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Title: Investigating behaviour change following a Home Fire Safety Visit

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Key Findings:

Research carried out in priority areas in Bristol to investigate the effectiveness of the Home Fire Safety Visit (HFSV) conducted by Avon Fire and Rescue Service to educate residents about home fire safety had the following key findings:

- **In general and prior to HFSV's householders tended to over-estimate their safety, experienced complacency with respect to fire hazards and often made (un)reasonable adaptations/avoidances to overcome potential hazards, and this increases with age. Understanding these pre-conceptions could enable FRS to tailor and target their advice, possibly leading to more impact.**
- **Residents' experience of the HFSV was varied due to specific needs and vulnerabilities. Some of the older residents in this research experienced specific cognitive issues (e.g. memory problems) that inhibited their ability to engage in some of the suggested safety behaviours suggesting that some adaptation to the HFSV is required in order to more fully meet the needs in the community.**
- **The HFSV offers an opportunity for those who have knowledge about safety to receive reassurance about their information and behaviours, and to check and correct those who are operating with incorrect knowledge and behaviours. Some simple and easily achievable behaviour changes were made. However more complex and sustained behaviour changes were more difficult to ascertain. There is a suggestion that cost and vulnerabilities**



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(including age and health) constrain behaviour change. There is opportunity for further research using a more complex research design and longer time period would to investigate this area fully.

Aims and Introduction

The aim of this research project was to examine behaviour change following Home Fire Safety Visits (HFSVs) by Avon Fire and Rescue Service (AFRS) personnel. HFSVs are conducted in order to inform residents of (and thereby prevent) behaviour that may cause fires, and to make residents more aware of safer behaviours. It is therefore important to ensure that HFSVs are designed and delivered as effectively as possible, and that they are achieving their aims and making a difference to the way that residents behave. This project looks at the impact of HFSVs on residents, by examining changes in attitudes and behaviours as a result of a HFSV. The research addresses the following questions:

1. What are residents' views and understandings of home safety and fire risk and appropriate behaviour prior to Fire and Rescue Service (FRS) HFSVs and HSRA interventions?
2. Do residents' views, understandings and behaviours change following such intervention by FRS?
3. If behaviour change occurs, what is the nature of this change? Is this change sustained over time?

Methodology

Working in partnership with AFRS, the research team were provided with contact details of residents who were about to receive a HFSV. The necessity of carefully scheduled research interviews meant that the process of eliciting participation in our project from residents was a time-consuming, lengthy process. It required the field researcher and personnel from AFRS to be in frequent direct contact with each other, working together to ensure an efficient and effective approach in eliciting the participation of as many residents as possible at the appropriate time.

The field researcher contacted the potential participants and arranged to meet them in their home prior to the HFSV. In consultation with AFRS, the researchers prepared a semi-structured interview schedule, which was utilised in phase one of data collection. The schedule included asking residents about a number of specific risks.

Following the HFSV participants took part in two further semi-structured telephone interviews: phase two interviews took place within 2 weeks of the HFSV, and phase



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three interviews took place within 3 months of the HFSV. During the phase two and three interviews, the field researcher again asked about identified specific risks, about the HFSV, and about any changes in behaviour.

The field researcher completed initial (phase one) interviews with 27 residents. Some residents were not able to complete the follow up interviews (phases two and three) within the research time-schedule, were unavailable or chose to withdraw from the research. Fifteen complete data sets (data from three interviews) were obtained, with partial data collected from the remaining 12 residents. Partial data sets were additionally examined for any additional insights, and to ensure that there were no major differences between those residents providing 'complete' data sets and those that did not. However, the more detailed analysis of change was obviously not possible on this subset of data.

Data

Caution should be employed when using a self-report data collection method as it cannot be relied on to provide an absolute, accurate measure of exact behaviours due to individual differences in participants and their reporting style.

However, such data are particularly valuable for the current project as 1) they can be considered an indicator of behaviours, 2) they do provide an insight into residents perspectives and experiences of fire safety and the HFSV, and 3) subsequent articulation by the residents to the researcher of the key messages learned by residents can be a useful learning tool in its own right – therefore asking residents to talk about what they had learned might be additionally beneficial in facilitating the reception of safety messages.

Findings

Analysis of the data resulted in four main consistent findings. Firstly, we present the main findings in relation to resident's experience of the HFSV emphasising the unique position and access those delivering the HFSV have, and the opportunities presented through this. Secondly our findings centre around vulnerability and the importance of understanding the needs of the community and tailoring advice and support. Thirdly we present our results concerning behaviour change both in the immediate sense (the length of the research project) and then in relation to more complex behaviour change.

Experience of the HFSV

Residents' understanding of HFSV's and of their own fire risk prior to the intervention indicated that most participants felt safe and were unaware and/or unconcerned



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about their home safety. Responding to questions about a series of potential hazards, where residents answered that they used candles or didn't have smoke alarms they did not express any concern about this. Only two of the participants expressed concern over a specific safety issue e.g. unsafe electrics prior to the HFSV.

The HFSV was mostly well received by participants, who described the fire service personnel as 'polite' and 'reassuring'. Dissatisfaction was sometimes expressed, however, in terms of the limitations of the service - for example, requests were made by residents to the fire service personnel that were 'additional' to the HFSV itself. In such cases there was evidence that residents still wanted further information or service provision following the visit. In one example, a participant expressed concern about her carbon monoxide monitor prior to the HFSV but the FRS did not discuss this during the HFSV. In another instance a participant expressed concern about her young son's interest in fire starting during the HFSV and although the FRS personnel said that they would refer the participant to the intervention officer, in the final interview (up to 3 months later) the participant expressed some concern that she had not received enough information and support about this. It is not clear whether AFRS personnel had referred this concern - it could be that the resident was not made aware. In either case, it is apparent that additional work on communication and feedback strategies may be beneficial.

While such issues can be difficult and complex, these experiences point to the potential additional value that can come from HFSVs. Given how difficult it evidently is to access the homes of residents that might benefit from HFSVs, in order to maximise their effectiveness (and foster stronger community links), there is scope to make it clearer to residents how such information would be captured and utilised, and ensure that residents know what this is. Thus there is potential for ensuring greater clarity with residents as to whether HFSVs are being used solely as a process of information provision *to* residents, or whether they are also a valuable opportunity to collect information *from* them (and potentially input into longer term of prevention strategies).

Residents are left with a leaflet at the end of the HFSV. Only half of the participants remembered the leaflet. Therefore alternative measures could be considered for ensuring impact and follow up – maybe with something more personalised to increase the likelihood that residents remember it.

Reassurance and the Role of HFSV



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Residents were often eager to talk about their own thoughts about safety in their home. It is clear that in most cases there is a degree of existing knowledge and practices in households in relation to fire safety. The HFSV plays an important role when knowledge is accurate and behaviours appropriate as, although residents may not 'learn anything new', the HFSV is useful for both the FRS as a check on knowledge and practise, and for the residents as a reassurance of their knowledge and actions.

Similarly where residents reveal incorrect views about safety, for example resident "I know that I should fill the bath" in the event of discovering a fire in the house, the HFSV can usefully serve as a reminder of relevant practices (and link to reassurance) and makes fire safety knowledge more salient. In other cases using examples in the home that illustrate problems, showing people evidence that they need to change seems effective. It appeared that it was often most effective to point to specific physical items that are problematic, with the advice provided being linked to specific behaviours that are achievable by people. This seemed particularly effective when the specific behaviours were simple.

Vulnerable people and the HFSV

There was evidence of residents not recognising dangers or underestimating their personal safety in their homes. For example one resident who had obvious mobility limitations throughout the course of the research period did not see themselves as vulnerable and therefore did not think that there was an increased safety risk to themselves.

Many of the participants included in the research were vulnerable due to mobility, age and/or health issues. In some cases mobility issues meant that the participants could not make the changes suggested in the HFSV to their 'end of day routine' – for example, bending down to switch plug sockets off. In another case, although the participant did not feel unsafe or that there was any risk to his safety, during the initial pre-HFSV interview, the field researcher noted significant risk of accidents and falling due to the resident's impaired mobility and a number of rugs and carpet offcuts presenting trip hazards in the home. During the follow-up interviews the participant reported that the rugs and carpets had not been mentioned or highlighted as a risk by FRS. Another participant said that during the HFSV he had learned to 'not worry about his cats and get out of the house in the event of a fire'. However, during the final interview (and recovering from a recent stroke) had only a vague recollection of the HFSV, remembering the advice about leaving the cats only after being prompted by the researcher.

Such findings suggest that a more nuanced approach is necessary. Vulnerabilities due to age and (mental / emotional) health should be considered and measures put in place to ensure a carer / relative is present at the time of the HFSV and/or there is



an appropriate way to provide information to those with particular needs (e.g. memory issues).

Behaviour Change

Residents adapted and avoided safety issues by, for example, ‘stopping cooking’; ‘not using the shower because there is a step’, and ‘not going outside because there was a step’. This could be considered a form of behaviour change resulting in residents developing coping mechanisms to deal with reductions in mobility /ability. These residents did not see themselves as vulnerable or with an increased safety risk and would therefore probably not seek guidance or support to address safety issues. This highlights the importance of identification and inclusion of residents who may not present as vulnerable, or proactively seek support / advice. There may be a lack of understanding / clarity about the role of FRS and some blurring of boundaries when it comes to asking for support.

There was evidence of behaviour change as a result of the HFSVs. Educating residents about simple changes and about emergency and safety plans resulted in some examples of sustained behaviour change. Ten of the fifteen participants who participated in all data collection points reported an example of a change in their behaviour. These changes, and whether they are sustained over time, are set out in Table 1.

Table 1: Examples of reported behaviour change immediately and over time following HFSV

Reported change within 2 weeks of HFSV	Change sustained (up to 3 months after HFSV)?
Changed adapters and turns everything off and shuts doors. Unlikely to tackle a fire by herself	Yes
Shut doors. Stopped overloading plug sockets and unplug computer. Understands the new fire escape plan. Purchased a new front door and now leaves a key near to the front door.	Yes
Changes to fire escape plans – get out of the house and don’t delay by looking for the cats.	No
Changes to fire escape plan – now to the bedroom not the bathroom.	Yes
Leaving a key near the front door.	Yes



Intention to buy new plug extensions	None bought (intention remains)
Changes to fire escape plan – go to bedroom and ring the FRS and not tackle a fire herself.	Yes
Turn off the plug sockets at night. Keeping doors closed.	Yes
Container of water in the kitchen to put out cigarettes.	Yes

As illustrated in the examples above, the majority of residents who reported changes in behaviour, did so in terms of in their ‘end of day’ routines and changes to their emergency fire escape plans. Where change was not sustained, this appeared to be due to intervening events that impacted on the resident’s ability to undertake the changes (i.e. experiencing a stroke, as explained below), or a lack of following up on behavioural intentions (i.e. not buying new plug extensions).

In terms of the more successful behaviour change, the changes to ‘end of day’ routines and emergency fire escape plans are fairly easy changes to make, in that they cost little and take very little time to complete (although a reliable routine may take longer to develop). In contrast to change that depends on, for example, the purchase of additional equipment, this ‘ease of change’ to behaviour following information provided during the HFSV may go some way to explaining this finding. It should also be noted that although changes involving extra financial costs might be considered ‘easy’, this often presents a significant barrier to the poorest and most vulnerable residents who cannot take on extra costs. Support (including financial assistance) to purchase items / equipment to promote household safety should be included as part of the HSFV.

Much of the academic literature concerning behaviour change suggests that information giving alone does not normally result in successful behaviour change. However, existing research suggests that the ease of carrying out a change in behaviour affects whether people will change. Simple, practical changes were suggested during the HFSV’s and in many cases these changes were made and were sustained over the research period revealing that behaviour had changed as a result of the advice received. Our results therefore support the finding that simple changes in routines are more likely to be made and sustained.

Other suggestions regarding the reasons behind behaviour change following information provision include the importance of how the message receiver perceives the message provider. Hearing educational messages from a respected, uniformed professional may mean that these messages are listened to and acted on more than if they were delivered by someone else. This may indicate that it is important for



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HFSV to be conducted by uniformed officers, contradicting earlier research where it was suggested that HFSV conducted by officers in uniform and attending in a fire engine can be seen to be intimidating. While care would need to be taken in order to mitigate against any such sense of intimidation, in order for the HFSV to be successful at influencing and changing behaviour it may be necessary to create an air of professionalism and authoritative influence by wearing a uniform. This could be a useful area to explore in more detail, for example by comparing and contrasting how safety messages are delivered, and by whom, and examining any resulting behaviour change. This issue could also be explored in other safety message contexts.

More complex behaviour change

As noted above, there were examples of cases where advice had not been acted on. In many cases this was because of the upheaval associated with change and/or the financial implications of obtaining new safety equipment / upgrading systems. In some cases residents reported that they intended to make suggested changes in the future.

More complex behaviour change may require a longer amount of time and more detailed and frequent follow-up visits by AFRS, talking through plans for changing behaviour and focusing participants on visualising how they may be able to achieve these changes by creating a 'safety plan'. The theory of planned behaviour (Ajzen, 1991) suggests that as well as being influenced by social norms, knowledge and behavioural control (ability / belief to complete the behaviour) successful behaviour change involves a further process labelled 'intention'. Having an intention to change something increases the likelihood that the change may occur in the future. This is a model that could be applied in order to develop behaviour change strategies, but would involve more comprehensive research and examination.

Conclusions and Recommendations

A number of conclusions and recommendations can be made based on this research:

Conclusions

- People tend to feel safe and not recognise / know about some risks in their households.
- People live with safety issues, adapting and employing coping mechanisms to avoid potential hazardous situations.
- The HFSV's are valued and well received by residents.



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- AFRS are considered by residents to deliver the HFSV well, although there is potential for further training and signposting of issues that do not directly fall within the HFSV remit.
- The HFSV could be useful in identifying vulnerable residents who may need further support.

Recommendations

- Identify vulnerable residents, providing follow up support and referral to appropriate services. Routinely ask for a carer to be present at HFSVs for vulnerable residents.
- Develop the HFSV and train personnel to identify more risks to safety (e.g. trips and falls)
- Maximise potential 'behaviour change' by identifying simple changes and pointing out their ease of completion and possible impacts.
- Maximize the use of information obtained in HFSV e.g. when parents tell FRS about fire involvement of their children, this is an opportunity to link up with appropriate source of referral.
- Link to additional support more generally (where there is vulnerability - e.g. YP fire involvement, memory problems). There would need to be specialist input into each of these.

There are also a number of **further avenues** that could be explored and we recommend that further research be devoted to:

- Investigating the scope and delivery of HFSV. Does who delivers the HFSV matter? Can the HFSV be linked to other services serving as a 'check' and reassurance of a variety of safety practices?
- Vulnerability and Safety. How can the HFSV be adapted to meet specific needs? Investigating a more personalised approach to the HFSV?
- Develop a structured process to support more complex behaviour change. Explore different models (for example the role of transformative learning). Using theories of 'change' (transformative learning, and Theory of Planned Behaviour) to develop different models of sharing safety messages and encouraging changes in behaviour.



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- Can the HFSV play a wider role in the community by developing to include messages about health (trips and falls) and wider preparedness levels (risk and resilience).