



University of
Nottingham

UK | CHINA | MALAYSIA



Effectiveness of a child home safety intervention: controlled before-and-after study

Dr Michael James Taylor^{1,2}; Dr Elizabeth Orton²;
Dr Michael Craig Watson³; Dr Mike Hayes⁴; Ms Tina
Patel²; Dr Matthew Jones²; Professor Carol
Coupland²; Professor Denise Kendrick²

¹National Health Service Midlands; ²University of Nottingham; ³Institute of Health Promotion and Education; ⁴Child Accident Prevention Trust



Stay One
Step Ahead



child accident
prevention trust



- Accidental injuries are leading cause of **preventable** deaths in under 5s
- Major cause of hospital admissions & emergency department attendances
- Long term physical & psychological consequences
- High cost to health services & families
- Steep social gradients
- Education, home safety assessment, provision/fitting of equipment **significantly** improve home safety



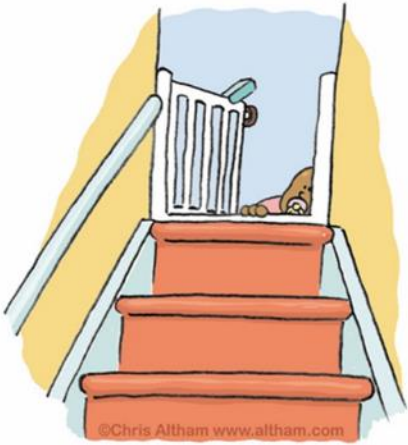
Research Question

Can systematic evidence-based home safety promotion (SOSA intervention) improve key home safety practices?

1. Fitted and working smoke alarm
2. Safety gate on stairs
3. Poisons stored out of reach



METHODS: Stay One Step Ahead Study (SOSA)



Design

Non-randomised, controlled before and after study

Setting

Nottingham City, in 9 electoral areas



Population

Parents of children aged 2-7 months at baseline (per group target: baseline 400, ≥ 237 followed-up)

Outcomes

Primary: fitted and working smoke alarm + safety gate on stairs + poisons out of reach

Secondary: other safety practices, self-reported injuries

Analysis

Random effects regression models





METHODS: Data collection



Control group
(5 Nottingham City areas)

Intervention group
(4 Nottingham City areas)

Baseline questionnaire

3-month questionnaire

6-month questionnaire

9-month questionnaire

12-month questionnaire

15-month questionnaire

18-month questionnaire

21-month questionnaire

24-month questionnaire

- Primary outcome measure
- Other safety practices
- Self-reported injuries in previous 3 months

Optional:

- Self-reported injuries in previous 3 months



METHODS: The Intervention



- Resources produced jointly with practitioners, parents, and injury prevention experts:
 - Home safety **checklists** in 9 month and 2 year child health reviews
 - Monthly safety **messages** (flyers, quizzes, activities, including IPB)
 - Activities** guided by family mentors
 - 4 home **safety weeks**/year at Children's Centres: fires, scalds, falls, poisoning

Where do you keep your household products?
e.g. cleaners, bleach, laundry capsules



1 in 3 families in Nottingham keep household products where children could reach them

TOP TIP Keep household products out of children's sight and reach - in a locked cupboard or at adult eye level or above

TOP TIP Child resistant containers are **NOT** child-proof - some toddlers will be able to open them

TOP TIP Always store household products in their original containers



TOP TIP Laundry capsules, e-cigarette liquid and reed diffuser liquid can all be harmful - keep these out of children's sight and reach

TOP TIPS FOR KEEPING ME SAFE!



Keeping children safe from medicine poisoning - a short quiz



1 The peak age for poisonings from medicines is 2 to 3 years.
☐ TRUE ☐ FALSE

2 Which are the sweets - picture A or picture B?
 

3 Most accidental poisonings are caused by household chemicals, such as bleach.
☐ TRUE ☐ FALSE

4 Child-resistant packaging is child-proof.
☐ TRUE ☐ FALSE

5 It is safer to store medicines high up out of reach than in a locked cupboard.
☐ TRUE ☐ FALSE



FIRE SAFETY WEEK

Join us for **FUN** and **FREE** fire safety activities with the Fire and Rescue Service!



- Fire safety tips!
- Meet our fire safety mascots!
- Spot hazards in the Risky Room!
- See our fire engine!
- ...And more!

If your child is aged under 5 and you would like to attend, join us on -

- Monday 21st May, 10am - 11:30am, Aspley Library**
- Wednesday 23rd May, 1pm - 2:30pm, Aspley Children's Centre**



Recruitment:

- 401 control families
- 361 intervention families

24-month follow-up:

- 298 (74%) control families
- 233 (65%) intervention families

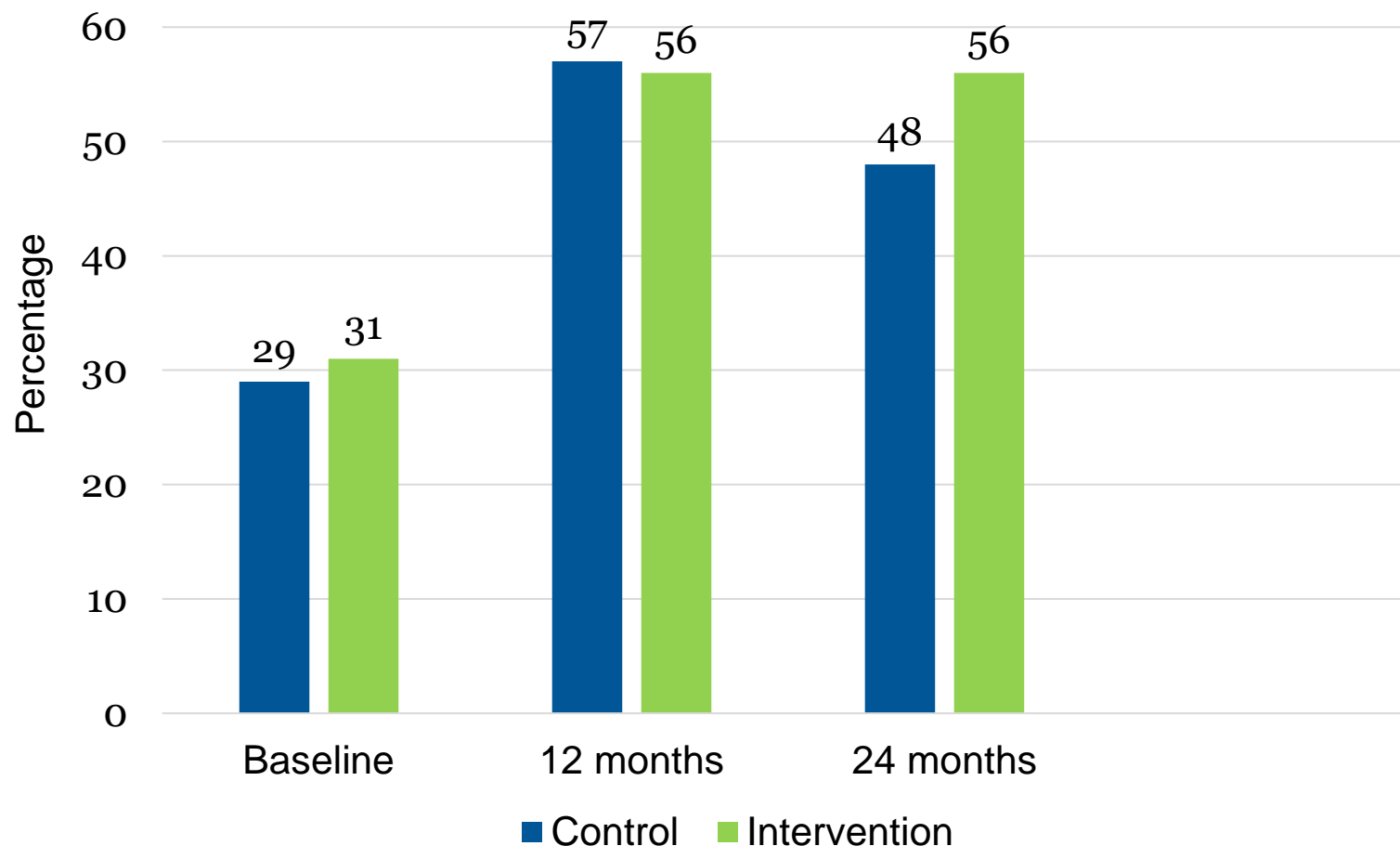
| Characteristics at baseline | Control (n=401) Median (IQR) or % | Intervention (n=361) Median (IQR) or % |
|--|--------------------------------------|---|
| Child age (months) | 4.6 (3.1-6.0) | 4.6 (3.1-6.2) |
| Male child | 48.2% | 50.4% |
| Number of children under 16 in family | 2 (1-2) | 2 (1-3) |
| Maternal age at birth of first child | 27 (21-31) | 25 (20-29) |
| Single adult household | 15.3% | 26.7% |
| Index of multiple deprivation (IMD) 2019 | 34.3 (24.7-40.5) | 52.7 (45.9-57.3) |
| Distance to nearest emergency department (miles) | 4.9 (3.7-5.8) | 4.2 (3.7-6.1) |



RESULTS: Primary outcome measure






Percentage with smoke alarms, safety gates and poisons out of reach



At 24 months:

Intervention group:

- Poisons out of reach = 6% 
- Safety gates = 3% 
- Smoke alarms = 2% 

Complete case analysis:

- OR 1.58 (0.98, 2.55) $p = 0.06$

Multiple imputation analysis:

- **OR 1.75 (1.12 to 2.73) $p = 0.0014$**

1. Additional safety practices

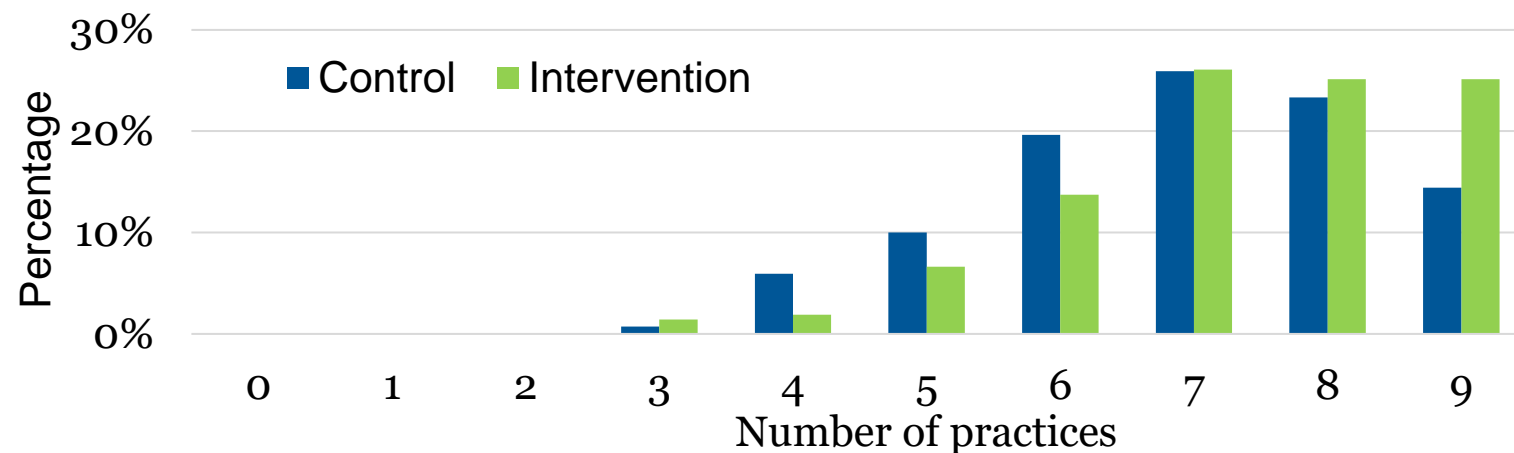
| | Control 24 months | Intervention 24 months | Adjusted odds ratio |
|---------------------------------------|----------------------|---------------------------|--------------------------|
| Not left child alone in bath | 91% | 96% | 1.85 (0.72, 4.79) |
| Use a fireguard or have no fire | 80% | 85% | 3.17 (1.63, 6.16) |
| Blind cords out of reach or no blinds | 86% | 89% | 0.72 (0.36, 1.44) |
| Has window safety catches | 59% | 65% | 0.78 (0.48, 1.27) |
| Has fire escape plan | 67% | 77% | 1.81 (1.06, 3.08) |
| Always accompanies toddler in garden | 73% | 79% | 1.30 (0.73, 2.31) |

2. Rates of injuries: No statistical differences between intervention and control

3. Post hoc analysis of number of home safety practices

Difference between means at 24 months:

0.46 (0.13, 0.79), $p = 0.006$



Limitations

- Non randomised
- Non blinded
- Lack of power
- Covid-19 pandemic



Conclusions

- Systematic evidence-based home safety promotion for families with high levels of need **improves some safety practices and number of safety practices**
- We recommend widespread implementation of the Stay One Step Ahead intervention

We would like to thank the Small Steps Big Changes Parent Champions (a team of parent volunteers) for their invaluable input into this project and the parents and practitioners who participated in the project

This project was supported by funding from Small Steps Big Changes, part of The National Lottery Community Fund A Better Start Programme.

Dr Elizabeth Orton
Ms Tina Patel
Dr Clare Timblin
Dr Rachel Clarke
Dr Michael Craig Watson
Dr Mike Hayes
Dr Matthew Jones
Professor Carol Coupland
Professor Denise Kendrick

