

MEDICAL PRACTICE

Contemporary Themes

Promoting children's home safety

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Abstract

Home accidents are the main cause of death and morbidity in early childhood. Working-class children are at greatest risk. A study in an inner city area of the effects of a national television campaign about child accident prevention and of a locally designed health education initiative showed that 55% of families with young children in the study area did not watch any of the television programmes. Only 9% of a group specially encouraged to watch the programmes took any action to make their homes safer. In a comparable group who also received a home visit at which specific advice was given 60% took action to make their homes safer. The families studied were well aware before the television campaign of the importance and preventability of children's accidents. The problems disadvantaged families face are therefore not ones of ignorance or apathy about hazards but practical difficulties in converting their concern into action. Administrative arrangements must be developed for providing health workers—especially health visitors—with detailed local information to pass on to parents.

Introduction

For children over 1 year of age in England and Wales accidents are the main cause of death, morbidity, and the emergency uptake of primary and secondary health care services.¹⁻⁴ Deaths due to accidents in children have a steeper social-class gradient

than any other fatal condition.⁵ Although over the past 30 years the numbers of deaths from accidents has fallen in all classes, social-class gradients have steepened.⁶ In children up to 5 years home accidents are the commonest cause of death,⁷ of attendance at accident and emergency departments, and of admission to hospital.⁸⁻⁹ Of home accidents reaching hospital, cuts, bruises, poisonings, burns, and scalds account for 70%. A fall has occurred in over half the accidents.¹⁰

For health education to be effective it must first reach people, next change knowledge and attitudes, and, finally, change behaviour. Two studies suggest the ineffectiveness of health education in reducing either hazards in the home¹¹ or accidents themselves.¹² Another study¹³ shows no benefit from an intensive television campaign in influencing the use of seat belts.

Our study was directed to preventing accidents in the home in young children in an inner city area. It arose from a hypothesis that failure of health education may reflect the inappropriateness of the educational method rather than unresponsiveness in those on whom the education is focused. If measures to prevent accidents are to benefit a large number of children they must be effective for working class families. By means of a randomised, controlled design we have studied the effect of two health education approaches in changing behaviour so as to make homes intrinsically safer. Families in one group were told about and encouraged to watch a forthcoming television campaign (group 1). A comparable group (group 2) received in addition a home visit before the programmes at which specific advice was given on how to reduce physical hazards present in their home at that time.

Methods

THE AREA

The "Riverside area" consists of four-and-a-half wards of the City of Newcastle. In 1978 the population was 39 250, with 2400 children under 5 years. One-third of those under 5 had changed address in the preceding year. Thirty per cent of heads of households containing

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children under 5 were in socioeconomic class IV or V (Registrar General's classification) and 24% were unclassified (unemployed, sick, single parent).¹⁴ The area is considered to have special needs by the education, social service, and housing departments of Newcastle.¹⁵ It is known to have high perinatal mortality, a high incidence of low birth weight and infant death, and high rates of hospital admission for respiratory infection¹⁶ and childhood accidents.¹⁵ The area has high preschool provision that is widely used; nursery and toddler groups provide places for 90% of children between 24 and 47 months.

"PLAY IT SAFE" TELEVISION CAMPAIGN

Between October and December 1981 at 6.30 pm on Sunday evenings on BBC 1, 10 10-minute programmes about childhood accidents were televised. The series was called *Play it safe* and was introduced by Jimmy Savile. Seven of the 10 programmes related to accidents in the home. The programmes were accompanied by a booklet about children's accidents, obtainable free from the BBC.

STUDY POPULATION

One hundred families were approached at all three child health clinics, both day nurseries, two nursery classes, a nursery school, and a toddler group in the area.

Two groups of families were constructed by randomly allocating at least one clinic, one day nursery, and one nursery class to each group.

In group 1 parents were asked by means of a short questionnaire about their social circumstances and knowledge of children's accidents. Their recognition of specific dangerous situations in the home was assessed by a "hazard picture" (discussed below). The families were told about the *Play it safe* campaign and sent a reminder by letter before the programmes started. At a home visit after the programmes the physical hazards in their homes were assessed.

Group 2 were interviewed in the same way and were visited at home before the television programmes. At this visit, which lasted about 20 minutes, each family received a copy of the *Play it safe* booklet, physical hazards in the home were assessed, and specific advice was given on how to reduce the hazards. These families were revisited for reassessment of physical hazards after the programmes.

In a "street survey" after the programme a further 150 families were approached at the three local shopping areas while out with their children and asked whether they had watched any *Play it safe* programmes.

HAZARD PICTURE

A picture was used to assess "recognition of dangerous situations" before and after the programmes. In the picture a tired mother sat with baby and toddler in her kitchen surrounded by 13 dangerous situations, all mentioned in the television programmes. Mothers were asked how many dangers they could see.

PHYSICAL HAZARD CHECK LIST

Nine physical hazards that had been mentioned in the television programmes but had not been put in the hazard picture were looked for in the homes. All could be made permanently safe by a single act. The nine hazards were open fire, matches, cookers, hanging flexes, low-level glass, falls from windows, falls on stairs, and storage of medicines and domestic fluids.

For group 1 the physical hazard score before the programmes had to be assessed retrospectively as inspecting the house before the programmes might have produced changes due to the inspection itself; also it would have been unethical to withhold advice about hazards discovered.

ADVICE

Advice was researched to be accurate, feasible, and inexpensive. For example, the two local DHSS managers were visited so that we knew of entitlements to cooker guard, fireguard, and stair gate for families receiving supplementary benefit. We identified local shops

where safety devices were obtainable and showed samples to families. We would be pleased to supply on request a sheet that details the information researched.*

STATISTICAL CONSIDERATIONS

Sample size was decided so as to provide an 80% chance of detecting a significant difference between the groups, given that a "worthwhile" difference would be at least 50% of group 2 and not more than 20% of group 1 making a physical change. For analysis, a chi-squared test was used with Yates's correction. Where appropriate the "exact probability test"¹⁷ was used.

Results

CHARACTERISTICS OF THE FAMILIES

Of the 101 families that entered the study, 21 families dropped out (11 had moved house, seven could not be contacted, three refused to continue). Forty-three families remained in group 1 and 37 in group 2. Of these 80 families, all had a working television, all had at least one child over 7 months or under 5 years, 89% were council tenants, 52% received supplementary benefit, 81% were in social class IV, V, or unclassified, 54% had no parent in full employment, and 21% were single parent families.

There were no significant statistical differences between the groups with respect to the above sociodemographic indices, maternal age, or number of children; nor with respect to the number of opportunities for increasing safety in their homes. Nor did the families who dropped out differ significantly from the remainder for the sociodemographic indices.

MOTHERS' KNOWLEDGE BEFORE CAMPAIGN

The 80 mothers were asked, "By the time 100 children reach the age of 3 years, about how many will have attended hospital for an accident?" Fifty-four mothers (67%) reckoned 50 or more children, while six mothers (7.5%) reckoned fewer than 30. The average figure for England is 30. Asked, "Do you think children's accidents are mostly just bad luck or mostly could be prevented?" 71 (89%) replied "mostly could be prevented." Replies did not differ significantly between the groups.

EXTENT TO WHICH TELEVISION PROGRAMMES REACHED FAMILIES

Table I shows the number of programmes watched. There were no significant differences between groups 1 and 2 with respect to number of programmes watched.

TABLE I—Number of families who had heard about or watched the television programmes

	Street survey (150 families)	Group 1 (43 families)	Group 2 (37 families)
Not heard of programmes	46 (31%)	Not applicable	Not applicable
No of programmes watched:			
0	37 (25%)	7 (16%)	3 (8%)
1-3	26 (17%)	16 (37%)	10 (27%)
4-6	24 (16%)	8 (19%)	6 (16%)
7-10	17 (11%)	12 (28%)	18 (49%)

There are no significant differences between groups 1 and 2. Chi squared with Yates's correction = 2.02 if division is at four or more programmes. Chi squared = 2.82 if division is at seven or more programmes.

THE BOOKLET

We did not give booklets to group 1 families but 17 of the 43 families obtained a copy from sources outside our control—for

*Correspondence and requests for details of the type of local information we researched should be sent to Dr A F Colver, Riverside Child Health Project, Atkinson Road Infant School, Atkinson Road, Newcastle upon Tyne NE4 8XT.

example, nursery or by writing to the BBC. We gave booklets to the 37 families in group 2, and 23 still had it at the revisit three months later.

TABLE II—Number of families who increased their score on hazard picture

	Group 1 (43 families)	Group 2 (37 families)
Score increased	24 (56%)	26 (70%)
Score unchanged or reduced	19 (44%)	11 (30%)

Chi squared with Yates's correction = 1.21, df = 1, not significant.

RECOGNITION OF DANGEROUS SITUATIONS

All families identified at least six hazards in the hazard picture before the programmes. Table II gives the numbers of families who increased their score as a result of the programmes.

PHYSICAL CHANGES IN THE HOME

Table III shows the families who made a physical change. Of the four families in group 1 who made a change, one had received specific advice from a health visitor and another had a best friend in group 2 who advised her to get a stair gate. Of the 17 families in group 1 who obtained a booklet, only two made a physical change. Table IV shows the changes made by the families in group 2. Within group 2 there were no significant differences between those who did and did not make a change with respect to sociodemographic indices, number of programmes watched, or number of opportunities for change.

TABLE III—Number of families in each group who made their homes safer

	Group 1 (43 families)	Group 2 (37 families)
Homes made safer	4 (9%)	22 (60%)
No changes made	39 (91%)	15 (40%)

Chi squared with Yates's correction = 20.6, df = 1, significant $p < 0.001$.

TABLE IV—Changes made by the families in group 2

7 fire guards obtained and fitted
7 cooker guards obtained and fitted
6 stair gates obtained and in use
5 window locks obtained and fitted
4 child-proof catches for domestic fluid cupboards obtained and fitted
2 child-proof catches for medicine cupboard obtained and fitted
2 child-proof containers for medicines obtained and in use
1 glass door boarded up
3 families had thrown away all matches
3 families stored matches in high cupboard

Discussion

The results of this study cast doubt on the value of television campaigns in promoting children's home safety. Fifty-five per cent of families with young children in the study area did not watch any of the *Play it safe* programmes. Only four (9%) of a group specially encouraged to watch the programme took action to make their homes safer (of these four, two had received additional detailed advice due to factors outside our control). The campaign, therefore, had little effect in making safer the homes we studied. We recognise that the campaign may have had longer-term effects, especially through interest it has aroused in health professionals, which we have not attempted to measure.

The results of the questionnaire show that families were well

aware before the *Play it safe* campaign of the high risk of accidents to their children and of the preventability of most accidents. They did not need to be told this by the television programmes nor by us. The results of our hazard picture test suggest that families also recognised specific dangerous situations in the home, although the television programmes increased this recognition to some extent.

Our most encouraging finding is that even severely disadvantaged families will respond to health education if the education is appropriate. Of families who were given specific advice about hazards present in their homes at the time of a home visit, 60% made at least one change to make their homes safer.

The *Play it safe* booklet may have contributed to the benefit of the home visit. Nevertheless, it had little effect by itself.

The families in our study did to some extent select themselves by attending a clinic or nursery. We used this method of selection because a pilot study had confirmed our suspicions that many parents, especially in disadvantaged areas, are suspicious of professionals who make an unannounced home visit to discuss accidents, because accidental and non-accidental injury are linked in their minds. The clinic or nursery approach enabled mothers to realise they were not being singled out. Clinics and nurseries are widely used in this part of Newcastle, and the socioeconomic indices of our sample were even lower than the averages for the area.

Why have some previous attempts^{11 12} to provide health education about accidents been ineffective, and are there implications from the findings of our study for a different approach by health professionals to accident prevention? We suggest that the following conclusions can be drawn:

(1) Health education advice usually aims to change behaviour but has to contend with long-established cultural patterns of behaviour. Such change is difficult for families to sustain and likely to break down at times of stress. In our intervention the advice given was to take single actions that would have a lasting effect.

(2) Advice about accidents is often combined with a variety of other advice about child care. In our intervention the purpose of the visit was clear and the amount of advice given small.

(3) Home visits are often not made by appointment. Parents in our study were able to prepare for the visit because they knew when and why we were coming to see them.

(4) Advice is often of a general nature, possibly not related to hazards actually present in the home at the time. In our intervention advice was given only about hazards present at the time in each home.

(5) Detailed information about local availability of safety devices, exact DHSS entitlements, etc, is often not readily available to health professionals. Individual health workers do not have the time to collect and update such information. For our intervention we had to spend considerable time researching the information.

We therefore suggest that:

(1) Those who attempt health education about accidents, especially health visitors, can be encouraged that their advice will be heeded by families most at risk from home accidents if the advice is specific, detailed, and concrete at a prearranged home visit.

(2) Senior health professionals, whether in medicine, nursing, or health education, should be responsible for ensuring that updated and local information about the availability of safety devices and about exact DHSS entitlements is supplied to health workers.

(3) DHSS offices should consider volunteering information about entitlements to fire guards, cooker guards, and stair gates to families with young children receiving supplementary benefit.

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Occasional Survey

Insulin-induced hypoglycaemia in an accident and emergency department: the tip of an iceberg?

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Abstract

In one year a prospective survey in a large accident and emergency department identified 204 admissions of adults with severe hypoglycaemia, 200 in insulin-treated patients. Ninety-six had one admission while 34 others were admitted on 104 occasions. Of the 130 patients, 111 attended diabetic clinics in Nottingham, forming 9% of a known clinic population of 1229 on insulin treatment. Since many other episodes of hypoglycaemia were presumably treated outside hospital, 9% a year is a minimum estimate of the incidence of severe hypoglycaemia in our area. The mean insulin dose was 1.2 units/kilogram/day for those admitted twice or more and 0.9 U/kg/day for those admitted once; these doses were significantly higher than those of an age-matched clinic population. A year after the latest admission with hypoglycaemia, the mean insulin dose in the group with two or more admissions had fallen to 0.8 U/kg/day, suggesting that over-treatment had been an important causal factor. A similarly high incidence has been reported in other studies, and we believe that it is due mainly to the inadequacy of conventional subcutaneous insulin treatment.

Introduction

Hypoglycaemia is the commonest complication of treatment with insulin, but little is known about its true incidence. For example, in 1977 the argument that improved control might lead to increased morbidity and mortality from hypoglycaemia¹ could be neither refuted nor sustained, since the basic information was lacking.² There are two main reasons why the frequency of hypoglycaemia is not known; hospital admission is mandatory for ketoacidosis but hypoglycaemia may be treated at home, in the casualty department, or on a hospital ward, and records from these sources are difficult to amalgamate. Secondly, information supplied by patients is often unreliable, perhaps because of retrograde amnesia, and we,³ like Malins,⁴ have noticed that our patients may not report episodes of severe hypoglycaemia even when questioned directly in the clinic.

We have attempted to assess the minimum frequency of severe hypoglycaemia in our area by means of a one-year prospective study of all admissions to a large accident and emergency department.

Methods

Nottingham is unusual in that one accident and emergency department serves a population of more than half a million. Patients with severe hypoglycaemia seen in the accident and emergency department between 0900 and 1800 were interviewed by a nurse practitioner who could be contacted by sleep. Patients who had been treated during the night were identified from casualty records and contacted by telephone or post. In addition, all casualty records were checked on the following day and those that recorded a diagnosis of diabetes were examined. We do not believe that many episodes were missed by our survey but have no independent check on this.

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