

Online Research @ Cardiff

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <http://orca.cf.ac.uk/118171/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Bennett, C. Verity, Hollen, Linda, Quinn-Scoggins, Harriet D., Emond, Alan and Kemp, Alison M. 2020. Feasibility of Safe-Tea: A parent targeted intervention to prevent hot drink scalds in pre-school children. *Injury Prevention* 26 (1) , pp. 31-41. 10.1136/injuryprev-2018-042921 file

Publishers page: <http://dx.doi.org/10.1136/injuryprev-2018-042921>
<<http://dx.doi.org/10.1136/injuryprev-2018-042921>>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



Article title: Feasibility of Safe-Tea: A parent targeted intervention to prevent hot drink scalds in pre-school children

Author information:

C. Verity Bennett¹, PhD

Linda Hollén², PhD

Harriet D. Quinn-Scoggins¹, MAnth

Alan Emond², FRCPCH

Alison M. Kemp¹, FRCPCH

¹Division of Population Medicine, Cardiff University, Neuadd Meirionnydd, Heath Park, Cardiff, CF14 4YS

²Centre for Academic Child Health, Bristol Medical School, University of Bristol, 1-5 Whiteladies Road, Bristol, BS8 2RP, UK

Corresponding author: C. Verity Bennett, bennettcv@cardiff.ac.uk 029206 87640

Word count: 3,199 words

Number of figures and tables: This manuscript includes 3 figures and 3 tables.

ABSTRACT

Objective – Despite the high prevalence of preventable hot drink scalds in pre-school children, there is a paucity of research on effective prevention interventions and a serious need to improve parents’ knowledge of first aid. This study investigates the feasibility of ‘Safe-Tea’ an innovative multi-faceted community-based intervention delivered by early-years practitioners.

Methods – ‘Safe-Tea’ was implemented at Childcare, Stay&Play and Home Visit settings, in areas of deprivation in Cardiff, UK. A mixed methods approach was used, including pre- and post-intervention parent questionnaires and focus groups with parents and practitioners to test the acceptability, practicality and ability of staff to deliver the intervention, and parents’ knowledge and understanding.

Results – Intervention materials, activities and messages were well received and understood by both parents and community practitioners. Interactive and visual methods of communication requiring little to no reading were most acceptable. Parents’ understanding of the risk of hot drink scalds in pre-school children and knowledge of appropriate first aid improved post-intervention.

Parents knew at baseline that they ‘should’ keep hot drinks out of reach. Focus group discussions post-intervention revealed improved understanding of likelihood and severity of scald injury to children, which increased vigilance. Parents gained confidence to correct the behaviours of others at home and pass on first aid messages.

Conclusion – This feasibility study is a vital step towards the development of a robust, evidence-based behaviour change intervention model. Work is underway to refine intervention materials based on improvements suggested by parents, and test these more widely in communities across the UK.

What is already known on the subject:

Scalds from hot drinks are the most common type of burn for children under 5 years of age.

Parents lack adequate knowledge of appropriate first aid for burns.

What this study adds:

This mixed methods study demonstrated that ‘Safe-Tea’ is an acceptable intervention for use by community practitioners to address prevention and first aid for hot drink scalds.

‘Safe-Tea’ improved parents’ knowledge of scald risk factors and burns first aid.

INTRODUCTION

Each year more than 50,000 children attend healthcare settings with burns in the UK¹. Peak prevalence is between 8 and 18 months of age, at the onset of independent mobility without cognitive awareness of the dangers¹. Burns from hot drinks account for 55% of these injuries, usually when a child pulls a hot drink from a surface within reach¹. The most deprived families sustain the greatest burden from these injuries², and are least able to manage burns with first aid^{3,4}. Burn risk and severity is elevated in children (whose skin is significantly thinner than adults), allowing quicker and more serious damage from liquids at lower temperatures and from shorter exposure.

There is a paucity of interventions specifically aimed at preventing hot drink scalds in children⁵⁻⁷. Most interventions are components of generalised burns prevention schemes^{8,9}, or of general home injury prevention interventions¹⁰⁻¹⁵ making it challenging to tease out the effectiveness of the hot drink scalds prevention element⁶. Community interventions are ideally placed to prevent unintentional injuries in the under 5's¹⁵⁻¹⁷ but opportunities are being missed¹⁸ reiterating the need for evidence based, effective and efficient interventions.

Whilst prevention is the priority, appropriate first aid can reduce the pain and severity of a scald if it does occur¹⁹. Appropriate burns first aid education for caregivers of the most vulnerable children is a priority in the face of inaccurate, inadequate and inconsistent burns first aid advice on the internet²⁰. Furthermore, the perpetuation of traditional or inappropriate home remedies calls for an intervention to interrupt the flow of incorrect and harmful advice²¹. There is a dearth of research into effective scalds first aid education for parents²².

Given these gaps in burns prevention, we designed and developed 'Safe-Tea', a community-based intervention delivered by early years community practitioners. We used a mixed methods approach to assess the feasibility of Safe-Tea in terms of the acceptability and practicality of the materials and delivery methods to parents and community practitioners, and to measure the limited efficacy by change in parents' knowledge and understanding post intervention.

METHODS

Research Design and Setting

Research was conducted in the Flying Start (FS) communities²³ in areas of deprivation in Cardiff. FS provides free childcare, an enhanced health visiting (HV) service and access to parenting support for families of children less than 4 years of age living in the most disadvantaged areas of Wales. The varied interaction between FS and families allowed the intervention to be delivered by a range of specialist staff in different environments. A short training on the severity, risks and incidence of hot drink scalds, key messages of the campaign and data collection methods was delivered to specialist FS staff in half day sessions prior to the intervention

The Safe-Tea intervention combines principles of behaviour change: the health belief model²⁴, protective motivation²⁵ and social cognitive theory²⁶ to address perceived susceptibility to and severity of hot drink scalds, and parental self-efficacy to prevent them and reduce their severity through first aid. The logic model is shown in Fig 1. It is a multi-faceted intervention employing both passive (display of information) and active (one-to-one and group discussion, group activities and demonstrations) methods to deliver repeated and consistent key messages, in a range of environmental settings (at home, in parenting groups and at childcare settings). The intervention design is summarised in figure 2. A novel suite of materials was used, including DVDs, posters, flyers, leaflets, fridge magnets and a reach chart (see Fig 2 and supplementary information)

A mixed methods approach was used to test the acceptability and practicality of the intervention content and delivery, limited efficacy (due to small sample size) and to identify improvements that could be made. Parents were

asked to complete pre- and post-intervention questionnaires with staff on home visits and at playgroups. Research staff conducted questionnaires with parents at selected childcare settings post-intervention.

Parents who had participated in the intervention were recruited to focus groups by Stay&Play or HV staff. FS staff who had delivered the intervention were recruited to focus groups by their FS team leaders. All groups took place at FS venues, lasted 1 hour, and were run by the lead author for consistency. Focus groups were audio recorded and professionally transcribed.

Analysis

Focus group transcripts were analysed using thematic analysis²⁷ and double coded (by VB and HQS) according to *a priori* themes: acceptability, practicality, limited efficacy and improvements (Table 1). Emergent sub-themes were then also coded for acceptability and practicality.

Theme	Sub-theme	Definition
Acceptability	Language and reading skills / motivation	Any discussion or points made regarding willingness or ability of parents to engage with written or spoken information or questions
	Engagement	Any discussion or points made regarding interest in taking part in or attention paid to discussions, demonstrations, or engaging with printed materials
	Importance and relevance of messages	Any discussion or points made regarding staff or parents' feelings towards importance of intervention messages and the relevance they have to parents
	Printed materials as communication tools	Any discussion or points made about the role of printed materials as a tool for communicating intervention messages
	Attitudes towards intervention content	Any discussion or points made regarding attitudes of parents and staff towards the content of the intervention.
Practicality*	Time	Any discussion or points made about the time demands of delivering the intervention
	Ease of delivery	Any discussion or points made about how easy the intervention was to deliver
Limited Efficacy	NA	Any discussion or points made in relation to how the intervention has affected parents' awareness of dangers or behaviour with hot drinks around children
Improvements	NA	Any discussion or points made in relation to ways in which the intervention could be improved

Table 1. Coding framework and definition of themes for focus groups. *Practicality was only addressed in staff focus groups.

Questionnaires were analysed using SPSS software version 23 (IBM, Armonk, New York, USA). Change in knowledge and response to behaviour questions pre and post intervention was assessed using Chronbach's Q test statistic. Significance was set at $p < 0.05$

Ethical considerations

Ethical approval was obtained from the University of Cardiff School of Medicine Research Ethics Committee. Participating community practitioners and parents were invited to take part in focus groups, with a £10 voucher incentive for parents. Permission was sought to use direct quotes. Parents at childcare settings were asked to complete post-intervention questionnaires for which they could enter a prize draw to win a £30 voucher.

RESULTS

Implementation

The intervention was well implemented in all settings. Almost all parents (97%, 166/171) were happy to take part in group activities, and key messages of the intervention were well covered (Fig 3).

The intervention was reported as being comprehensively conducted at home visits on the post-intervention forms that were returned, except for having the opportunity for behaviour modelling (Fig 3).

Initial recruitment of parents to the research questionnaire element of the intervention was 45% (77/171) in Stay&Play centres and 39% (211/539) at home visits (Fig 3). Eighty one percent (154/190) of those completing a pre-intervention questionnaire at the home visits were followed-up, compared to 45% (35/77) at Stay&Play.

Questionnaires

Parents had good existing knowledge of the most frequent scald mechanism. (65% at home visits, 71% at Stay&Play) and that children's skin burns more easily than adults' (92% at home visits, 91% at Stay&Play); these results improved ($p < 0.05$) post-intervention for parents at the home visit (Table 2). The age at which a child is most likely to be burned by a hot drink was less well known initially (54% at home visits, 23% at Stay&Play), but improved (by 24% at home visits and 34% at Stay&Play) post-intervention.

Pre-intervention, most parents (77% at home visits and 86% at Stay&Play) knew that a burn should be run under cool running water, although few knew how long for (33% at home visits and 34% at Stay&Play) and knowledge of covering with cling film was low (14% at home visits and 17% at Stay&Play) (Table 2). All first aid knowledge tested at Stay&Play and at home visits improved post intervention except what to do to cool a burn, which only increased for parents at the home visit (Table 2).

Question	Response Options	Frequency of response given (%)				
		Home visit		Stay & Play		Childcare
		Pre	Post	Pre	Post	Post
Knowledge						
1. Who is most likely to be burned by a hot drink?	Babies not crawling (under 6 months)	3	3	3	0	3
	Crawling to walking (6 months - 1 year)	54	78*	23	57*	26
	Toddlers (over 1 year)	30	16	57	37	32
	Older children (about 3-4 years)	5	1	6	3	0
	I don't know	7	3	11	3	35
Missing	1	0	0	0	3	
2. Pre-school children are most commonly	Hot water from a bath / tap	8	3	6	3	6
	Other person spilling hot drinks	5	3	0	0	3
	Knocking over / pulling down a kettle or saucepan	13	7	6	9	0
	Pulling down a hot drink from a surface	65	81*	71	71	45

scalded by...	within reach					
	I don't know	8	6	17	17	42
	Missing	1	0	0	0	3
3. Compared to adult skin a child's skin...	Burns more easily	92	98*	91	91	74
	Burns the same	3	1	9	3	10
	Burns less easily	0	0	0	3	3
	I don't know	4	0	0	0	13
	Missing	1	1	0	3	0
Behaviour						
4. I keep hot drinks out of childrens reach...	All of the time	83	92*	74	83	77
	Most of the time	14	6	17	11	23
	Some of the time	1	1	3	3	0
	None of the time	1	1	0	0	0
	I don't know	0	0	3	0	0
	Missing	1	1	3	3	0
5. I pass hot drinks over my child...	All of the time	1	3	6	3	0
	Most of the time	0	0	0	0	0
	Some of the time	6	2	23	6	13
	None of the time	92	95*	69	89*	87
	I don't know	1	0	0	0	0
	Missing	1	1	3	3	0
6. I drink hot drinks whilst holding my child...	All of the time	1	1	0	0	0
	Most of the time	1	0	0	3	3
	Some of the time	19	8	20	17	19
	None of the time	77	90*	77	77	77
	I don't know	1	0	0	0	0
	Missing	1	1	3	3	0
First Aid						
7. What should you do to cool a burn?	Cool with ice	2	0	3	3	6
	Apply butter, toothpaste or cream	4	1	0	3	3
	Hold under cool running water	77	89*	86	86	68
	Hold a wet flannel on the burn	8	1	6	0	6
	I don't know	4	1	6	0	16
	Missing	5	7	0	9	0
8. How long should you cool a burn for?	5 minutes	14	3	9	0	16
	10 minutes	26	8	26	3	29
	15 minutes	9	5	20	9	6
	20 minutes	23	76	34	77*	26
	I don't know	23	1	11	3	23
	Missing	5	7	0	9	0
9. I should call 999 if...	If the burn was bigger than a 10p coin	47	77*	57	89*	61
	If the burn was smaller than a postage stamp	0	0	3	0	3
	For any burn on a child	37	15	23	0	29
	I don't know	10	1	14	3	3
	If a friend / family member told me to	2	0	3	0	0
	Missing	5	7	0	9	3
10. Should you cover a burn?	Yes, with cling-film	32	84*	17	77*	58
	No, never	31	3	43	11	10
	Yes, with a plaster	2	2	0	0	0
	Yes, with a wet flannel	14	3	17	0	6
	I don't know	17	1	23	3	23
	Missing	5	7	0	9	3

Table 2. Questionnaire results. Pre- and post-intervention questionnaire responses from parents receiving the intervention at home visits (HV) and Stay&Play, and post-intervention questionnaire responses from parents receiving the childcare intervention. Correct / optimal answers highlighted in bold. * Denotes where frequency of correct responses increased significantly ($p < 0.05$) post-intervention.

Parents questioned at childcare settings had less knowledge than parents in the other arms of the study regarding burn mechanism (26-36% fewer correct answers) and that ‘children’s skin burns more easily than adults’ (17-24% fewer correct answers). They were also less aware that children who were developing from crawling to walking are the most at risk of hot drink scalds (31-52% fewer correct answers).

Focus groups

Seven focus groups were held with: 6 Stay&Play staff, 4 HVs, 10 Community Nursery Nurses (CNN), 3 parents who had the intervention at home visits and 3 groups from different areas of the city each comprising 8, 4 and 3 parents who had the intervention at Stay&Play. Selected quotes are provided in Table 3.

Acceptability
<i>Language and reading skills / motivation</i>
<p>“...we have a lot a language issues as well in my area so it did take that bit longer to explain some of it.” Health Visitor</p> <p>“Because it was interesting to see, and because you were there and it was visual, like I couldn’t believe when the tea was poured over ... and she then took off the ... the layers, how far it actually went through from her pouring the tea. And to see that was really interesting.” S&P parent</p> <p>“You just look at it and you don’t even realise you’re looking at it, and if anything happened you’ll go ‘Okay, Cool, Call, Cover’.” (magnet) S&P parent</p> <p>“When you see a poster like that, it’s a reminder, it’s no effort” (large CAPT poster) S&P parent</p> <p>“The one with loads of information, people are not going to, really, take it all in... That takes an effort to sit down and read it... obviously we’re parents, we haven’t got time.” (CAPT one-step-ahead) S&P parent</p> <p>“It’s quite a strong picture...cos there’s not a lot going-on...where if it’s a lot going-on on something you don’t tend to pay attention. You would automatically look at the front, and you’ll probably pay attention to the back because it’s caught your eye already... If I looked at that first [back of flyer] I’d be like ‘argh its too much’” (flyer) S&P parent</p> <p>“I’m thinking about it ... what I meant is when you have a little one, like she’s two now, but she was one and my other daughter was three at the time, and ... when she was just turning one, baby brain, and rushing, and wiping snot, and ... heavy babies, not always I have time to focus on the information leaflets.” (flyer) S&P parent</p> <p>“I thought there were quite a lot [of questions] cos some of our parents that aren’t used to filling in, you know, such lengthy questionnaire I think possibly” S&P staff member</p> <p>“And when language isn’t 100% they’re even more nervous about being asked questions. It just sounded very formal. I think when all the study bit is taken away, it’s more of a chat then isn’t it?” Health Visitor</p>
<i>Engagement</i>
<p>Parents:</p> <p>“The first thing I asked her is why do we have to do this one? Why don’t you tell us what we have to do so we’ll do it.” (questionnaire) Home visit parent</p> <p>“Because it’s a story as well you can read with your child. It’s a story that you can read to family, and it helps you as well to understand...” (booklets) S&P parent</p> <p>“...with the tea cooling timer, the accidental spill, my children were really interested in it and they were like ‘Oh, what’s happening to the dolly Mum?’, and I was telling them ... she’s accidentally had the tea knocked over her and we’re going to see how far it goes through. And ... yeah, that was better for me.” S&P parent</p> <p>FS Staff:</p> <p>“For me and my sessions we didn’t have any volunteers from the parents so staff were the ones to do the first aid.” S&P staff member</p> <p>“You know I certainly ... and to be honest another parent then said about her experience and that broke the ice as well. You know how it had happened to her.” S&P staff member</p> <p>“However, I think my personal point of view, it didn’t... they didn’t find it sort of patronising. I think it did open some conversation.” Health Visitor</p> <p>“I found they mostly liked the height chart because they like to measure their height but it’s a very good visual learning tool isn’t it, to sort of show what they can reach, which they hadn’t thought about before for a smaller baby.” (reach chart) Health Visitor</p>
<i>Importance and relevance of messages</i>
<p>Parents:</p> <p>“Yes, it should be a standard thing. Because let’s be honest, everyone and anyone has kids. You don’t have to have any formal qualifications.</p>

And I think it's this ... Burns, it's going to happen when you least expect it. And when panic sets in you completely go ... You just don't know what you're doing, and if it's left it's going to be worse and obviously if you don't do nothing about it straight away. So I think a lot of people don't know what to do with kids ... for something like this" S&P parent

"Yeah showing you ... this woman there, was like her story and stuff, it's always like ... yeah, when other mums are talking about accidents and stuff that's ... like new to you, like saying okay, yeah, that can be my story if I'm not careful about it." (CAPT DVD) S&P parent

"Because you saw it ... you know, that's what would happen. It's not a picture, it's not a video ... No, it was your ... you see a real girl." (accidental spill) S&P parents

"So I think that's ... that's why that's better, the tea cooling, because everybody was excited to know what it will ... and who was going to win." S&P parent

"You can read as much as you want but when you see something in person it sticks in your head" S&P parent

FS Staff:

"Passing that information on to the parents? Yes, it was. It's invaluable really." S&P staff member

Printed materials as communication tools

Parents:

"If you will have only the flyer then it's very helpful ... so we can take home and study them, but probably less like, putting them in with all the papers somewhere...but this for home [the fridge magnet] is the best...it's not flying anywhere, it's on the fridge." S&P parent

FS Staff:

"It was just a good talking point with each parent. I got to talk through the steps and they really remembered..." (flyer) S&P staff member

"I just thought it was a really good and fun way to explain about how to deal with a burn and I found that it was really well received." (reach charts) Health Visitor

Attitudes towards intervention content

Parents:

"...I was thinking if I'm doing it wrong and the health visitor will know that I'm doing it wrong with the baby. So I was scared, and she said it's not about the health visitor or social worker, that's the university." Home visit parent

"I keep hot things out of children's reach. I just thought ... Many people would not answer truthfully... I told [HV], I was like, obviously everyone is going to say 'Yes, I do', because no one wants to be seen as a bad parent." Home visit parent

"For me, because I already have kids, I always thought it was something I knew...I thought it was toddlers, I didn't know it was them that are crawling, because they're exploring and they want to touch everything, so it was really useful." Home visit parent

"This is my first baby and every question they're asking me ... so the first time, everything was wrong that I was ticking. Because I didn't know that." And when asked about the post intervention questionnaire: "I tick everything right!" Home visit parent

"Running water over the burn, because who's going to do that? [laughs] I wasn't going to do that and I told her. It's like 20 minutes.

Hopefully no one gets burned, but I just ... you know... I did, I did talk to her [the Health Visitor], and what she said was, funnily enough, she got burned three days before and she was following the advice, and after three minutes she got bored and she thought, oh well, it's too ... She said she wanted to follow the advice and she ran water over the burn, and then after five, three minutes, she got bored. She went, ah, no one's going to do this." Home visit parent

FS Staff:

"Otherwise I think one or two got quite, you know. "They think we're stupid or something?" But we got over it." S&P staff member

"We're being pressured from A&E and other sources to prevent our clients from just ringing and ambulance and going to A&E for things that GPs can deal with. So I think the 10p piece is sort of conflicting information as far as we're concerned. We're telling them one thing and then we're telling them another thing." Health Visitor

"No, but you know accidents do happen. Children learn by exploring. We can only give the information and how to prevent an accident but equally we need them to know what to do if there is an accident because we know we're not going to eradicate drink accidents, are we? Some parents will do it ... a lot of them are not aware of the consequences of their child's growing abilities and they'll get caught out because as parents we all do. I do think that, you know, for them to then know how to treat an accident is really important. I think they're equally important." Health Visitor

Practicality

Time

"I would say minimum twenty minutes on a visit. So it was making it significantly longer... Because one mum was really interested but you know, she was asking just lots of questions which was really ... you know they were good questions but it did sort of take the visit a lot longer than I planned for, yes. So that was about 40-45 minutes." Health Visitor

"When they come. We go round and chat to them. How are you? Blah-blah-blah. So there was just, you know, something extra to have a little chat about." S&P staff member

"It took longer because my group of parents kept talking about it and they'd be saying to me, 'Well, come on. It's been another five minutes ...'" (tea cooling activity) S&P staff member

"But even though you say it took an hour we didn't actually really do much, making the drink and having the temperature in." (tea cooling activity) S&P staff member

Ease of delivery

Parents:

"I did the DVD one week in snack time but it was very, very quiet and obviously the children were just ... well, they were supposed be having snacks but they were so ... it was like, "Oh my god. Is this..." You know, little telly here or whatever so that sort of got them off the chairs and they were sort of wanting to look at the wire, and whatever. But then ... we did the following week ... Rachel got hold of a speaker because we didn't realise how quiet it would be so we had it on with a speaker but that was a very busy session so it was very difficult for other parents to actually ... they really needed to sit and listen to it and cos the children were quite lively and active it was hard for them to do that. So we had to really talk them through it really. Tell them, you know, what it was all about and the reason why. So that was hard really in the same vein ..."

S&P parent

FS Staff:

"Modelling is really quick because most of us don't have a drink in the houses. We don't the type of clients that we sit and drink tea with. It just doesn't really happen, does it? So that was probably something that was never going to be a common theme." Health Visitor

"I think they were engaged for the actual spill but when we tried to say the messages afterwards we kind of lost them then. We did do it at snack time so snack time anyway can be quite busy so maybe we could've thought of a better time to do it. Maybe after singing ... someone said. Maybe that could've worked better for us, and not doing it at snack time." S&P staff member

"We had an issue with cling film... We couldn't unravel it. We just used our hands then and said pretend. We did as much as we could because the cling film didn't work." S&P staff member

Limited Efficacy

Parents:

"Yeah it's like ... we're just more careful with them. Since we have seen it, you know, the amount of time it takes, we thought like just hot tea, maybe two, three minutes was fine, but then ... the time ... Yeah, it's keeping it out of ... definitely out of the way. Like even if [my child is] playing in the kitchen I say look [to my husband], it's really hot here, can you take him out. Because we know how important it was. We don't like ... like how we get burned, it's fine, but it's not with them because their skin is more sensitive." S&P parent

"I tell you what it has done, because when I was a first ... a first time mum, when I was a new mum and I went over to my ... brother-in-law's, they had actually ... just holding a cup of tea over the ... over the ... [baby] And I didn't have the confidence, I knew that that was wrong but I didn't have the confidence to say hang on, can you not do that. But that ... if I was ... in reverse time that would have given me the confidence to say no, actually ..." [another participant: "To give them a leaflet!"] ... I've got ... the magnets! No, but in all seriousness ... that would have given me the confidence to say actually no, it's not just me thinking it's wrong, it's ... it's proven...So that would have given me the confidence to say that." S&P parent

"It makes you more aware that ... Where on the kitchen unit I thought it was safe ... it isn't safe ... so it goes that bit further back ..." S&P parent

"I drink my tea while I have the baby... It's not okay, I know that, but you know sometimes when he's crawling and then you have your cup of tea, and then he just came to you ..." Home visit parent

"When I got home, that's what stuck in my head, and I was saying to my partner 'Did you know it takes this long for a cup of tea to cool down', whereas with the video I don't really remember." S&P parent

FS Staff:

"But then you are going to still have people who are like, 'Oh, I hold my baby and drink a hot drink. Nothing's ever happened'." Community Nursery Nurse

"One of our parents actually said that her husband, she must have gone home and told her husband, he then went to his mother-in-law's or his mother's and she did exactly the same, went to lean across and apparently he shouted at her! And I went, "Well done, Dave!" And she was like, "Yeah, but he shouted!" I went, "It doesn't matter. It had got through." And I said, "That was through YOU going home and telling him, not from us." S&P staff member

Improvements

Parents:

"And maybe repeat the stuff, because you tend to forget how it is and how to go, but maybe the parents who are visiting that session were not there like telling them once a, maybe twice in a month a reminder about the cling film and maybe like that." S&P parent

"Maybe with the magnets, incorporate the other information onto a magnet, so not just the cure ... more preventative magnets would be good... So like ... yeah, facts and ... yeah, facts about how long it takes for a cup of tea to cool down ..." S&P parent

FS Staff:

"My parents...they absolutely loved this little quiz... as well as doing the first aid I re-capped on what was going to be in the quiz so that the answers ... not were fresh in their mind but they knew. But I sort of ... when you were asking them I gave them like options. I was like, "Well, can you remember what we said then?" S&P staff member

Table 3. Selected quotes from all seven focus groups broken down by *a priori* and emergent themes.

Acceptability

No staff or parents reported that any of the printed materials were confusing or difficult to understand, yet staff did mention a potential language barrier. Materials with fewest words were most popular, and parents frequently cited 'visual' materials and activities as the best. The simplicity of the message on the fridge magnet and the large poster were positively regarded by parents whereas several parents stated that the information on the flyer and the one-step-ahead chart required too much effort or time to read. The parents and staff stated that the questionnaires, information and consent forms were too lengthy and formal.

Parents preferred to be shown or told information than to read it and were often reluctant to answer direct questions (questionnaires) or stand up in front of the group (first aid demonstration). When staff and peers recounted personal experiences, parents were more open to discussing prevention. Parents enjoyed materials and activities that their children could be involved in (reach chart, booklets, accidental spill), those where they felt they were learning something useful (first aid materials and activities), those they could see as relevant to their lives (DVD, accidental spill) or involved interacting with other parents (tea cooling activity). Parents also felt that being involved in activities made the messages more memorable.

Staff thought that the flyer was useful as a talking point, and although some parents thought they were useful, they admitted they would probably get lost, unlike the magnets. Staff enjoyed discussing the materials with parents, and felt the interaction was important to facilitate delivery of information.

Parents expressed concern about being judged as bad parents if they answered questionnaires incorrectly, and felt that they couldn't be totally honest about their behaviour with staff. Knowing that this was research for the university, rather than a test by their HV reassured some parents. Although staff reported that some parents found the questions patronising, most thought them useful and realised that they didn't know as much as they thought and were proud to have improved their knowledge post-intervention.

First aid information was widely accepted by parents and staff, but some elements were felt to be inappropriate. Twenty minutes under cool running water was considered excessive by at least one parent and (apparently) her HV. When to call for an ambulance was questioned by staff, some of whom believed the 'call 999 if larger than a 10p piece' to be misleading. Some staff also felt there was conflict with burns first aid advice they had received from another agency, which had told them not to remove clothing. Parents and staff thought first aid guidance was particularly important because they believed burn injuries would happen despite prevention advice.

Practicality

FS staff reported that it was difficult to consent participants and conduct questionnaires in a timely manner. Talking through printed materials and conducting group activities were generally easy to deliver in the time available to staff. HVs were rarely offered a drink during visits, which limited behaviour modelling. Most activities were easy to run in groups, although picking the right point in the session was a key consideration. The DVD was not easy to deliver and staff had some small practical issues with the first aid demonstration.

Limited efficacy

One parent described how she had gained confidence to correct the behaviour of others with hot drinks. The intervention validated her knowledge and empowered her to act on it. Several parents reported that they were more aware of the possible dangers of hot drinks at home, and were more inclined to keep hot drinks out of reach. One parent admitted that she hadn't made a change and still had a cup of tea whilst holding their baby, a CNN agreed that this would often be the case despite parents knowing better. Some of the prevention and first aid messages were imparted by participants to partners and family members i.e. telling a family member not to lean across a baby with a hot drink and relaying hot drink cooling time.

Suggested improvements

Parents proposed repetition of the information for the benefit of new and existing group members. They suggested more activities and 'visual' elements. Staff suggested that the group intervention could work in non-drop-in sessions, such as cooking classes, where parents aren't distracted by children and attend more regularly.

Staff and parents suggested a bigger magnet to include prevention alongside first aid advice. Staff suggested providing cling film, and the use of reach charts in locations such as GP waiting rooms.

Staff implemented a fun first aid quiz at one Stay&Play, which encouraged parents to think without the formality of the research data collection.

DISCUSSION

This study has shown that it is feasible to deliver Safe-Tea in Flying Start communities in Cardiff. We have shown that Safe-Tea was successfully implemented at Stay&Play where parents were keen to take part in most of the activities and key messages were well covered throughout the term. Our results of 37-45% were below the 60% usually considered to be a good response rate for questionnaires. This suggests that we would need to revise methods for administering pre- and post-intervention questionnaires to ensure better completion rates, perhaps by using a quiz style format to make the process less formal. The drop-in nature of the sessions meant that many who had completed a pre-intervention questionnaire were not present to complete one post-intervention. Similarly the proportion of 6-month HV home visits at which Safe-Tea messages were delivered was unclear due to a low number of returned intervention forms (comprising HV tick boxes and parent questionnaire). However, where forms were returned, implementation of key elements was high, aside from behaviour modelling.

Safe-Tea was practical to conduct. Although activities that required facilities and equipment were less practical in some of the settings where FS activities are based e.g. the hot drink cooling activity, and the DVD. The compulsory research tasks (consent and questionnaires) were the least practical elements.

The most acceptable elements of the intervention were those that were interactive and 'visual'. Printed and written materials were possibly unpopular due to: lower levels of literacy and English language skills, insufficient time or desire to read information, feeling bombarded with information generally and preferring activities where their child could be involved. This implies that the pictorial and action-based elements of the intervention are more likely to ensure accessibility and parental engagement.

Sensitivity to feeling judged as a bad parent, and fear of being tested or challenged, affected answers to questionnaires and participation in demonstrations. The desire of some parents to just be told what to do rather than being asked their opinion also highlights this sensitivity. However, FS staff used their experience and expertise in working with parents to negotiate these barriers. The passive intervention at childcare settings was ineffective in bringing parents' knowledge of risks and first aid up to the same level as in Stay&Play and home visits. It is probable that the active involvement of FS staff is integral to the success of this intervention.

Parents showed good pre-intervention knowledge of hot drink scald prevention for small children. However, consistent with previous studies^{28 29}, a lack of understanding of child development and associated scald risk is likely to hinder timely prevention actions. By contrast, as found in previous studies^{4 29 30}, baseline parent knowledge of appropriate first aid for burns was low, but improved considerably post-intervention, and is likely to be due to the simple and memorable 'cool, call, cover' message, and the popularity of the magnets - serving as a constant reminder.

That prevention and first aid information were passed on to family members indicates that the intervention messages were taken seriously and can reach the wider community. This awareness might translate to behaviour change, by making parents think twice about where they put their hot drinks and correct the behaviour of others at home. Conversely, a small number of parents admitted that they have continued with behaviours that they know are 'wrong' or that they could avoid. Considering the habitual and comforting qualities of hot drink consumption amongst UK adults, it is unrealistic perhaps to expect a small-scale intervention to radically change the behaviour of a population. However, we know that injury prevention behaviour is influenced by social norms and the behaviour of

a partner^{31 32}, so we might reasonably expect that persistent implementation and uptake of Safe-Tea in communities, could improve the behaviour of others and consolidate newly formed prevention behaviours.

Improvements

Notwithstanding positive feedback from parents and staff, it is clear that more can be done to increase the accessibility of our printed materials. We propose a trial of photographic or visual video sequence of the key burns first aid steps and prevention messages. If successful, this could make the messages more 'visual' and transcend language barriers, increasing the accessibility of our printed materials, and their potential impact in other community venues.

The flyer will be enhanced with further background information and used to inform discussion between practitioners and parents rather than to be distributed and rarely read. Some materials received mixed reviews and ran the risk of diluting the specific Safe-Tea message (e.g. the one-step-ahead chart and booklet). The DVD was expensive (£25 each), and although one could be shared between playgroups, its lack of practicality discounts it from a future playgroup-based intervention.

Following popular suggestion, the magnet will be made larger to increase impact and will include prevention advice.

To respond to HV concerns about calling 999 unnecessarily, in the future a recommendation to call for medical help either by NHS Direct or via 999 would be more appropriate. Despite some disagreement regarding cooling for 20 minutes, scientific evidence supports this advice with respect to burn outcome³³. A future intervention would explain why 20 minutes is beneficial to improve acceptability.

Limitations

Although the Cardiff FS community is one of the most diverse communities in Wales, we cannot be sure of the feasibility of conducting Safe-Tea in more rural communities or elsewhere in the UK where there is not a cohesive multidisciplinary pre-school service such as FS.

The questionnaire response rate potentially introduced bias. Our results suggest that by reducing the length and formality of our questionnaires, we could increase the acceptability of the intervention and the research tool in future studies.

Parents who completed questionnaires and attended focus groups were likely to be the more motivated and easier to engage group of parents within our target audience. It was particularly difficult to engage with parents who had received the HV part of the intervention for focus groups, despite the voucher incentive, and so these data should be interpreted with caution.

CONCLUSION

Safe-Tea sought to increase parents' awareness of the vulnerability of small children to hot drink scald injury, improve prevention and burns first aid knowledge. Although burns prevention in pre-school children has been highlighted as a priority in public health policy³⁴, evidence for the effective prevention of hot drink scalds is lacking, despite their frequency and potential severity. Safe-Tea has the potential to address that need.

It is feasible for community staff to deliver the Safe-Tea intervention to parents living in areas of deprivation. Safe-Tea materials and methods of delivery were acceptable to parents and staff and the intervention was successfully implemented in Cardiff.

This study exhibits evidence of increased parental knowledge of hot drink scald risk factors, and correct first aid alongside changed attitudes and behaviours in the presence of children. Safe-Tea has the potential to be effective in reducing the incidence of hot drink scalds in pre-school children; however, further research is needed to test this

robustly. Work is underway to both refine intervention materials based on the improvements suggested in this paper and test these more widely in community groups within the UK.

REFERENCES

1. Kemp A, Jones S, Lawson Z, et al. Patterns of burns and scalds in children. *Arch Dis Child* 2014;**99**(4):316-21.
2. Alnababtah K, Khan S, Ashford R. Socio-demographic factors and the prevalence of burns in children: an overview of the literature. *Paediatrics and International Child Health* 2016;**36**(1):45-51.
3. Baker R, Tata L, Kendrick D, et al. Differing patterns in thermal injury incidence and hospitalisations among 0-4 year old children from England. *Burns* 2016;**42**(7):1609-16.
4. Davies M, Maguire S, Okolie C, et al. How much do parents know about first aid for burns? *Burns* 2013;**39**(6):1083-90.
5. Turner C, Spinks A, McClure R, et al. Community-based interventions for the prevention of burns and scalds in children. *The Cochrane Database of Systematic Reviews* 2004(2):CD004335.
6. Zou K, Wynn P, Miller P, et al. Preventing childhood scalds within the home: Overview of systematic reviews and a systematic review of primary studies. *Burns* 2015;**41**(5):907-24.
7. Burgess J, Cameron C, Watt K, et al. Cool Runnings - an app-based intervention for reducing hot drink scalds: study protocol for a randomised controlled trial. *Trials* 2016;**17**(1):388.
8. Carlsson A, Bramhagen A, Jansson A, et al. Precautions taken by mothers to prevent burn and scald injuries to young children at home: an intervention study. *Scandinavian Journal of Public Health* 2011;**39**(5):471-78.
9. Macarthur C. Evaluation of Safe Kids Week 2001: prevention of scald and burn injuries in young children. *Inj Prev* 2003;**9**(2):112-16.
10. Babul S, Olsen L, Janssen P, et al. A randomized trial to assess the effectiveness of an infant home safety programme. *International Journal of Injury Control and Safety Promotion* 2007;**14**(2):109-17.
11. Kendrick D, Marsh P, Fielding K, et al. Preventing injuries in children: cluster randomised controlled trial in primary care. *BMJ* 1999;**318**(7189):980-83.
12. Nansel T, Weaver N, Donlin M, et al. Baby, Be Safe: the effect of tailored communications for pediatric injury prevention provided in a primary care setting. *Patient Education and Counseling* 2002;**46**(3):175-90.
13. Nansel T, Weaver N, Jacobsen H, et al. Preventing unintentional pediatric injuries: a tailored intervention for parents and providers. *Health Educ Res* 2008;**23**(4):656-69.
14. Posner J, Hawkins L, Garcia-Espana F, et al. A randomized, clinical trial of a home safety intervention based in an emergency department setting. *Pediatrics* 2004;**113**(6):1603-08.
15. Towner E, Dowswell T. Community-based childhood injury prevention interventions: what works? *Health Promotion International* 2002;**17**(3):273-84.
16. Bruce B, McGrath P. Group interventions for the prevention of injuries in young children: a systematic review. *Inj Prev* 2005;**11**(3):143-47.
17. Drago D. Kitchen scalds and thermal burns in children five years and younger. *Pediatrics International* 2005;**115**(1):10-16.
18. Watson M, Mulvaney C, Timblin C, et al. Missed opportunities to keep children safe? National survey of injury prevention activities of children's centres. *Health Education Journal* 2016;**75**(7):833-42.
19. Varley A, Sarginson J, Young A, et al. First Aid Position Statement, 2014.
20. Burgess J, Cameron C, Cuttle L, et al. Inaccurate, inadequate and inconsistent: A content analysis of burn first aid information online. *Burns* 2016;**42**(8):1671-77.
21. Cuttle L, Pearn J, McMillan J, et al. A review of first aid treatments for burn injuries. *Burns* 2009;**35**(6):768-75.
22. Nurmatov U, Mullen S, Quinn-Scoggins H, et al. The effectiveness and cost-effectiveness of first aid interventions for burns given to caregivers of children: a systematic review (in press).
23. Welsh Government. Flying Start. Secondary Flying Start 26 May 2017 2017. <http://gov.wales/topics/people-and-communities/people/children-and-young-people/parenting-support-guidance/help/flyingstart/?lang=en>.
24. Champion V, Skinner C. The health belief model. In: Glanz K, Rimer B, K V, eds. *Health Behavior and Health Education: Theory, Research, and Practice*. 4th ed. San Francisco, USA: Jossey-Bass, 2008.
25. Conner M, Norman P. *Predicting health behaviour: research and practice with social cognition models*. 2nd ed. McGraw-Hill Education, UK: Open University Press, 2005.
26. Bandura A, National Institute of Mental Health. *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ, US: Prentice-Hall, Inc, 1986.
27. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative research in psychology* 2006;**3**(2):77-101.

28. Khanom A, Hill R, Brophy S, et al. Mothers' perspectives on the delivery of childhood injury messages: a qualitative study from the growing up in Wales, environments for healthy living study (EHL). *BMC Public Health* 2013
29. Burgess JD, Watt KA, Kimble RM, et al. Knowledge of childhood burn risks and burn first aid: Cool Runnings. *Inj Prev* 2018.
30. Graham HE, Bache SE, Muthayya P, et al. Are parents in the UK equipped to provide adequate burns first aid? *Burns* 2012;**38**(3):438-43.
31. Sellström E, Bremberg S. Perceived social norms as crucial determinants of mother's injury-preventive behaviour. *Acta Paediatrica* 1996;**85**(6):702-07.
32. Vladutiu C, Nansel T, Weaver N, et al. Differential strength of association of child injury prevention attitudes and beliefs on practices: a case for audience segmentation. *Inj Prev* 2006;**12**(1):35-40.
33. Cuttle L, Kempf M, Kravchuk O, et al. The optimal temperature of first aid treatment for partial thickness burn injuries. *Wound Repair and Regeneration* 2008;**16**(5):626-34.
34. Godson R. Reducing unintentional injuries in and around the home among children under five years. *Community Pract* 2014;**87**(8):12.

Statements

Contributors: We confirm that all authors have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content and (3) final approval of the version to be submitted.

Competing interests: None declared.

Ethical approval: This study was approved by the Cardiff University School of Medicine Research Ethics Committee Ref: 16/29 and Cardiff and Vale UHB Ref: 16/AUG/6609

Acknowledgements: The authors acknowledge the Children's Burns Research Centre for providing advice on prevention and first aid content of the 'Safe-Tea' materials and the design of the intervention. We would like to thank the staff of Cardiff Flying Start in particular Pamela Powis, Jane Imperato, Linda Dunn Rebecca Boore, Sara Wiggins, Robina Woodfield and Rachel Everett for coordinating the intervention delivery. We would also like to thank Katrina Phillips at the Child Accident Prevention Trust and Kenn Dunn at the British Burns Association for advising on the content of the 'Safe-Tea' materials. This research was supported by funding from the Scar Free Foundation, Health and Care Research Wales and Cardiff University's City Region Exchange.

Figure legends:

Figure 1. Logic model for the Safe-Tea intervention.

Figure 2. Summary of research design, feasibility measures and intervention materials. Materials include in-house designed materials and those purchased from the Child Accident Prevention Trust (CAPT).

Figure 3. Flow of participants through the research study at 6-month home visits and Stay&Play. Grey boxes indicate implementation of intervention elements. Italic font indicates number of parents who likely additionally received the intervention in another setting.