

Do safety practices differ between responders and non-responders to a safety questionnaire?

D Kendrick, R Hapgood, P Marsh

Abstract

Objective—To compare reported safety practices between responders and non-responders to a safety survey.

Design—Cross sectional survey at baseline compared with safety practices reported at subsequent child health surveillance checks.

Subjects—Parents of children aged 3–12 months registered with practices participating in a controlled trial of injury prevention in primary care that did, and did not, respond to the baseline survey and who subsequently attended child health surveillance checks.

Results—No difference in safety practices was found between responders and non-responders to the survey at the 6–9 month check. Responders were more likely to report owning a stair gate (odds ratio (OR) 2.75, 95% confidence interval (CI) 1.82 to 4.16) and socket covers (OR 2.16, 95% CI 1.53 to 3.04) at the 12–15 month check, and owning socket covers (OR 2.19, 95% CI 1.34 to 3.61) at the 18–24 month check. Responders were more likely to report greater than the median number of safety practices at the 18 month check.

Conclusions—Non-responders to a safety survey appear to be less likely to report owning several items of safety equipment than responders. Further work is needed to confirm these findings. Extrapolating the results of safety surveys to the population as a whole may lead to over estimation of safety equipment possession.

(*Injury Prevention* 2001;7:100–103)

Keywords: safety practice; respondent; data collection; bias

Safety surveys are often undertaken for planning or evaluating injury prevention programmes. The published literature suggests non-responders to surveys differ systematically from responders,^{1–13} but little of this relates to non-responders to safety questionnaires. If surveys are used for planning injury prevention programmes, having information on the safety practices of non-responders is important. As part of a controlled trial of injury prevention we have obtained information on some safety practices among responders and non-responders to a safety questionnaire. This has enabled an assessment of whether a response bias occurred, and if so, its direction and magnitude.

Method

A postal questionnaire was sent in July 1995 to all parents of children aged 3–12 months registered with 36 practices in areas ranging from the deprived to the affluent in Nottingham. The questionnaire, which was tested for reliability,¹⁴ was sent before the interventions commenced. It included sections on safety equipment and safety practices, perceptions of risk of injury and of hazards, knowledge and confidence in dealing with first aid, socio-demographic characteristics, and history of previous injury.

Parents attending routine child health surveillance (CHS) checks at 6–9 and 18–24 months with the health visitor, and at 12–15 months with the practice nurse were asked to complete a carbonated checklist asking about possession of safety equipment and safety practices. The checklist was then used as the basis of the safety advice given by the health visitor or practice nurse as part of the trial intervention. All intervention group parents, regardless of their response to the postal questionnaire, were eligible to receive the study interventions including safety advice at CHS contacts, home safety checks, low cost equipment (for those receiving means tested benefits), and first aid training. Fewer parents received advice at the 6–9 month and 12–15 month checks than the 18–24 month check as some children participating in the study had already received these checks by the start of the study, and were therefore only eligible for those checks they had not yet received.

Data were analysed using SPSS for windows version 8.0 and STATA version 5. Comparisons of self reported safety practices at each CHS check were made between responders and non-responders to the postal questionnaire, using χ^2 tests and by calculating the odds ratio (OR) and 95% confidence interval (CI) for each safety practice, with the standard error adjusted for clustering. A subgroup analysis has been undertaken comparing safety practices between responders and non-responders who did not receive safety equipment as part of the study. The number of interventions received and the safety practices reported were not normally distributed. In order to compare the number of interventions and safety practices between those completing and those not completing the safety questionnaire, with adjustment for clustering, responders and non-responders have been dichotomised into two groups. The groups have been defined as having more than the median number of interventions or safety practices, or

Division of General Practice, Floor 13, Tower Building, University Park, Nottingham NG7 2RD, UK
D Kendrick
R Hapgood

Roundwood Surgery, Mansfield, Nottinghamshire
P Marsh

Correspondence to:
Dr Kendrick
denise.kendrick@nottingham.ac.uk

Table 1 Sociodemographic characteristics and history of previous injury in responders to baseline questionnaire

Sociodemographic factors	Frequency (%)
Receipt of means tested benefit	246 (29.9)
No access to car	149 (18.1)
Non-owner occupation	231 (28.1)
Overcrowding*	64 (7.8)
Four or more children in family	55 (6.7)
Single parent	89 (10.8)
Teenage mother	114 (13.9)
Ethnic group non-white	52 (6.3)
Residence in deprived area†	96 (11.7)
Unemployment:	
One parent unemployed in two parent family	73 (8.9)
Single parent or both parents unemployed in two parent family	22 (2.7)
Previous medically attended injury	42 (5.1)

*Overcrowding defined as more than one person per room.

†Residence in a deprived area defined as living in a ward with a Jarman score above 30.

less than this. In view of the multiple comparisons reported here, a significance level of 0.01 has been used.

Results

The results relate only to the intervention group of the study. The response rate to the questionnaire was 73.2% (n = 823). Non-responders numbered 301, 24 of whom left Nottingham before the interventions commenced. The sociodemographic characteristics of responders to the questionnaire are shown in table 1. Non-responders comprised 18% of those receiving advice at each of the CHS checks (57/315 at the 6–9 months check, 82/463 at the 12–15 month check, and 95/535 at the 18–24 month check). A third or fewer non-responders received advice at any of the CHS checks (21% at the 6–9 month check,

30% at the 12–15 month check, and 34% at the 18–24 month check). Overall, responders to the questionnaire were much more likely to have received greater than the median number of interventions than non-responders (OR = 8.66, 95% CI 5.34 to 14.03; p<0.001).

There was no difference between the self reported practices among responders and non-responders to the questionnaire at the 6–9 month check. Tables 2 and 3 show the safety practices reported by responders and non-responders to the questionnaire at the 12–15 month and the 18–24 month checks respectively. Responders to the questionnaire are more likely to report owning some items of safety equipment than non-responders at both time points. Responders were more likely to have more than the median number of safety practices than non-responders at both the 12–15 month (OR 2.12, 95% CI 1.10 to 4.09; p=0.03) and the 18–24 month check (OR 1.86, 95% CI 1.16 to 2.98; p=0.01).

As the interventions included the provision of low cost safety equipment, we have repeated the analyses among those who did not receive equipment from the study. This produced similar results. No differences were found between safety practices at the 6–9 month CHS check (n = 272). At the 12–15 month check (n = 411), responders were more likely to report having a stair gate (OR 3.14, 95% CI 1.89 to 5.21; p<0.001) and socket covers (OR 2.44, 95% CI 1.76 to 3.40; p<0.001). At the 18–24 month check (n = 471) responders were more likely to report having socket covers (OR 2.27, 95% CI 1.38 to 3.74; p=0.001).

Table 2 Frequency of safety practices reported at 12–15 month child health surveillance check among responders and non-responders to safety questionnaire

Safety practice	Frequency among responders (n=381) (%)	Frequency among non-responders (n=82) (%)	Odds ratio (95% CI)	p-value
Has fireguard	247 (65.5) [4]	47 (58.8) [2]	1.33 (0.82 to 2.18)	p=0.25
Has stair gate	338 (88.7)	60 (74.1) [1]	2.75 (1.81 to 4.16)	p<0.001
Has smoke alarm	343 (90.0)	67 (81.7)	2.02 (1.08 to 3.78)	p=0.03
Has safety catches on windows	242 (64.2) [4]	51 (63.0) [1]	1.05 (0.69 to 1.62)	p=0.81
Has cupboard locks	212 (55.8) [1]	38 (46.9) [1]	1.43 (0.96 to 2.12)	p=0.08
Has socket covers	310 (82.0) [3]	55 (67.9) [1]	2.16 (1.53 to 3.04)	p<0.001
Always stores medicines out of reach of child	360 (94.5)	76 (92.7)	1.35 (0.52 to 3.50)	p=0.62
Always stores sharp objects out of reach of child	359 (94.5) [1]	77 (93.9)	1.11 (0.46 to 2.69)	p=0.82
Always stores cleaning products out of reach	243 (64.1) [2]	52 (64.2) [1]	1.00 (0.61 to 1.64)	p=0.99
Has curly kettle flex/cordless kettle	96 (25.7) [7]	16 (20.0) [2]	1.38 (0.87 to 2.19)	p=0.17
Has safe garden	243 (65.4) [10]	58 (70.7)	0.79 (0.49 to 1.26)	p=0.32

[] = Missing data points.

Table 3 Frequency of safety practices reported at 18–24 month child health surveillance check among responders and non-responders to safety questionnaire

Safety practice	Frequency among responders (n=440) (%)	Frequency among non-responders (n=95) (%)	Odds ratio (95% CI)	p-value
Has fireguard	280 (66.5) [19]	57 (61.3) [2]	1.25 (0.56 to 2.81)	p=0.58
Has stair gate	367 (85.2) [9]	76 (80.9) [1]	1.36 (0.90 to 2.05)	p=0.15
Has smoke alarm	396 (92.1) [10]	84 (88.4)	1.53 (0.66 to 3.55)	p=0.33
Has safety catches on windows	303 (71.6) [17]	62 (66.7) [2]	1.26 (0.78 to 2.05)	p=0.35
Has cupboard locks	275 (64.0) [10]	48 (51.1) [1]	1.70 (0.95 to 3.03)	p=0.07
Has socket covers	357 (83.8) [14]	66 (70.2) [1]	2.19 (1.34 to 3.61)	p=0.002
Always stores medicines out of reach of child	415 (97.0) [12]	94 (98.9)	0.34 (0.04 to 2.63)	p=0.30
Always stores matches and lighters out of reach of child	405 (95.7) [17]	91 (95.8)	0.99 (0.33 to 2.93)	p=0.98
Always stores cleaning products out of reach	280 (65.9) [15]	65 (68.4)	0.89 (0.51 to 1.55)	p=0.68
Has curly kettle flex/cordless kettle	137 (34.0) [37]	22 (25.0) [7]	1.55 (0.80 to 2.98)	p=0.19
Always keeps pans on cooker out of reach of child	407 (94.9) [11]	90 (94.7)	1.03 (0.44 to 2.40)	p=0.95
Has safe garden	343 (80.9) [16]	78 (84.8) [3]	0.76 (0.41 to 1.41)	p=0.39

[] = Missing data points.

Discussion

Safety equipment possession does appear to differ between responders and non-responders to a safety questionnaire. Responders are 2–3 times more likely to report possessing stair gates and socket covers locks when their child is 12–24 months of age than non-responders. In addition responders report a higher number of safe practices than non-responders.

While our results suggest differences in safety practices between responders and non-responders, there are several possible explanations for this. Firstly completing a questionnaire may raise awareness of home safety and may change behaviour by encouraging parents to obtain safety equipment. If this was the case, the greatest difference between responders and non-responders would be expected at the first CHS check after completion of the questionnaire. However, we were unable to find any differences between the groups at the 6–9 month check. Completion of the questionnaire may encourage parents to obtain safety equipment in the future; for example, when the child becomes more mobile. Alternatively parents who are more likely to obtain equipment as the child becomes more mobile may be more likely to respond to the questionnaire.

Secondly, the safety practices reported on the questionnaire and at the CHS checks were self reported; and as such may overestimate safe practice.¹⁵ Responding families may have over reported owning safety equipment to a greater degree than non-responding families. It seems unlikely that families would report owning equipment they do not possess as it was available at low cost in the study. It also seems unlikely that responders, who were more likely to request, and to have a home safety check (27.3% responders *v* 4.5% non-responders, $\chi^2 = 65.9$, 1 df; $p < 0.001$), would report having items of equipment which they did not possess, when they will be visited by the health visitor for a home safety check.

The differential safety equipment reporting cannot be explained by receipt of the study interventions as the findings were similar for parents who did not obtain safety equipment as part of the study. We have not been able to find any published work that has examined safety practices among non-responders to a safety questionnaire with which to compare our results. There is a large body of work which suggests that responders to surveys differ from non-responders in terms of socio-demographic characteristics, ethnicity, and interest in the topic covered in the questionnaire.^{1–13} This suggests that non-responders tend to belong to groups that are likely to have a higher risk of unintentional injury. It would therefore not be surprising to find that non-responders differed in terms of safety practices as well. Furthermore, it is a weakness of our study that we were only able to examine safety practices in non-responders who attended CHS checks. Parents not attending CHS checks are likely to differ from those who attend. Lower rates of uptake of child immunisation have been found among the socioeconomically disadvantaged.^{16–18}

Key points

- Safety surveys are often used for planning or evaluating injury prevention programmes, but little work exists examining the safety practices of non-responders to safety surveys.
- Analysis of data from this study suggests a response bias does exist and that non-responders are less likely to report owning several items of safety equipment than responders.
- Further work is needed to confirm these findings.
- Extrapolating the results of safety surveys to the population as a whole may lead to an over-estimation of safety equipment possession.
- Where possible, planners and evaluators should consider collecting data on socio-demographic characteristics, safety practices, and injury occurrence among non-responders.

Non-attendance at child health clinics has been found to be associated with older maternal age,¹⁹ and in several studies with socioeconomic disadvantage.^{20–21} Therefore, it is possible that non-attending non-responders may report fewer safety practices than those attending. If this were the case, our findings would represent a conservative estimate of the difference between responders and non-responders.

We conclude that our study suggests that non-responding families are less likely to report possessing some items of safety equipment and that further work confirming this finding would be useful. If this is confirmed, extrapolating the results of safety surveys to the population as a whole may be of questionable validity and may lead to over estimation of safety equipment possession. Wherever possible, information on sociodemographic characteristics, safety practices, and the injury experiences of non-responders should be sought to help inform the generalisability of such surveys.

We would like to thank Carol Coupland for advice on analysis of clustered data.

- 1 Bowling A. Data collection methods in quantitative research: questionnaires, interviews and their response rates. In: Bowling A, ed. *Research methods in health: investigating health and health services*. Milton Keynes, UK: Open University Press, 1997: 228–40.
- 2 Barton J, Bain C, Hennekens CH, et al. Characteristics of respondents and non-respondents to a mailed questionnaire. *Am J Public Health* 1980;70:823–5.
- 3 Emberton M, Black N. Impact of non-response and of late-response by patients in a multi-centre surgical outcome audit. *Int J Qual Health Care* 1995;7:47–55.
- 4 Vestbo J, Rasmussen FV. Baseline characteristics are not sufficient indicators of non-response bias follow up studies. *J Epidemiol Community Health* 1992;46:617–9.
- 5 Tennant A, Badley EM. Investigating non-response bias in a survey of disablement in the community: implications for survey methodology. *J Epidemiol Community Health* 1991; 45:247–50.
- 6 Prendergast MJ, Beal JF, Williams SA. An investigation of non-response bias by comparison of dental health in 5-year-old children according to parental response to a questionnaire. *Community Dent Health* 1993;10:225–34.
- 7 Bostrom G, Hallqvist J, Haglund BJ, et al. Socioeconomic differences in smoking in an urban Swedish population. The bias introduced by non-participation in a mailed questionnaire. *Scand J Soc Med* 1993;21:77–82.
- 8 Hill A, Roberts J, Ewings P, et al. Non-response bias in a lifestyle survey. *J Public Health Med* 1997;19:203–7.

- 9 Brussaard JH, Brants HA, Bouman M, *et al.* The study population: general characteristics and potential confounding factors. *Eur J Clin Nutr* 1997;51(suppl 3):S19–24.
- 10 O'Neill TW, Marsden D, Silman AJ. Differences in the characteristics of responders and non-responders in a prevalence survey of vertebral osteoporosis. European Vertebral Osteoporosis Study Group. *Osteoporos Int* 1995;5:327–34.
- 11 Ehnfors M, Smedby B. Patient satisfaction surveys subsequent to hospital care: problems of sampling, non-response and other losses. *Qual Assur Health Care* 1993;5:19–32.
- 12 Etter JF, Perneger TV. Analysis of non-response bias in a mailed health survey. *J Clin Epidemiol* 1997;50:1123–8.
- 13 Cartwright A. *Health surveys in practice and in potential: a critical review of the scope and methods.* London: Kings Fund, 1983.
- 14 Kendrick D, Marsh P, Fielding K, *et al.* Preventing injuries in children: cluster randomised controlled trial in primary care. *BMJ* 1999;318:980–3.
- 15 Scott I. You can't believe all that you're told: the issue of unvalidated questionnaires. *Inj Prev* 1997;3:5–6.
- 16 Marsh GN, Channing DM. Deprivation and health in one general practice. *BMJ* 1986;292:1173–6.
- 17 Jarman BJ, Bosenquet N, Rice P, *et al.* Uptake of immunisation in district health authorities in England. *BMJ* 1988;296:1775–8.
- 18 Adjaye N. Measles immunisation—some factors affecting non-acceptance of vaccine. *Public Health* 1981;95:185–8.
- 19 While A. Child health clinic attendance during the first two years of life. *Public Health* 1986;100:156–65.
- 20 Zinkin PM, Cox CA. Child health clinics and inverse care laws: evidence from longitudinal study of 1878 pre-school children. *BMJ* 1976;iii:411–13.
- 21 Moss P, Bolland G, Foxman R, *et al.* The first six months after birth: mother's views of health visitors. *Health Visitor* 1986;59:71–4.

6th World Conference on Injury Prevention and Control

12–15 May 2002, Montréal, Canada

The Organizing Committee is very pleased to invite you to take part in the *6th World Conference on Injury Prevention and Control* which will be held from May 12 to 15, 2002 at the Montréal Convention Centre. This meeting, on the theme of Injuries, Suicide and Violence: Building Knowledge, Policies and Practices to Promote a Safer World, will be an excellent opportunity for the participants to exchange information and forge links between sectors (health, transportation, safety, justice, etc) and, together, find new ways to improve the safety of populations and reduce the burden of injuries. The conference will deal first of all with safety problems in various contexts: on the road, in the workplace, in the home, and during recreational and sports activities, as well as the problems of suicide, violence, and post-trauma care. Each of these themes will be discussed extensively during the three days of the conference, which will include oral presentations, round tables, debates and presentations on the most recent scientific advances.

In addition, cross disciplinary topics that are of interest to all the participants will be presented in plenary sessions to stimulate exchange between sectors and fields of specialty. Finally, satellite conferences, courses, site visits, and exhibits will complete the program. To ensure the quality of the scientific content of the conference, working groups bringing together leaders from each field have been established.

For the second time, this conference will take place in the Americas, which is why we are extending a very special invitation to our colleagues from Latin America. Montréal is a beautiful city, well known for its *joie de vivre*. It has a reputation for hospitality and safety, and also has a cultural heritage that is well worth discovering. We look forward to seeing you in Montréal in May 2002 at the 6th World Conference.

- Deadline for abstract submission: 15 September 2001.
- For registration, accommodation, and abstract submission forms and for more information, please consult the conference web site at <http://www.trauma2002.com> or contact the Conference Secretariat at +1 514 848 1133 (fax +1 514 288 6469).