain: An Update on America's Rental Housing Crisis.* Washington, DC: US Dept of Housing and Urban Development; 1999.
8. US Dept of Housing and Urban Development. American Housing Survey. Available at: <http://www.huduser.org/datasets/ahs.html>. Accessed May 7, 2001.
9. National Center for Health Statistics. National Health Interview Survey. Available at: <http://www.cdc.gov/nchs/nhis.htm>. Accessed May 7, 2001.
10. Briefel RR, Woteki CE. Development of food sufficiency questions for the Third National Health and Nutrition Examination Survey. *J Nutr Educ.* 1992;24(suppl):24S–28S.
11. Sharfstein J, Sandel M, eds. *Not Safe at Home: How America's Housing Crisis Threatens the Health of Its Children.* Boston, Mass: Boston Medical Center; 1998.
12. Matte TD, Jacobs DE. Housing and health—current issues and implications for research and programs. *J Urban Health.* 2000;77:7–25.
13. Katz LF, Kling JR, Liebman JB. Moving to opportunity in Boston: early results of a randomized mobility experiment. Available at: <http://www.ksg.harvard.edu/jeffreyliebman/mto060600.pdf>. Accessed May 7, 2001.

# Encouraging Stair Use: Stair-Riser Banners Are Better Than Posters

| Jacqueline Kerr, PhD, Frank Eves, PhD, and Douglas Carroll, PhD

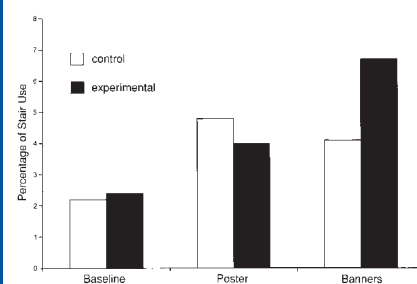
Increasing physical activity levels among a largely sedentary public is a health priority.<sup>1</sup> Lifestyle exercise, such as walking or stair climbing, has been recommended because it provides substantial health benefits and fits easily into daily routines.<sup>2</sup> Opportunities for stair climbing in workplaces, public buildings, and the home are frequently available to most population groups.

Studies conducted in both the United States and the United Kingdom have shown that posters at the “point of choice” between escalators and stairs can increase stair use.<sup>3–6</sup> As a result, physical activity promoters have championed the use of such posters.

In a recent study, however, messages placed as banners on alternate stair risers were associated with a greater increase in shoppers' stair use than that typically observed with posters.<sup>7</sup> To confirm the superiority of these banners in promoting stair climbing, we systematically compared the use of poster prompts and stair-riser banners.

The study was conducted at 2 shopping malls; both sites had 28-step staircases with adjacent escalators. Following a coding system,<sup>3</sup> an observer recorded the number of people using the escalators and stairs on alternate days at each location. Observations were made between 11 AM and 1 PM to include day and lunchtime shoppers.

At the control site, a 2-week baseline period was followed by 4 weeks during which a poster that read “Stay healthy, use the stairs” was displayed. Use of this poster had been found to be effective in previous research.<sup>3</sup> At the experimental site, 2 weeks of baseline observation and 2 weeks of the poster intervention were followed by 2 weeks during which banners, containing multiple messages, were placed on the stair risers, as in our earlier study.<sup>7</sup>



**FIGURE 1—Stair use at baseline in poster and banner conditions in the control and experimental shopping malls.**

Logistic regression analyses were conducted with escalator–stair use as the dichotomous outcome variable. Overall pedestrian traffic volume, a potential confounding variable,<sup>3</sup> was calculated as the total number of people using the escalators and stairs during each half-hour period. Traffic volume was entered into the logistic regression models as a continuous variable. Sex, age, and ethnicity were also added to the models, in that previous research had demonstrated their importance.<sup>3–6</sup>

Figure 1 illustrates the effects of the poster and banner conditions in the 2 shopping malls. At the control site (n=12 018), the rate of stair use increased from 2.2% at baseline to 4.8% during the first 2 weeks of the poster exposure but fell slightly to 4.1% during the second 2 weeks. At the experimental site (n=11 961), stair use increased from 2.4% at baseline to 4.0% when the poster was in place and rose to 6.7% when the banners were displayed on the stair risers.

Logistic regression analyses revealed that stair use increased at both sites during the first 2 weeks in which the poster was displayed (odds ratio [OR]=2.18, 95% confidence interval [CI]=1.69, 2.80), with no significant differences between the sites. During the second intervention period, there was an interaction between the sites (OR=2.06, 95% CI=1.48, 2.87) such that rates of stair use were higher with the banners at the experimental site than with the poster at the control site.

There are several reasons why the banners were more effective than the poster in encouraging stair use. First, the banners were

highly visible. In our earlier studies, 76% of interviewees reported seeing these banners,<sup>7</sup> whereas only a third reported noticing the poster used.<sup>8</sup> Second, while the poster included only one health-related message, the banners contained multiple messages, such as “Keep fit,” “Be active,” and “Free exercise.” As such, they are likely to appeal to a broader population range.<sup>9</sup>

Regular stair climbing has been associated with discernible health gains.<sup>10</sup> Accordingly, if large population groups are regularly exposed to motivating stair banners instead of the posters currently used by health promoters, the public health dividends could be considerable. ■

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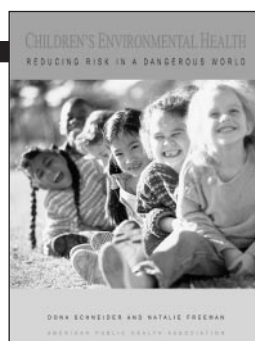
J. Kerr organized the study, collected and analyzed the data, and wrote the paper. F. Eves and D. Carroll assisted with the study design, supervised data analysis, and contributed to the writing of the paper.

### References

1. *Physical Activity and Health: A Report of the Surgeon General*. Atlanta, Ga: Centers for Disease Control and Prevention; 1996.
2. Dunn AL, Andersen RE, Jakicic JM. Lifestyle physical activity interventions: history, short- and long-term effects, and recommendations. *Am J Prev Med*. 1998;15:398–412.
3. Kerr J, Eves FF, Carroll D. The influence of poster prompts on stair use: the effects of setting, poster size and content. *Br J Health Psychol*. In press.
4. Andersen RE, Franckowiak SC, Snyder J, et al. Can inexpensive signs encourage the use of stairs? Results from a community intervention. *Ann Intern Med*. 1998;129:363–369.
5. Blamey A, Mutrie N, Aitchison T. Promoting active living: a step in the right direction. *J Institute Health Educ*. 1996;34:5–9.
6. Brownell KD, Stunkard AJ, Albaum JM. Evaluation and modification of exercise patterns in the natural environment. *Am J Psychiatry*. 1980;137:1540–1545.
7. Kerr J, Eves FF, Carroll D. Getting more people on the stairs: the impact of a new message format. *J Health Psychol*. In press.
8. Kerr J, Eves FF, Carroll D. Posters can prompt less active individuals to use stairs. *J Epidemiol Community Health*. 2000;54:942–943.

9. Kreuter MW, Strecher VJ, Glassman MAT. One size does not fit all: the case for tailoring print materials. *Ann Behav Med*. 1999;21:276–283.

10. Boreham CAG, Wallace WFM, Nevill A. Training effects of accumulated daily stair-climbing exercise in previously sedentary young women. *Prev Med*. 2000;30:277–281.



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