Morbidity and healthcare utilisation of children in households with one adult: comparative observational study

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BMJ 1998;316:1572–6

Abstract

Objective: To identify and consider differences in morbidity in children in households with one adult presenting to general practitioners compared with children in households with more than one adult.
Design: Observational study; data analysed with logistic regression controlling for age, sex, and practice.
Subjects: 93 356 children aged 0-15 years included in the fourth national study of morbidity in general practice and for whom data about household structure were available. Among them 10 983 (11.8%) were living in households with a sole adult.
Methods: Morbidity data were recorded from each consultation as the assessment diagnosis made by the general practitioner.
Main outcome measures: Number of consultations and consultations per person for any illness, infections, acute respiratory infections, asthma, and accidents; number presenting and mean consultations per person for immunisation; number receiving home visits and home visits per person visited; average annual frequency of consultation among those consulting.
Results: Compared with children in other households, a higher proportion of children in households with one adult consulted for infections and accidents. The proportion consulting for immunisation was lower and the proportion receiving home visits greater. Mean numbers of consultations per person consulting were also generally higher for all conditions. For infections, accidents, and home visits, the differences were evident in all age groups.
Conclusions: The study confirms the importance of single parent families as an indicator of deprivation. Children in such families should be targeted for immunisation and accident prevention.

Introduction

Between 1961 and 1994, the proportion of households made up of a lone parent with dependent children increased from 2% to 7%, and the number of households increased from 16.2 million to 23.1 million—thus the actual number of households with lone parents and dependent children in Britain increased fivefold.[1] In 1991, 19.4% of children were living in a one parent family situation, mostly (18%) with their mother. There is an excess of lone parents in black African and Caribbean ethnic groups, in social class III non-manual (assessed in women), and in metropolitan areas such as Greater London, south Wales, and the western part of Scotland.[1]

The Committee on One Parent Families identified finance and housing as major problems[2]: Bradshaw noted that two thirds of lone parents received supplementary benefit.[3] Studies of the health of children in single parent households have generally found that it differs little from the health of children in two parent situations.[4–7] However, a common definition of single parent household was not always used. Behavioural problems,[8] accidents,[9–11] and non-accidental injury[12] have been found more commonly in children of single parent households, and an Australian study reported reduced rates of polio immunisation.[13] Roberts and Pless drew attention to the twofold difference in rates of injury between the children of lone mothers and those in two parent households and related this difference to elements of social deprivation.[10]

Kai studied 95 parents of preschool children, including 29 sole parents in a disadvantaged inner city community, and drew attention to parental anxiety about the gravity of feverish illnesses.[14] The impression of general practitioners that young single mothers bring their babies more readily to the doctor with comparatively minor problems was part of the consensus assessment which led to the establishment of the Jarman index as a determinant of a deprived area.[15] This paper examines some of the problems for health and health care delivery associated with childhood in a single parent household and assesses both the needs of such children and the implications for general practitioners.

Methods

Data collected in the fourth national study of morbidity in general practice were used.[16] The participating general practitioners and practice nurses in 60 practices recorded their assessment of the problems at each face to face encounter between September 1991 and August 1992. The problems were entered onto the practice computer, using conventional medical terms, and stored as Read codes.[17] A consultation or episode type was assigned to each entry, distinguishing "first ever" diagnoses, "new" episodes of illness, and

"ongoing" consultations. The total study population of approximately half a million was representative of the national census population by age, sex, marital status, tenure of housing, economic position, occupation, and whether they lived in an urban or rural area. There were small differences in distribution by social class and by ethnic composition.[16]

Socioeconomic data were collected by trained field workers.[18] For children under 16 years of age, data obtained included housing tenure, ethnic group, country of birth, whether they were living with one or more adults, economic position of parent one year ago, and current or most recent occupation and employment status of parent. These data were obtained in a single interview from each person registered during the course of the study year. In most cases the data for children were provided by the mother; for a minority they were provided by the father and occasionally by a grandparent. Unlike the census, the definition of social class was not restricted to people who had been employed at some stage during the past 10 years; thus, more people were assigned social classes in the survey than in the census. The occupation of the head of the household (usually the mother when the household had only one adult and the father in other households) was as described by the respondent. Answers applicable at the time of interview were applied to the data for the entire year.

For this study, comparisons were made between children (aged <1 year, 1-4 years, and 5-15 years) living in a household with two or more adults (other household) and children in households with only one adult. Children were counted on the first occasion they consulted for the specified reason, and rates were expressed per 10 000 person years at risk, calculated from the number of days each child was registered in the practice during the survey. Children were grouped by age at the midpoint of the study; hence those aged 17 months or less at the end of the study year were aged less than 12 months at the midpoint of the study and were included in the group <1 year.

Comparisons were made for children consulting with: any illness (international classification of diseases ninth edition, chapters 1-17 inclusive); infectious diseases (ICD chapter 1); acute respiratory infections (ICD numbers 460-466); asthma (ICD 493); accidents excluding medical misadventure (ICD E800-E869 and E880-E949); immunisation (ICD V03-V06); and home visits.

Separate analyses of differences in terms of odds ratios were made using logistic regression.[19 20] The reference population was children living in households with two (or more) adults and the analyses took into account age (month of birth in those aged <1 year), sex, and practice. Odds ratios and 95% confidence intervals were derived relative to the reference populations. In further regression analyses, we included urbanisation (derived from patients' post code), ethnic origin, social class, housing tenure, and distance to practice (distance between patient's and practice postcodes treated as a continuous variable). For reference purposes, the index population was white, living in an urban area, social class I or II, in owner occupied housing. Odds ratios (and confidence intervals) were derived for the effect of each factor independent of all others.

We also calculated the average annual number of consultations per child for each condition, and the 95% confidence interval, and compared these for children in households with one adult and those in other households. After normality of distribution was tested for, differences were evaluated by *t* test.

Results

The study population included 93 356 children aged 0-15 years for whom we had relevant socioeconomic information: 10 983 (11.8%) were living in households with one adult. Table 1 summarises the distribution by ethnic group, social class, and housing tenure. The proportions of children in households with one adult were greatest among people of black (African or Caribbean) origin, in social class IIIN, and living in council housing.

Table 2 shows rates for children consulting with illnesses, reporting accidents, receiving immunisation, and visited at home. Rates for any illness in children under 1 year exceed 10 000 per 10 000. This apparent anomaly relates to the use of a denominator based on person years at risk. New babies frequently attend the general practitioner soon after birth and on average would only be at risk for 6 months of the study year. Rates for any illness were slightly greater in children of all ages living in households with one adult, but rates differed for infections (ICD chapter 1), acute respiratory infections, and asthma. Rates for asthma in boys exceeded those for girls.

Rates for children consulting with accidents were considerably higher in households with one adult: for boys under 1 year they were 50% higher, and for girls they were 35% higher. In all age groups, accident rates for boys were higher than those for girls. Boys under 1 year and aged 1-4 years and girls aged 1-4 years were less likely to present for immunisation if living in

Table 1 Population by urbanisation, ethnic group, social class and housing tenure

Characteristics	No of households with one adult	No of other households	Proportion (%) in households with one adult
Urbanisation:			
Urban	10 421	73 589	12.4
Rural	555	8739	6.0
Not known	7	47	12.9
Ethnic group:			
White	10 380	78 761	11.6
Black	201	308	39.5
Indian	27	692	3.8
Pakistani and Bangladeshi	20	673	2.9
Other	189	1158	14.0
Not known	166	781	17.5
Social class:			
I and II	1786	29 514	5.7
IIIN	3030	7991	28.0
IIIM	1090	27 404	3.8
IV and V	3555	14 937	19.2
Other	1514	2675	36.1
Not known	8	52	13.3
Housing tenure:			
Owner occupied	3726	60 087	5.8
Rented from council	5627	15 519	26.6
Other rented	1623	6681	19.5
Not known	7	86	7.5
Total	10 983	82 373	11.8

Table 2 Rates of children consulting (per 10 000 population) for selected illness groups, for accidents, immunisation, and receiving home visits: by sex and age groups for children in households with one adult and other households

	Age <1 year		Age 1-4 years		Age 5-15 years	
Variable	One adult households	Other households	One adult households	Other households	One adult households	Other households
Boys						
Any illness	13 165	12 720	9295	8983	7122	7072
Infections*	6057	5405	3648	3251	2009	1839
Acute respiratory infections	9211	8799	5959	5786	2843	2772
Asthma	883	638	1408	1086	956	912
Accidents	589	375	775	617	582	552
Immunisation	10 641	11 333	2873	3123	545	564
Home visits	6393	4747	3456	2660	1260	951
Girls						
Any illness	14 052	12 317	9198	8875	7866	7334
Infections*	7224	5233	3641	3418	2413	2073
Acute respiratory infections	9779	6377	5707	5591	3609	3210
Asthma	573	418	1040	807	712	671
Accidents	485	352	543	514	551	459
Immunisation	11 453	11 381	2804	3123	1061	1005
Home visits	6652	4412	3362	2470	1424	956

* *International Classification of Diseases*, ninth edition, chapter 1.

Table 3 Odds ratios (95% confidence intervals) of children from households with one adult (relative to those in other households) presenting to general practitioner. Values are adjusted for age, sex, and practice

Variable	Age < 1 year	Age 1-4 years	Age 5-15 years
Any illness	1.31 (0.95 to 1.79)	1.05 (0.93 to 1.18)	1.01 (0.95 to 1.07)
Infectious disease	1.24 (1.01 to 1.53)*	1.10 (1.01 to 1.20)*	1.09 (1.03 to 1.17)**
Acute respiratory disease	1.06 (0.84 to 1.32)	0.98 (0.90 to 1.06)	1.03 (0.98 to 1.09)
Asthma	1.20 (0.76 to 1.91)	1.22 (1.07 to 1.39)**	1.01 (0.92 to 1.11)
Accidents	2.16 (1.21 to 3.85)**	1.21 (1.02 to 1.43)*	1.12 (1.00 to 1.26)*
Immunisation	0.70 (0.52 to 0.95)*	0.87 (0.78 to 0.97)*	1.05 (0.94 to 1.17)
Home visits	1.35 (1.09 to 1.68)**	1.24 (1.13 to 1.36)***	1.26 (1.16 to 1.37)***

*P<0.05, **P<0.01, ***P<0.001.

Table 4 Consultations per person consulting for selected illness groups, accidents, immunisation, and receiving home visits by sex and age group in households with one adult and other household groups

	Age <1 year		Age 1-4 years		Age 5-15 years	
Variable	One adult households	Other households	One adult households	Other households	One adult households	Other households
Boys						
Any illness	6.17*	5.38	4.59	4.68	3.10	3.05
Infections†	1.79	1.76	1.53	1.49	1.44	1.40
Acute respiratory infections	3.04*	2.60	2.11	2.19	1.63	1.62
Asthma	1.67	2.25	2.66	2.58	2.17	2.28
Accidents	1.07	1.05	1.12	1.08	1.11	1.12
Immunisation	2.21	2.38*	1.19	1.15	1.27	1.28
Home visits	2.41*	1.88	1.87*	1.67	1.46	1.39
Girls						
Any illness	5.89*	5.09	4.34	4.51	3.36	3.21
Infections†	1.87	1.73	1.47	1.54	1.48	1.44
Acute respiratory infections	2.74	2.46	2.02	2.13	1.75	1.71
Asthma	1.38	2.19	2.62	2.63	2.03	2.23
Accidents	1.09	1.04	1.10	1.08	1.03	1.08*
Immunisation	2.21	2.44*	1.16	1.14	1.17	1.19
Home visits	2.23*	1.84	1.67	1.67	1.49	1.41

*Higher mean number with probability P<0.05.
†*International Classification of Diseases*, ninth edition, chapter 1.

households with one adult. Overall, one third more children in households with one adult were visited at home.

The primary regression analyses (with adjustments for age, sex, and practice only) showed that children in the three age groups in households with one adult were more likely to present with infections, more likely to present with accidents, less likely to present for immunisation (except age group 5-15 years), and more likely to have received a home visit (table 3). Odds ratios were generally similar to those derived using the fuller analysis model, with the exception of the result for immunisation in children <1 year, where the odds ratio in the fuller model was 0.96 (95% confidence interval 0.69 to 1.34). Residence in council housing was the single most important adverse factor for achieving immunisation (0.54; 0.41 to 0.71). Social class and ethnic origin by themselves were not associated with poor immunisation uptake.

To assess the impact on general practitioners' workload, we examined the mean numbers of consultations per child for each condition studied (table 4). We first checked to ensure that there were no important differences in the registration period of children in households with one adult and of those in other households. Differences in mean numbers of consultations were mainly found among children aged under 1 year and included increased mean numbers of consultations for any illness, acute respiratory infections, and home visits. Decreased mean numbers were found for immunisation; mean numbers for infections and for accidents were similar.

Discussion

Generalisability

This study has shown higher rates for children consulting and increased mean numbers of consultations per child consulting by children in households with one adult compared with children in other households, particularly in the first year of life. Increased rates of home visits were seen throughout childhood. A household with one adult ("sole adult household") is not quite the same as "single parent family," though the implications of the findings of this study are the same. The interviewers were members of practice staff seconded to the study and familiar with the household composition of many of the families involved. It is unlikely that bias could be introduced from variations in the responses of interviewees from the two household groups. Some children effectively were reared by a sole parent but because they were living in households with other adults (in a grandparental home, for example) they were included in the "other household" category.

Practices recruited to the study were well distributed geographically and by practice characteristics; objective recording lasted 12 months; the population was reasonably representative of the national population by age and sociodemographic characteristics[16]; large numbers of children (95 000) were included. For these reasons we believe the findings can be generalised to England and Wales.

In spite of very detailed information available for each child, we cannot standardise for variables such as passive smoking, sibling order, or number of siblings, all of which might influence results for respiratory disease. One conclusion from this study therefore is a plea

for the use of a family or household identifier in any future major morbidity survey.

The study included children for whom household data were available, in total exceeding 95% of the entire childhood population surveyed. As Judge and Benzeval have pointed out, the group of children with an unoccupied social class status is dominated by children of lone mothers and carries twice the risk of death by accident.[11] Social class was not used as a variable for the primary analyses of the data because of the limitations of using the occupation of the head of household as a determinant of social class, dependent on which parent is heading the household.

Smith reported rates of pregnancy in young women (aged under 20) six times as high in the most deprived areas as in the most affluent.[21] One in four teenage pregnancies in deprived areas ended in abortion, compared with two in three in the most affluent areas. These studies suggest that if there is any selection bias in our study, it tends to underestimate the problems of children in sole parent situations.

Children in households with one adult consulted more frequently, which may reflect the insecurity of a sole adult with no opportunity to share responsibility for a sick child, substantiating the observations of Kai's focus group study.[14] There is also the transference effect whereby stress in one person (the sole parent) is manifest in problems presented by those immediately around him or her (the child).

Interpretation

The number of children presenting with accidents was greater in households with one adult regardless of age, as in other studies.[9–11 22] In contrast, the results for immunisation indicate that fewer boys were brought for immunisation; among those who came there was a reduced mean number of consultations, suggesting that fewer completed the immunisation course. However, these results should be seen in the context of other relevant factors such as residence in council housing. The interrelationships between poverty and health contain several components, among which housing is perhaps the most significant.[2 3] The links between low income and poor housing on the one hand and childhood accidents on the other have already been identified.[10] It is not simply a matter of the type of housing; access to nursery places and child care may be equally important. Supportive care for socially disadvantaged people has been shown to improve pregnancy outcome as measured by birth weight.[23]

The study results support the inclusion of single parent status as a determinant of deprivation for providing income supplements for general practitioners.[15] Children from households with just one adult create extra work for doctors, especially extra home visits, and they are more difficult to immunise, thus making it more difficult for general practitioners with large numbers of these children to achieve immunisation targets. The higher rates for home visiting bear on arrangements for out of hours primary care surgeries, especially because a "sole adult parent" is less likely to have a car or carer available for other children.

These findings provide a challenge to society and the health service. The prevention of accidents is a key area in the Health of the Nation strategy.[24] Carter and colleagues examined general practitioners' attitudes to preventing injury in children and felt that members of the primary care team might do more towards preventing injuries during suitable consultation opportunities.[25] Roberts and colleagues reviewed 11 randomised control trials of home visiting programmes and concluded that such programmes have the potential to reduce significantly the rates of childhood injury.[26] On the basis that accidents are preventable and immunisation prevents disease, perhaps more could be done to minimise the risks faced by children in households with one adult. The responsibilities lie only partly with healthcare providers; the causes of and minimisation of poverty are for political initiatives. Single parents and their children live at the bottom end of the income scale.[27]

Key messages

- Children in households with one adult consult general practitioners more frequently than those in households with two or more adults and receive increased numbers of home visits
- They are more likely to consult for accidents, and they attend less frequently for immunisation
- Single parent households are an appropriate indicator of deprivation
- Children from households with one adult require specific targeting by general practitioners, health visitors, and primary healthcare workers for accident prevention and immunisation uptake

Contributors: DMF and JRHC jointly initiated this study. The database was assembled from data provided by practices contributing to the fourth morbidity study in general practice. JRHC was responsible for the statistical input to the study and was assisted by Judith Charlton in undertaking the computer searches. DMF was chiefly responsible for the preparation of the manuscript and the related secretarial work was undertaken by Joan Dainty. DMF and JRHC are guarantors of the content of this report.

Funding: The morbidity survey was funded by the Department of Health, who have given permission to publish.

Conflict of interest: None.

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(Accepted 11 November 1997)

A randomised controlled trial of general practitioner safety advice for families with children under 5 years

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BMJ 1998;316:1576–9

Abstract

Objective: To assess effectiveness of general practitioner advice about child safety, and provision of low cost safety equipment to low income families, on use of safety equipment and safe practices at home.
Design: Randomised, unblinded, controlled trial with initial assessment and six week follow up by telephone survey. Twenty families from intervention and control groups were randomly selected for a home visit to assess validity of responses to second survey.
Setting: A general practice in Nottingham.
Subjects: 98% (165/169) of families with children aged under 5 years registered with the practice.
Interventions: General practitioner safety advice plus, for families receiving means tested state benefits, access to safety equipment at low cost. Control families received usual care.
Main outcome measures: Possession and use of safety equipment and safe practices at home.
Results: Before intervention, the two groups differed only in possession of fireguards. After intervention, significantly more families in intervention group used fireguards (relative risk 1.89, 95% confidence interval 1.18 to 2.94), smoke alarms (1.14, 1.04 to 1.25), socket covers (1.27, 1.10 to 1.48), locks on cupboards for storing cleaning materials (1.38, 1.02 to 1.88), and door slam devices (3.60, 2.17 to 5.97). Also, significantly more families in intervention group showed very safe practice in storage of sharp objects (1.98, 1.38 to 2.83), storage of medicines (1.15, 1.03 to 1.28), window safety (1.30, 1.06 to 1.58), fireplace safety (1.84, 1.34 to 2.54), socket safety (1.77, 1.37 to 2.28), smoke alarm safety (1.11, 1.01 to 1.22), and door slam safety (7.00, 3.15 to 15.6). Stratifying results by receipt of state benefits showed that intervention was at least as effective in families receiving benefits as others.
Conclusions: General practitioner advice, coupled with access to low cost equipment for low income families, increased use of safety equipment and other safe practices. These findings are encouraging for provision of injury prevention in primary care.

Introduction

The *Health of the Nation* suggests that primary healthcare teams should provide safety advice to parents during child health surveillance programmes, advise on and provide access to safety equipment, check and advise on hazards in the home, provide advice on first aid, and advise the community on safety.[1] Studies have suggested that a lack of time and expertise are often quoted as factors that limit the provision of injury prevention in primary care.[2–10] Hence, it has been suggested that any initiative to be introduced into general practice must be quick and easy to carry out.[11]

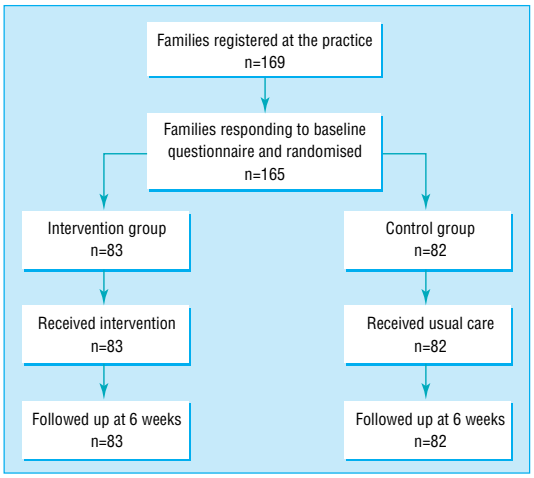
Studies in the United States have shown that counselling by physicians improved safety behaviour and reduced hazards,[12–15] and one small study showed a reduction in falls in infants.[16] In addition, increasing access to safety equipment increased the installation of smoke alarms[17] and socket covers but not cupboard locks, which were more difficult to install.[18 19]

However, differences between the healthcare systems of the United Kingdom and the United States may limit the generalisability of these studies to UK settings. We therefore undertook this study to assess the effectiveness of counselling on injury prevention by a general practitioner in conjunction with access to low cost safety equipment for families on a low income in the United Kingdom. The study received approval from the ethics committee of Queen's Medical Centre.

Subjects and methods

Subjects

The study population comprised the 169 families with children aged ≤5 years that were registered with a single handed general practice in an urban area of Nottingham. The 165 (98%) families that responded to a questionnaire on child safety practices were numbered from 1 to 165, and we used random number tables to allocate them, by number, to an intervention or a control group. We calculated that 73 families were required in each group, based on $\beta = 0.1$, $\alpha = 0.05$, a baseline possession of safety equipment of 60%,[20] and a



Progress of families through trial

difference of 25% in possession of safety equipment. The figure shows the flow of families through the trial.

Questionnaire

We used a questionnaire to obtain information on families' use of safety equipment; storage of sharp objects, cleaning products, and medicines; risk factors for unintentional injury; and sociodemographic factors. The questions on risk and sociodemographic factors had previously been validated.[21] The questionnaire was designed to be administered by telephone or postal survey. It was piloted in another general practice with a similar patient population, with 30 questionnaires administered by each method. No major changes were made to the questionnaire based on the pilot study.

The questionnaire was pre-coded. Each safety practice was assigned a category combining several aspects of safety. For example, for the storage of sharp objects, safe storage was defined as all sharp objects stored above adult eye level or always kept in cupboards or drawers that were always locked. Moderately safe storage was defined as some sharp objects stored below adult eye level in cupboards or drawers that were only sometimes locked or only some of which had locks. Unsafe storage was defined as some or all sharp objects always stored below adult eye level in cupboards or drawers that were not locked.

The questionnaire was administered at baseline and at follow up, six weeks after intervention, by telephone by the general practitioner (MC) or sent by post to those families without a telephone. Non-responders to the postal questionnaire were sent a reminder three weeks later.

The validity of the responses was assessed by home visits to a random sample of 10 families in each of the intervention and control groups two weeks after the second questionnaire. MC, who was blind to the responses on the questionnaire, made the home visits.

Intervention

The intervention consisted of standardised advice and safety leaflets concerning smoke alarms, stair gates, fireguards, cupboard locks, covers for electric sockets, door slam devices, safe storage of medicines, sharp objects, and cleaning materials. Families receiving means tested state benefits were offered a smoke alarm for 50p and two window locks, three cupboard locks, six socket covers, or a door slam device for 20p, all available from the surgery at the time of the consultation. Stair gates and fireguards were offered at £5 per item via the health district's low cost scheme, which was available to families receiving benefits across Nottingham Health District (including control families) and was accessed via health visitors, with equipment being delivered to a local health centre for collection by parents.

The intervention took place during child health surveillance consultations or opportunistically during other consultations, or the family was asked to make an appointment specifically for the intervention. The control group received routine child health surveillance and routine consultations, but without the intervention. The mean length of consultation for safety advice was 20 minutes.

Statistical analysis

We analysed the data, on an intention to treat basis, using SPSS for Windows.[22] The results are presented as relative risks (95% confidence intervals) of using safety equipment and behaving safely, and the number needed to treat to facilitate one family to use safety equipment or behave safely. We assessed the consistency between the responses to the questionnaire and observed safety practices by means of κ coefficients.[23]

Results

The consistency of responses to the questionnaire and at the home visit was high: 21 questions showed complete agreement, with κ coefficients of 1; for five questions $\kappa = 0.75$-0.99; for six questions $\kappa = 0.59$-0.74; and for four questions $\kappa < 0.60$. Two questions had almost complete agreement (95% in each case), but the κ coefficient was low because all but one of the responses were positive on the first questionnaire.[24] The two remaining questions with low κ coefficients concerned the level at which sharp objects were stored in the kitchen ($\kappa = 0.49$) and the use of socket covers on unused sockets ($\kappa = 0.33$).

Table 1 shows the baseline characteristics of the study population. Thirty three per cent of the families in the intervention group and 35% of those in the control group reported that at least one of their children had

Table 1 Sociodemographic characteristics of study population. Values are numbers of families

Sociodemographic characteristics	Intervention group (n=83)	Control group (n=82)
Single parent family	7	10
Not owner occupiers	20	15
Receiving means tested state benefits	30	23
Without access to car	15	11
Jarman score:		
<0	5	9
0.1-22.9	64	59
>23	14	14
Overcrowded*	12	8
Not in paid employment:		
Respondent	42	38
Partner of respondent	11	6
Ethnic minority group	1	1

*Defined as >1 person per room, excluding kitchens <2 m wide and bathrooms.

Table 2 Use of safety equipment by families after safety intervention

Safety equipment used	No of families: Intervention group (n=83)	No of families: Control group (n=82)	Relative risk (95% CI)	Number needed to treat*
Fireguard†	36/65	19/60	1.89 (1.18 to 2.94)	4
Stair gate‡	51/82	40/78	1.26 (0.95 to 1.67)	9
Smoke alarm	82	71	1.14 (1.04 to 1.25)	8
Socket covers	76	59	1.27 (1.10 to 1.48)	5
Window catches	80	72	1.10 (1.00 to 1.20)	12
Cupboard locks:				
To lock away sharp objects	23	29	0.78 (0.50 to 1.23)	—
To lock away cleaning materials	49	35	1.38 (1.02 to 1.88)	6
To lock away medicines	15	15	0.99 (0.52 to 1.89)	—
Door slam devices	51	14	3.60 (2.17 to 5.97)	2

*Number needed to treat to facilitate one family using safety equipment (not calculated when relative risk <1).
†Families without open, gas, or electric fires excluded from analysis.
‡Families without stairs excluded from analysis.

Table 3 Proportion of families categorised as behaving very safely on range of practices after safety intervention

Safety practice	Intervention group (n=83)	Control group (n=82)	Relative risk (95% CI)	Number needed to treat*
Fireplace safety†	56	30	1.84 (1.34 to 2.54)	3
Stairway safety‡	53	50	1.05 (0.83 to 1.33)	11
Smoke alarm safety	80	71	1.11 (1.01 to 1.22)	10
Socket cover safety	68	38	1.77 (1.37 to 2.28)	3
Window safety	67	51	1.30 (1.06 to 1.58)	5
Storage of sharp objects	52	26	1.98 (1.38 to 2.83)	3
Storage of cleaning materials	59	49	1.19 (0.95 to 1.49)	9
Storage of medicines	79	68	1.15 (1.03 to 1.28)	8
Door slam safety	42	6	7.00 (3.15 to 15.6)	2

*Number needed to treat to facilitate one family behaving very safely.
†Families without open, gas, or electric fires categorised as behaving very safely.
‡Families without stairs categorised as behaving very safely.

had more than one attendance at the general practice or accident and emergency department for an injury.

After the intervention, families in the intervention group were more likely to use a range of items of safety equipment than were control families (table 2). A higher proportion of families in the intervention group were categorised as safe for their storage of sharp objects and medicines and for safety of windows, fireplaces, electric sockets, smoke alarms, and door slams (table 3), suggesting that even when these families did not obtain items of safety equipment, such as cupboard locks and window catches, they did change their safety behaviour.

After stratifying the results by receipt of means tested benefits, we found that, among those receiving benefits, a significantly higher proportion of families in the intervention group than controls were categorised as safe for five of the nine safety practices. Among those not receiving benefits, significantly more families in the intervention group were categorised as safe for three of the nine safety practices. This suggests that the intervention was equally, if not more, effective in the families receiving benefits.

Discussion

The high response rate to the baseline questionnaire suggests the results of this study are generalisable to the practice population. The similarity of the study population to that of Nottingham in terms of sociodemographic factors[25] suggests these results may be applicable to a wider population, although the lower proportion of families belonging to an ethnic minority in the study means that caution must be exercised in extrapolating the results of this study to minority groups.

Key messages

- We assessed the effectiveness of general practitioner advice about child safety, and provision of low cost safety equipment to low income families, on safe practices at home
- The intervention increased safe behaviour and use of safety equipment
- The intervention was equally effective in families receiving means tested benefits as in those not receiving benefits
- The effectiveness of this intervention should be evaluated over longer periods, in other practices, and when delivered by other members of the primary healthcare team

As safety practices were self reported, it is possible that families receiving the intervention overreported safety practices to a greater degree than did control families, so overestimating the effect of the intervention.[26] However, the high degree of consistency of responses to questionnaire and the safety practices observed on the home visit suggest that overreporting did not occur to any great degree and did not occur differentially in the intervention group.

The results from this small study suggest that general practitioners can increase safety practices through giving routine safety advice and providing low cost safety equipment. The short follow up period means we cannot draw conclusions about the long term effectiveness of such an intervention, and further studies are needed. Further evaluation is needed in other practices to see if our findings can be replicated elsewhere. Furthermore, the effectiveness and cost effectiveness of other members of the primary care team undertaking the same intervention programme requires evaluation. The short time scale and small sample size of this study precluded any assessment of reductions in frequency or severity of injury, but such evaluations are needed before new interventions are introduced into routine primary care.

Our finding that the intervention was at least equally effective in families receiving benefits is important as there is debate about the relative effectiveness of population versus targeted approaches to injury prevention in primary care.[21 27 28] This study used a population approach, with tailoring of the interventions to specific groups in order that families relying on state benefits were not disproportionately disadvantaged by taking part in the interventions. This is the first UK study to suggest that a population approach would be equally effective in different socioeconomic groups. It has been argued that the population approach would lead to widening inequalities in health, as interventions may be less effective in those most at risk.[27] This study suggests this is not the case, but further work, with a larger sample from a larger number of practices, is needed to confirm this finding.

The safety leaflets used in this study included *Play it Safe* (Health Education Authority, 1996), *Your Baby's Safety At Home and At*

Play (Mothercare, 1994), and *Home Safety Checklist* (Child Accident Prevention Trust, 1996).

DK coordinated the formulation of the primary study hypothesis, discussed core ideas, designed the protocol and questionnaire, and participated in data analysis and writing of the paper. MC initiated the idea for the study; discussed core ideas; carried out the literature search and pilot studies; modified the questionnaire; administered the questionnaire, intervention, and validation studies; entered and verified the data; and participated in data analysis and writing of the paper.

Funding: Nottingham Health Authority provided a grant of £500 for the purchase of safety equipment. This research was undertaken as part of a Masters Degree in Medical Science in Primary Health Care, in the Division of General Practice at Nottingham University.

Conflict of interest: None.

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(Accepted 22 April 1998)

Correction

Effect of doctors' ethnicity and country of qualification on prescribing patterns in single handed general practices: linkage of information collected by questionnaire and from routine data

Two errors occurred in this paper by Paramjit S Gill and others (12 December, pp 1590-4). The first sentence in the results subsection "Characteristics of responders by group" on page 1592 should have read: "Table 3 shows that Asian doctors who qualified in the United Kingdom (group 1) were significantly younger than doctors in the other groups. Also, Asian doctors had a higher proportion of patients who were from deprived wards."

In table 4 (top of page 1593) the prescribing variables adjusted for confounding factors were calculated incorrectly. The correct values are given below. However, the overall conclusions—that there were no differences between the three groups in their prescribing practice—remain valid as, after Bonferroni correction, no differences in mean generic prescribing were detected (see table a1).

Table a1 Differences in mean generic prescribing between groups after Bonferroni correction

Variable	Mean (95% CI) difference in generic prescribing	*T* statistic	P value (Bonferroni)
Group 1–group 2	–4.22 (–9.39 to 0.96)	–1.97	0.16
Group 1–group 3	0.17 (–5.60 to 5.91)	0.07	1.00
Group 2–group 3	4.39 (–0.37 to 9.16)	2.23	0.08

Table 4 Prescribing variables of 155 single handed general practitioners who responded to questionnaire by ethnicity and country of qualification. (Values are means (95% CI) unless stated otherwise)

Variable	Group 1 (n=42)*	Group 2 (n=58)†	Group 3 (n=55)‡	Difference	
				Adjusted R^2	P value
Prescribing cost (cost per ASTRO-PU)					
Unadjusted	16.61 (15.29 to 17.93)	17.11 (16.05 to 18.16)	17.64 (16.52 to 18.73)		0.46
Adjusted§	17.27 (14.13 to 20.41)	18.21 (14.41 to 22.01)	17.87 (12.41 to 23.33)	0.32	0.53
Prescribing frequency (No of items per ASTRO-PU)					
Unadjusted	6.61 (5.98 to 7.25)	6.37 (5.90 to 6.84)	7.96 (7.27 to 8.65)		0.0003
Adjusted§	6.24 (4.09 to 8.39)	6.50 (4.13 to 8.87)	7.13 (3.71 to 10.55)	0.34	0.15
Generic prescribing (% of drugs that were generic)					
Unadjusted	46.26 (42.73 to 49.78)	48.47 (45.07 to 51.87)	43.49 (40.97 to 46.02)		0.07
Adjusted§	36.85 (17.68 to 56.02)	41.07 (23.54 to 58.60)	36.68 (16.08 to 57.28)	0.23	0.04

*Asian, qualified in United Kingdom. †White, qualified in United Kingdom. ‡Asian, qualified in Indian subcontinent. §Adjusted for appropriate variables mentioned in the text.