Randomised controlled trial of site specific advice on school travel patterns

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Accepted 10 June 2002
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Aims: To evaluate the effect of site specific advice from a school travel coordinator on school travel patterns.

Methods: Cluster randomised controlled trial of children attending 21 primary schools in the London boroughs of Camden and Islington. A post-intervention survey measured the proportion of children walking, cycling, or using public transport for travel to school, and the proportion of parents/carers very or quite worried about traffic and abduction. The proportion of schools that developed and implemented travel plans was assessed.

Results: One year post-intervention, nine of 11 intervention schools and none of 10 control schools had travel plans. Proportions of children walking, cycling, or using public transport on the school journey were similar in intervention and control schools. The proportion of parents who were very or quite worried about traffic danger was similar in the intervention (85%) and control groups (87%). However, after adjusting for baseline and other potential confounding factors we could not exclude the possibility of a modest reduction in parental concern about traffic danger as a result of the intervention.

Conclusions: Having a school travel coordinator increased the production of school travel plans but there was no evidence that this changed travel patterns or reduced parental fears. Given the uncertainty about effectiveness, the policy of providing school travel coordinators should only be implemented within the context of a randomised controlled trial.

Increasing car use for journeys that would previously have been made on foot has provoked concern about declining physical activity in childhood and the risks that this may have for health in later life. Since 1972, the annual distance walked by children has fallen by 28%, largely because car travel has replaced walking on many school journeys.[1] Driving to school increases congestion and pollution and limits children's independent mobility.[2][3] Because of these problems, the government is trying to discourage car use and promote walking on the journey to school. However, many parents perceive walking to school as fraught with dangers from injury and abduction and would only allow their children to walk if it was safer. The government has responded to parental concerns by promoting the use of school travel plans. The government would like school governors, teachers, parents, and children to work together to survey children's travel to school, identify safety concerns, and formulate a plan to improve safety. Government "Best Practice" guidelines recommend that school travel plans should include actions to: (1) decrease traffic and pollution; (2) increase children's fitness levels; (3) increase access to public transport; and (4) decrease casualties.[4] To promote the production and implementation of travel plans, the government is funding school travel coordinators to provide expert, site specific advice on the development and implementation of effective travel plans. Because the effectiveness of this intervention has not been established, we conducted a randomised controlled trial.

METHODS

Study population and design

Forty one primary schools in the inner London boroughs of Camden and Islington were invited to participate. These included local authority, voluntary aided (Church of England and Roman Catholic), and private schools. Each head teacher was sent an invitation explaining the trial. Intervention schools would receive assistance and advice from a school travel coordinator, and control schools would receive £150 in compensation for their time. All participating schools were offered an individual report on their school travel patterns on study completion.

A cluster randomised controlled trial was conducted. The school was the unit of randomisation. Consenting schools were randomised to intervention or control group. Prior to randomisation, information was collected on whether the school was local authority, whether road safety improvements were planned during the follow up period, whether the school was already participating in "safe routes to school" or other safety related programmes, and whether the school already had a travel plan. A reasonable balance with respect to these potential confounding factors was achieved by the use of minimisation. An independent statistician carried out the randomisation using the MINIM software programme. The Institute of Child Health Research Ethics Committee approved the study.

Intervention

Intervention schools were offered 16 hours of expert assistance over one school year from one of two part time school travel coordinators who had formal teaching qualifications and road safety experience. Road safety problems and their solutions were identified by meeting with teachers and governors, organising focus groups of parents and pupils, and encouraging the establishment of a school travel working group. Within the working group, specific safety concerns were discussed and advice was given on the development and implementation of a travel plan. The coordinator reviewed draft travel plans and provided advice about how to obtain necessary funding. The coordinator encouraged implementation of the plans by liaison with relevant parties within the local and health authorities.

Outcomes assessment and analysis

The primary outcome measures were the proportion of children who walked, cycled, or used public transport for
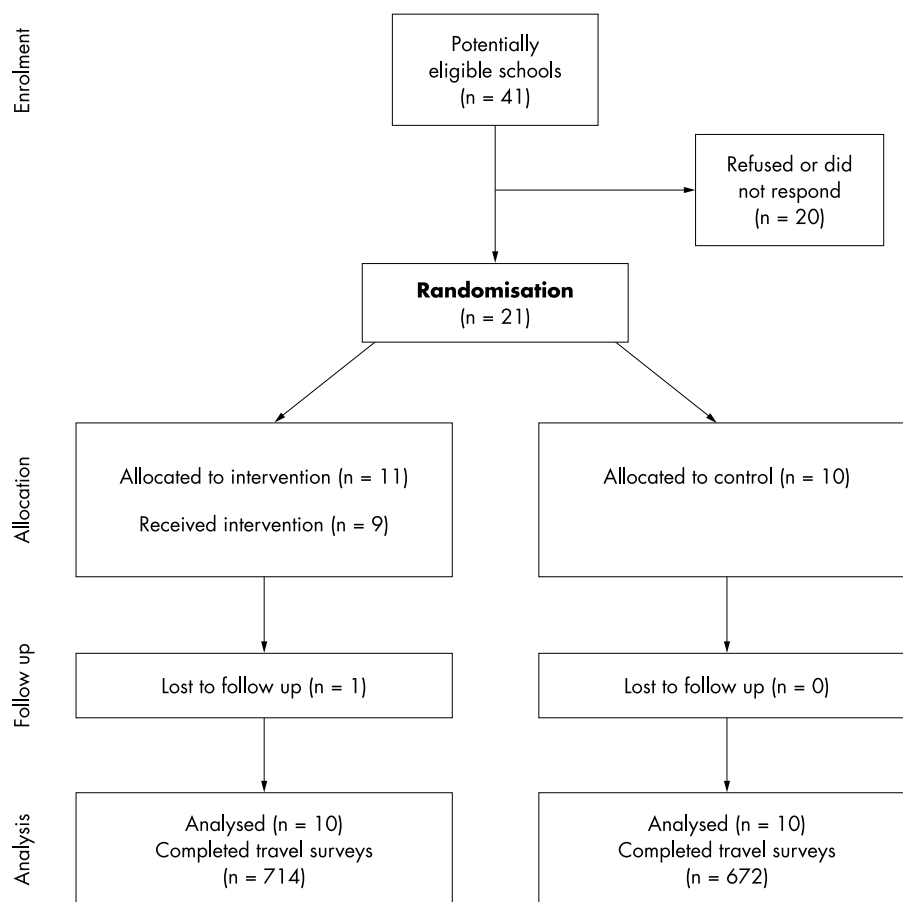
travel to school on the day of the survey, and the proportion of parents or carers who were very or quite worried about the safety of their children on the daily journey to school in relation to traffic, abduction, and bullying. Primary outcome measures were assessed by a survey administered to the parents of all children in years 2 and 5 in intervention and control schools two months after the intervention was complete. The methods used to implement the survey have been described previously.[5] The survey was offered in English, Bengali, Somali, Greek, Turkish, Chinese, and Albanian. An identical survey carried out in 1997 provided baseline data for each school on the proportions of children walking to school and of parents very or quite worried about each specific safety concerns.[5]

The secondary outcome measure was the proportion of schools that developed and implemented school travel plans. On completion of the study, the head teachers of intervention and control schools were interviewed to assess whether the school had developed a school travel plan and if any "safe routes" activities had been undertaken. Copies of written travel plans were obtained and examined for the relevant areas covered and the specific components included. The number and quality of actions taken by the local authority were also recorded.

All participating schools were included in the analyses, regardless of the extent of intervention received. We analysed the primary outcome measures using logistic binomial analysis models for distinguishable data (Egret v1.02.10, Cytel Software Corporation, 1997), matching on school and controlling for each school's baseline proportions of children who walked to school or of parents who were quite or very worried about specific dangers. We examined whether any potential differences in the minimisation factors influenced the results. We assessed the effect of possible confounding factors including year in school, sex, ethnicity, distance to school, survey

respondent (mother, father, other carer), home ownership (as a proxy for socioeconomic status), car ownership, maternal paid employment, and whether the child was enrolled in an after school play scheme. Odds ratios and 95% confidence intervals are presented.

RESULTS

Of 41 primary schools invited to take part, 21 (51%) agreed and were randomised (fig 1). Of the remaining 20 schools, 10 declined because of general overload of work, five declined because of involvement with other community based initiatives, and the remaining five gave either no response or no reason.

Intervention and control schools were similar in terms of type of school, pre-existing travel plans, planned roadwork, and having other safety programmes in place. The groups were also similar in the mean proportions at baseline (1997) of children who walked to school, and parents who were very or quite worried about traffic danger, abduction, or bullying. Table 1 shows characteristics of the intervention and control group schools.

Two of 11 intervention schools opted out of the project following randomisation. One school was "too busy", the other gave no reason. Travel surveys were conducted in 20 (95%) of 21 participating schools. One school that opted out also declined to take part in the survey. Of 1629 pupils in years 2 and 5 in the 20 surveyed schools, 1386 (85%) completed the survey.

Primary outcomes

Table 2 shows the proportions of children walking, cycling, or using public transport on the journey to school in the intervention and control groups. In the intervention schools, 70% of children walked to school, 24% travelled by car, and 6% cycled or used public transport. In the control schools, 71%

Table 1 Characteristics of intervention and control schools at baseline.

	Intervention n/total (%)	Control n/total (%)
Local authority schools	6/11 (55)	5/10 (50)
London Borough of Islington	6/11 (55)	7/10 (70)
Baseline travel plan	2/11 (18)	1/10 (10)
Roadwork planned	7/11 (64)	8/10 (80)
Other safety programmes	6/11 (55)	3/10 (30)
Children who walked to school, mean proportion (SD)	65 (22)	70 (16)
Proportion of parents very or quite worried about traffic danger, mean (SD)	84 (12)	88 (9)
Proportion of parents very or quite worried about abduction, mean (SD)	84 (13)	89 (10)
Proportion of parents very or quite worried about bullying, mean (SD)	55 (20)	63 (19)

Table 2 Characteristics of children responding to the questionnaire

	Intervention, n (%) Total = 714	Control, n (%) Total = 672
Attending local authority school	407 (57)	417 (62)
Attending school in Islington	446 (63)	462 (69)
Living <0.5 mile from school	368 (52)	386 (57)
Year 2 in school	356 (50)	353 (52)
Female sex of child	399 (56)	326 (49)
Race/ethnicity of child non-white	266 (37)	253 (38)
Mother in part or full time work	357 (45)	330 (43)
Mother is respondent	554 (78)	549 (82)
Own home	234 (33)	174 (26)
Own at least one car	421 (59)	403 (60)
Child in after school play scheme	101 (14)	131 (20)
Walked to school	499 (70)	477 (71)
Took private car to school	172 (24)	151 (22)
Parent very or quite worried about traffic danger	607 (85)	583 (87)
Parent very or quite worried about abduction danger	560 (78)	580 (86)
Parent very or quite worried about bullying danger	423 (59)	444 (66)
Parent very or quite worried about danger of child becoming lost	383 (54)	410 (61)

Table 3 Survey results of travel to school

	Unadjusted OR (95% CI)	Adjusted for baseline (95% CI)	Adjusted for baseline and other covariates* (95% CI)
Walked, cycled, or took public transport	0.98 (0.54 to 1.76)	1.20 (0.81 to 1.82)	0.98 (0.61 to 1.59)
Very or quite worried about traffic danger	0.97 (0.67 to 1.38)	1.01 (0.69 to 1.46)	0.85 (0.56 to 1.28)
Very or quite worried about abduction danger	0.60 (0.33 to 1.09)	0.64 (0.33 to 1.26)	0.82 (0.35 to 1.91)
Very or quite worried about bullying	0.78 (0.49 to 1.22)	0.81 (0.50 to 1.31)	0.88 (0.56 to 1.37)

*Covariates included in the final models: year in school, sex, ethnicity, type of school, distance to school, survey respondent, home ownership, car ownership, maternal paid employment, child's enrolment in an after school play scheme, existence of other safety programmes in the school.

walked to school, 23% travelled by car, and 7% cycled or used public transport. Table 3 shows the results with and without adjustment for baseline data and for potential covariates. For the journey to school, the adjusted odds of walking, cycling, or using public transport in intervention schools were almost identical to that in control schools (OR 0.98; 95% CI 0.61 to 1.59). Results for travel from school to home in the afternoon were similar (data not shown).

Secondary outcomes

Two of 11 intervention schools and one of 10 control schools reported having travel plans prior to the study. One year later, nine of 11 intervention schools and none of 10 control schools had a written travel plan. None of the 11 intervention schools took action in all four recommended areas in government "Best Practice" guidelines for school travel plans. However, of the nine intervention schools developing their travel plan within the project time frame, all implemented some form of Safe Routes activities (table 4), compared to four of the 10 control schools.

DISCUSSION

In an attempt to break the vicious cycle of increasing car use and decreasing walking on the journey to school, the government has advocated the use of school travel plans and the provision of expert advice to schools on the development and implementation of such plans. This policy has important resource implications but has never been properly evaluated in a randomised controlled trial. Our trial shows that assistance from a school travel coordinator does increase the production of school travel plans, but we found no evidence that this assistance changes children's travel patterns or has any substantial effect on parental fears about safety on the journey to school.

Only half of the schools invited to participate took part. Most declined because they were too busy and were reluctant to take on the extra responsibility of school travel. Furthermore, two of the 11 schools that were offered the intervention subsequently declined the assistance of the travel coordinator. In view of the lack of enthusiasm shown by many schools, the uptake of this policy at a national level is questionable.

Table 4 Activities implemented within project time frame

Activity	Number of schools implemented activity	
	Intervention (n=11)	Control (n=10)
Written travel plan developed	9	0
Working group meeting(s) held	8	2
Walking bus*		
General publicity, e.g. letters, meetings	4	1
Route mapping	3	1
Volunteers trained	2	0
Bus running one morning per week	2	0
Creation of "drop off" zone**		
Recruiting of volunteers	2	0
Establishment of zone	1	0
School requests made of local authority		
Control of vehicle speeds, e.g. speed limit, road humps	3	2
Warning signs	2	0
Restricted parking	1	2
Stopping restrictions, e.g. road markings	2	2
Pedestrian crossing facilities	1	0
School crossing patrol	4	0
Removal of abandoned vehicles	1	0
Actions taken by local authorities in response to school requests		
Warning signs	1	0
Restricted parking	1	0
Independent contact by school working group with external organisations		
Public transport providers, e.g. bus garage	1	0
External funding		
Applied for	3	1
Received	1	0
Publicity		
Newsletters/posters	3	0
School prospectus	1	0

*"Walking bus" is an escorted group of children walking an agreed route to school with designated stops.
**"Drop off zone" is an agreed "safe" area where children travelling by car can be dropped off and escorted to and from the school premises.

acceptable way of rationing a limited resource while simultaneously allowing learning to take place about its effects.[6] Rather than implement the policy throughout Camden and Islington, we developed a randomised controlled trial to evaluate its implementation in a limited number of schools.

Government policy proposes that schools receive extra funds to enable them to take a lead role in promoting safety on the journey to school in the hope that this will increase the number of children walking over a number of years. We conclude that many schools are not willing to participate in a non-compulsory transport strategy, even when provided at no extra cost to the school. We cannot be sure that the action taken by schools implementing this strategy will be sufficient to allay parents' safety fears or change travel patterns. In view of the uncertainty about its effectiveness, the policy of providing school travel coordinators should only be implemented within the context of a randomised controlled trial of sufficient size and duration to identify important effects.

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Consort table can be viewed on the *ADC* website [www.archdischild.com]

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Nevertheless, of the intervention schools developing a travel plan, all nine included at least some of the activities recommended by the government. Activities to implement safe routes were more likely within intervention schools, particularly in reference to the development of a walking bus and contact with the local authorities. However, the solution to many of the schools' transport needs required urban planning measures which were unlikely to be implemented within the project time frame.

In this trial, allocation was well concealed, intervention and control schools were similar at baseline, an intention to treat analysis was conducted, and the travel surveys achieved a high response rate (85%). However, whereas the trial may have been sufficiently well designed to avoid bias, we cannot exclude the possibility that random error might have obscured a modest but real intervention effect. The Camden & Islington Health Action Zone funded the study, and study size and duration was constrained by resources. The trial was motivated by the belief that random allocation is an ethically