Evaluation of the “Warmer Ways to Better Health” Scheme

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Abstract

Fuel poverty is a major problem in Northern Ireland in comparison to the rest of the United Kingdom. Living in fuel poverty can have a negative impact on all aspects of people’s lives. Various schemes have been introduced to try to help those people living in fuel poverty, however not everyone qualifies for these schemes. The “Warmer Ways to Better Health” scheme, which was launched in 2005/2006, supports people who are living in homes that have inadequate heating and insulation but do not qualify for support currently available under existing schemes.

The aim of this study was to evaluate the “Warmer Ways to Better Health” scheme. A qualitative and quantitative study was carried out to determine how successfully the WWtBH scheme was being facilitated. The study focused on what the scheme was doing to deal with fuel poverty and how satisfied participants were with the scheme. In addition areas of the “Warmer Ways to Better Health” scheme, which could be improved upon were identified.

Two methods were used to gather information. A postal questionnaire was designed and sent to participants of the scheme. Telephone interviews were carried out. Unfortunately due to time restrictions and the availability of respondents not all those who agreed to a telephone interview were interviewed. Twelve people were interviewed via telephone.

The results indicated that the “Warmer Ways to Better Health” scheme was very successful in addressing the main causes of fuel poverty. The results also indicated that most respondents were impressed with this scheme and its delivery. In addition, areas where the scheme could be improved upon were identified.

KEYWORDS: fuel poverty; Warmer Ways to Better Health (WWtBH); heating; inequalities, health

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Introduction

The term "fuel poverty" was coined in the early 1980s by the grass roots environmental health movements in the United Kingdom (UK) and Ireland (Lloyd, 2006). It was used to describe the situation in which people who are least able to afford the cost of heating tend to live in houses that are hardest to heat and, as a result, achieve lower indoor temperatures with the fuel that they buy (Department of Business Enterprise and Regulatory Reform (DBERR), 2001). The most widely accepted definition of a fuel poor household is one which needs to spend more than 10% of its income on all fuel use and to heat its home to an adequate standard of warmth (DBERR, 2001). The World Health Organisation (WHO) defines this as 21^{o}C in the living room and 18^{o}C in the other occupied rooms (DBERR, 2001).

Northern Ireland (NI) has the highest rate of fuel poverty in the UK, with 1 in 3 households suffering its effects (Department for Social Development (DSD), 2004). Currently, 203,000 families, representing 33% of households in NI, live in fuel poverty (NEA, 2004). This level is significantly higher than that experienced in most of the UK (Shortt and Rugkasa 2007). In England, 9% of households were fuel poor in the same period, and the latest figures from Scotland show that 13% of households there were fuel poor (DSD 2004).

Fuel poverty is clearly linked to general poverty and deprivation and is firmly associated with the following factors (DBERR 2001, Design & Demonstration Unit (DDU), 2005):

Low income and debt

Figures show that 43% of fuel poor households have an income of less that £7,000 and that growing numbers of fuel poor people are in employment, with 28% of employed households experiencing fuel poverty (DBERR, 2007). This is thought to be due to rising fuel prices resulting in people spending a large portion of their income on heating their homes (Wall, 2008).

Poor housing, household insulation and ventilation standards

The energy efficiency of houses is measured by the Standard Assessment Procedure (SAP), which assesses insulation and heating and has a rating from 0 (poor) to 100 (good). A rating above 60 indicates a good efficiency standard. (Department of Trade and Industry (DTI)/ Department of Environment Food and Rural Affairs (DEFRA), 2005). In 1998 nearly half of those households with a SAP rating below 20 (i.e. poor energy efficiency) were in fuel poverty. The majority of those who were considered to be in fuel poverty were in homes with a SAP rating of less than 50. However, 20% of fuel poor households had a SAP rating of 50 or more, demonstrating that poor energy efficiency is not the only cause of fuel poverty (DBERR, 2007).

Inefficient or expensive heating systems

There are clear links between heating type and fuel poverty, with more households heated by solid fuel glass fronted fires or electric storage heaters being fuel poor than those that were heated with oil or gas (DSD, 2004). NI's homes are much more likely to use solid fuel (and indeed heating oil) than other areas of the UK (DSD, 2004). The clear link between use of solid fuel and fuel poverty shows that conversion of solid fuel heating to oil or gas should be a high priority, and it is vital that the price of these fuels is made low and stable (DSD, 2004).

Lack of access or availability of affordable fuel and/or tariff options

As previously stated NI has the highest rate of fuel poverty in the UK. It could be argued that this particularly high figure relates to the lack of an adequate gas network and other associated factors contributing to the fact that fuel bills are an estimated 27% higher than in the rest of the UK (CSE/NRFC, 2001). This problem is likely to escalate in the following years due to the volatility of oil prices. Recent soaring fuel costs have pushed the number of people in fuel poverty up from 1.2 million to 1.5 million bucking a downward trend since 1996 (Wall, 2008).

Under-occupation of homes

Households in the worst degree of fuel poverty tend to occupy accommodation, which is, on average, significantly larger in area (DBERR, 2001). DSD (2004) found that 50% of single person households were likely to suffer fuel poverty.

The links between cold, damp homes and poor health have long been recognised (Healy and Clinch, 2002) and fuel poverty presents a serious risk to the health and well being of thousands of people (Williams, 2008). Fuel poverty damages people’s quality of life and imposes wider costs on the community, through increased health service use (Evans *et al* 2000).

The physiological effects of cold are well documented. Resistance to respiratory disease falls when temperatures fall below 16ºC (*Collins K J, 1986*). Wilkinson *et al* (2004) found that the coldest homes were associated with an increased risk of excess winter mortality. In the UK from December to March, year on year, there are between 20,000 and 50,000 excess deaths compared to the rest of the year (DBERR, 2001). The likelihood of ill health is also increased by cold homes, with illnesses such as influenza, heart disease, and strokes all exacerbated by the cold (DBERR, 2001). Cold homes can also promote the growth of fungi and numbers of house dust mites. The latter have been linked to longstanding conditions such as asthma (Evans *et al* 2000, DBERR, 2001). Damp is one of the most common health hazards associated with poor housing and is largely a result of poor insulation and inadequately heated homes (Shortt and Rugkasa 2007). Its effects have been found to impact on not only physical health, but also mental health and well-being (Hunt *et al*, 1988). Despite the above studies Rudge and Gilchrist (2005) state there is currently limited evidence directly linking health outcomes with low indoor temperatures or fuel poverty, and further research should be carried out within the field.

Although the above risks apply to all people, older people, children, and those who are disabled or have a long-term illness are especially vulnerable (DBERR, 2001). NI’s Interim House Condition Survey revealed that 52% of households headed by a person with a disability or long-term illness and 54% of households headed by those aged 60+ experience fuel poverty (DBERR, 2007). As well as influences on health, fuel poverty can exacerbate the social isolation felt by many older household owners, especially those situated in rural areas (Lawlor *et al*, 2002); as they cannot afford to socialise (DBERR, 2001). Families with children account for 15-20% of fuel poor households (DBERR, 2001). Cold homes also increase the time taken to recover from other illnesses so that children may be off school for longer periods, affecting their education and development (DBERR, 2001). Homework can also suffer if the family

are confined to a small part of their home, and there is nowhere for the children to study in quiet (DBERR, 2001).

Fuel poverty has moved up the political agenda in recent years with the publication of the UK fuel poverty strategy (2001) and the NI fuel poverty strategy (2004) (Shortt and Rugkasa, 2007). Much has been done, over the last decade or so, both to highlight the plight of those households living in fuel poverty, and to reduce the numbers suffering (Healy and Clinch, 2002). Such effort has realised actual results in the form of reductions in the levels of households caught in a fuel-poverty trap in the UK. Much of this reduction may be associated with the Home Energy Efficiency Scheme (HEES), which has provided grants for the retrofitting of energy-saving measures in the home for those on low incomes (Healy and Clinch, 2002).

The latest estimates indicate that in 2005, there were approximately 2.5 million households in fuel poverty in the UK; of which 2 million were vulnerable households. However, this is an increase of 0.5 million since 2004 which lead to 25,700 excess winter deaths in England and Wales in 2005/06 (Williams 2008). These statistics reflect the impact of rising energy prices on fuel poverty levels (DBERR, 2007).

The goal of the Government and the Devolved Administrations in the UK is to seek an end to the problem of fuel poverty. In particular they will seek an end to the blight of fuel poverty for vulnerable households by 2010 (DBERR, 2001). Fuel poverty in other households will also be tackled when progress is made on the priority vulnerable groups (DBERR, 2001), this may prove more difficult as these individuals could move in and out of fuel poverty as personal circumstances change (DBERR, 2001). The UK Fuel Poverty Strategy (2001) aimed by 2006, to have assisted at least 40,000 households in fuel poverty through the new Warm Homes Scheme and partnership programmes. To achieve these targets, the Government and the Devolved Administrations believe that no single measure would be sufficient. Instead a range of programmes and measures have been put in place, addressing the main causes of fuel poverty (DBERR, 2001). The Design and Demonstration Unit (DDU) sees finding and targeting the fuel poor as the single most difficult step in eradicating fuel poverty. It is difficult to assess the number of people who are entitled to help, and who are

made aware of the grants available but do not apply (DSD, 2004). Therefore there is still a lot to do to reach those most in need.

As stated previously Fuel poverty is a much greater problem in NI than in the rest of the UK due to our relatively low income and high fuel costs (DSD, 2004). High levels of owner occupation, coupled with low levels of energy efficiency, the lack of access to a gas network, lower average income and the relative disadvantage of the entire region make tackling fuel poverty particularly complex (Shortt and Rugkasa 2007). ‘Ending Fuel Poverty: A Strategy for NI’ sets out the aim, subject to necessary resources, to eliminate fuel poverty in vulnerable households by 2010, and in non-vulnerable households by 2016 (DBERR, 2007). The interim targets for NI were to have assisted at least 40,000 households in fuel poverty by 2006 and reduce the number of vulnerable fuel poor by 71,000 households in 2006 (DBERR, 2007). The Warm Homes Scheme was designed to focus specifically on fuel poor households in the private rented and owner occupied sectors (DBERR, 2001). Its objectives are to strengthen previous schemes by broadening the range of assistance, which it offers and continuing to target those households most vulnerable to cold related ill health (DBERR, 2001). It provides a range of energy efficient measures such as insulation, draught proofing and advice to the value of £750 to homeowners and private sector tenants in receipt of certain benefits (DSD, 2004). The Warm Homes Plus scheme provides gas or oil powered central heating systems as well as the insulation measures up to a value of £2,700 (DSD, 2004).

Since July 2001, over £6.5 million has been spent on insulation measures resulting in 17,603 homes benefiting from lower energy bills and nearly £16 million has been spent resulting in 5,501 homes benefiting from a warmer, more comfortable environment (DSD, 2004). In 2001, it was identified that 181,000 vulnerable households in Northern Ireland were in fuel poverty but by 2004, this was down 55,000 to 126,000 (DBERR, 2007). In terms of progress towards NI’s interim target to have assisted at least 40,000 households in fuel poverty by 2006, almost 49,000 fuel poor households were assisted under the Warm Homes Scheme by 2006 (DBERR, 2007). Throughout 2006/07, almost £120 million was directed towards schemes and programmes that directly contribute to the eradication of fuel poverty throughout NI (DBERR, 2007).

Due to the success of the Warm Home Scheme there may also be a case for supporting more locally focused schemes to address fuel poverty among households that either do not qualify or do not apply for help under the mainstream programmes (DSD, 2004). One such scheme is WWtBH scheme. This is a joint initiative co-ordinated between the NHSSB, Northern Ireland Electricity (NIE), the Department of Social Development (DSD) and Antrim, Ballymoney, Coleraine, Moyle, Magherafelt, Cookstown, Newtownabbey and Larne councils as partners within the NIfHP (NHSSB, 2007). “This valuable scheme provides a package of heating, insulation and energy efficiency measures, free of charge to those who qualify, to help combat the adverse health impacts of living within a cold or damp home (Frazer, 2007). The WWtBH scheme started in 2005/06 with Antrim, Ballymoney and Magherafelt councils contributing; Cookstown and Coleraine joined in 2006/07 with Larne, Moyle and Newtownabbey contributing in 2007/08.

The aim of this investigative study was to evaluate the WWtBH scheme within the NHSSB area.

Method

This study was carried out in the NifHP area excluding Carrickfergus. The NIfHP was contacted in September 2007 to establish if it would be possible to contact all participants of the scheme to date.

The aim of this study was to evaluate WWtBH scheme. It was decided that a postal questionnaire triangulated with a telephone interview, would be the most appropriate approach for this study. The questionnaire is perhaps the most popular of all data collection instruments employed in statistical work (Wilson & McClean, 1994). The advantages of "closed format" questions are that they are quick to answer, easier to code and show no discrimination based on the articulate and inarticulate responses (Wilson & McClean, 1994). When these advantages were considered it was decided that a predominately closed format questionnaire was most suitable.

The methodology sought to: obtain the opinions of participants, establish how the "Warmer Ways to Better Health" scheme contributed to tackling fuel poverty and: identify ways in which the scheme can be improved.

A postal questionnaire (Appendix 1) was designed and distributed to those who participated in the scheme from its launch until March 2008. The questionnaire consisted of twenty-one questions, which combined both a qualitative and quantitative approach. It was specifically designed to determine participant's satisfaction with the scheme, their opinion on its success and how it could be improved upon. Information on various aspects of the household and its occupants were requested.

The questionnaire included a section where participants could indicate whether or not they would be willing to take part in a further verbal interview about the scheme in the form of a telephone call. Telephone surveys involve using the telephone to contact respondents, thus eliminating travel costs; however such surveys can be seen as an intrusion on personal privacy when used in a domestic context (Wilson & McClean, 1994). The fact that respondents were given a choice in relation to taking part in the telephone interview ensured that no respondents would feel that there was

an intrusion on their personal privacy. The telephone interview was less intrusive than a face-to-face interview in the person’s home and it allowed them to remain anonymous. Furthermore it was believed that participants may feel more relaxed when responding on the telephone in their own home. One disadvantage was that this form of interview required that all the participants had access to a telephone.
The study population comprised 189 persons in receipt of assistance since the schemes inception in 2005/2006 until March 2008.

Pilot testing is the process whereby a newly designed questionnaire is tested for its ability to do the job, which it is designed to perform; the pilot test can also highlight questions, which may be ambiguous or difficult for the respondent to reply to (Wilson & McClean, 1994). A pilot study of the questionnaire was undertaken, using 20 randomly selected participants. The pilot study did reveal some difficulties in relation to wording and these were rectified.

Postal surveys are relatively low cost, they readily accommodate a large sample of potential respondents but they frequently suffer from low response rates (Wilson & McClean, 1994). To address the issue of low response rates, the following steps were taken to encourage a good response rate:

- A covering letter can be used to give an assurance regarding the confidentiality of the data provided (Wilson & McClean, 1994). In view of this two letters were sent out along with the questionnaire. One letter was from the author (Appendix 2) and the other from Fuel Poverty Strategy Coordinator (Appendix 3) of the Northern Investing for Health Partnership. Both letters explained the questionnaire from the point of view of both parties. The University of Ulster logo was used on the Author’s letter and the NIfHP used on the Fuel Poverty Strategy Coordinator’s letter.
- A free prize draw was offered for those who completed and returned the questionnaire. “Prize Draw Slips” along with “Prize Draw Envelopes” were sent out with the questionnaire. Anonymity was ensured by the inclusion of the “Prize Draw Envelopes” which were separated from the completed

questionnaires. A closing date for entry into the free prize draw was included in the letter.

- Stamp addressed envelopes were enclosed for the return of the questionnaire and “Prize Draw Slips”
- Questions were suitably worded and appropriate, with the use of plain English, short questions and no leading questions.

The NIfHP labelled and sent the questionnaires using their database in order to respect the participant’s right to confidentiality and address data protection. The closing date for entry into the free prize draw was two weeks after the questionnaires were sent out.

The telephone interview ensured that both quantitative data and qualitative data were obtained. This integrated approach allowed for more extensive information to be collected. Self-selected participants were contacted via telephone over a period of time after the questionnaires had been returned. These interviews were times to accommodate the participants using the times that they had indicated would be suitable.

The quantitative data was analysed using “Statistical Package for Social Sciences” (SPSS).

Results

Of the 189 questionnaires sent out 75 were returned. This is a 39.7% return rate. Of these 75, 40 agreed to take part in a telephone interview.

The following results were obtained from the returned questionnaires, which were input into SPSS and analysed.

Council Area

In relation to each of the council areas, the break up is as follows; 25.3% of respondents indicated that they lived in the Antrim Borough Council Area, 16% Cookstown, 14.7 Ballymoney, 13.3% Coleraine, 13.3% Larne, 9.3% Magherafelt, 5.3% Newtownabbey and 2.7% indicating Moyle.

Fuel Bill

42.7% of respondents felt that their fuel bill had decreased. 20% felt it had increased and the 37.3% felt it had remained the same.

Measures Installed

66.7% of respondents had oil-fired central heating installed, 64% energy efficient light bulbs, 56% loft insulation, 44% thermostatic radiator valves, 32% central heating programmers, 21.3% cavity wall insulation, 6.7% reflective radiator panels and 2.7% had gas-fired central heating installed. This 2.7% lived within the Ballymoney Borough Council area.

When asked about whether or not they would have installed measures without assistance from the WWtBH scheme 8% said yes, with 92% saying no.

90.5% of those who received a heating system and/or thermostatic controls indicated that they have no problem operating them, 9.5% were not able to operate them properly.

13.8% of those who received a heating system and/or thermostatic controls indicated that they weren’t given instructions on how to operate them.

36% of respondents indicated that they received energy advice.

Household Size

Of those participants who took part in this study 42.7% indicated that there were two people living in their household, 18.7% single person households, 16% four people, 14.7% three people, 5.3 five people,1.2% six people and1.2% seven people.

Illness/Disability

64% of respondents indicated that someone in their household suffered from an illness or disability. 37.5% of this 64% indicated that they had noticed an improvement in their health since the installation of measures.

Age of Head of Household

45.3% of respondents indicated that their head of household fell into the 40 – 59 age bracket, 44% fell into the 60 – 79 age bracket, 6.67% fell into the 18 – 39 age bracket and 4% into the 80 + age bracket.

Children/Education

8% of respondents indicated that there were children in their household aged 0 – 4. 14.7% of respondents had children who were age 5 – 11 and 16% of respondents had children who are age 12 – 17. 28% of households who responded contained children under the age of 18. 12% of respondents indicated that there were those in their household over 18 and in education. In total 34.7% of respondents indicated that there were members of their household in education.

Rural/Urban Areas

38.7% of respondents indicated that they lived in a rural area with the other 61.3% indicating they lived in an urban area.

Awareness of the Scheme

26.7% of respondents heard about the scheme via leaflets, 25.3% via the media, 22.7% from a friend, 10.7% from their local council, 9.3% from other sources and 5.3% from the Citizens Advice Bureau (CAB).

Contractors

89.3% of respondents indicated that in their opinion the contractors were tidy. 92% felt contractors were on time and 94.7% felt contractors were well mannered.

94.7% of respondents indicated that they knew when the work was going to be done beforehand. 9.3% of respondents indicated that they didn’t know prior to the commencement of the work what measures they were having installed under the scheme.

94.7% of respondents indicated that they would recommend the scheme to someone else.

Cross tabulations

Cross tabulations of some of the results were carried out (Appendix 4).

Telephone Interviews

12 people were contacted via telephone during this study. The majority of these participants indicated that prior to participation in the scheme that their home was heated by a fire or electric storage heaters. All telephone interviewees noticed an increase in the thermal comfort of their home since the installation of measures. All of the telephone interviewees stated that they wouldn’t have installed these measures without assistance from the scheme and that affordability was the obstacle. Of those who felt their fuel bill had increased, it was attributed to the recent hike in oil prices. Half of the telephone interviewees felt that double glazed windows would be a useful addition to the measures available under the scheme.

Discussion

In relation to council areas just over a quarter of respondents indicated that they lived in the Antrim Borough Council Area, with just over a sixth of respondents indicating Cookstown, followed by Ballymoney, Coleraine, Larne, Magherafelt, Newtownabbey and Moyle. This is quite surprising in that although Cookstown District Council did not join the scheme until 2006/2007 a larger percentage of respondents in this council area made use of the scheme than in Ballymoney and Magherafelt. Furthermore Larne had a higher percentage of respondents who made use of the scheme than Magherafelt, despite not joining the scheme until 2007/2008. This difference can probably be explained due to the population differences within these council areas.

As previously stated there are several factors, which contribute to fuel poverty. By looking at how the WWtBH scheme impacted upon these factors (A to E) it is possible to evaluate the scheme.

A. Low income and debt

As previously stated a fuel poor household can be defined as one which needs to spend more than 10% of its income on all fuel use and to heat its home to an adequate standard of warmth (DBERR, 2001). This definition clearly links fuel poverty to money, which can be a real issue for those on low incomes or in debt. (King 1992) highlights the fact that fuel poverty is not simply a question of poverty per se, but of the interaction of low income, relatively high fuel expenditure and low levels of capital investment on energy efficiency measures in housings (Goodacre *et al* 2002).

The WWtBH scheme thus was aimed at helping households reduce the money they spend on heating their home, through the installation of more efficient heating equipment and the installation of insulation. When asked about whether their fuel bill had increased, decreased or remained the same since the installation of measures under the scheme, the majority of respondents felt that their fuel bill had decreased. Fuel poverty is a much greater problem in Northern Ireland than in the rest of the United Kingdom due to our relatively low income and high fuel costs (DSD, 2004).

When it is considered that low income and high fuel costs play such a significant role in fuel poverty in Northern Ireland the fact that the majority of respondents felt that their fuel bill had decreased is an extremely positive outcome.

Of the respondents who felt it had increased and the respondents who felt it had remained the same the majority gave explanations for this, stating that they felt the increase in their fuel bill or lack of reduction in their fuel bill could be attributed to the recent soaring energy prices. When this fact is brought into consideration it is appropriate that the majority of respondents indicated that their fuel bills remained the same since the installation of measures under the scheme be seen be seen as a positive statistic in the face of soaring fuel prices.

These results indicate that the WWtBH scheme is successfully helping to address this aspect of fuel poverty.

B. Poor housing and household insulation

This is another factor, which has been identified as contributing to the issue of fuel poverty. In 1998 nearly half of those households with a SAP rating below 20 (i.e. poor energy efficiency) were in fuel poverty (DBERR, 2007). This clearly shows the strong link between poor energy efficiency and fuel poverty. Under the WWtBH scheme cavity wall insulation and loft insulation was installed in the households of participants of the scheme to increase the energy efficiency of homes.

Thermal insulation of buildings external walls, roof and floor and double pane windows reduce annual energy consumption for space heating, by lowering heat losses through the building's envelope (Balaras *et al* 2000). Just over one fifth of participants had cavity wall insulation installed under the scheme. In Relation to loft insulation, over half of participants had this installed under the scheme. Households, where both cavity wall insulation and loft insulation was installed equated to just over one sixth of respondents. Cavity wall insulation and loft insulation were only installed in instances where there was a lack of insulation, or any insulation present was in poor condition. Thus quite a considerable number of respondent's homes are better insulated than they were prior to their involvement in the scheme (Balaras *et al*

2000) states that energy consumption in insulated buildings may be 20–40% less than in non-insulated buildings (Balaras *et al* 2000). This is reflected in the findings of this study, when we take into account that just under a fifth of those who had cavity wall insulation installed and just under a fifth of those who had loft insulation installed felt that their fuel bills had actually increased since the installation of these measures. Of this percentage, the majority felt that their home was more efficient, but that the sharp rise in fuel prices caused the increase in their fuel bill. Furthermore when it is considered that energy efficiency upgrading of housing can promote wider sustainable development aims and objectives because it produces macro-economic benefits in addition to lower fuel bills to the householder (Goodacre *et al* 2002) the importance of this aspect of the scheme is further highlighted.

From comments included in the questionnaires and from the telephone interviews completed several respondents indicated that their homes were much less draughty. All of those respondents who had cavity wall insulation installed under the WWtBH scheme indicated that they would not have installed these measures without assistance from the scheme and the vast majority of those who had loft insulation installed claimed the same. Despite enduring relatively mild winters, Ireland and the UK have the highest rates of seasonal mortality in northern Europe, and it has been shown that such mortality rates result, in no small part, from the inadequately protected, thermally inefficient housing stocks in these countries (Clinch and Healy 2000; and Curwen, 1991). When the results of this study in relation to the installation of insulation are considered alongside the claims made by Clinch and Healy (2000) and Curwen (1991) it is evident that the WWtBH scheme is making quite significant inroads at a local level into one of the main factors contributing to fuel poverty.

Increases in energy efficiency are likely to have social consequences in terms of reducing high rates of excess winter deaths and decreasing the incidence of cold-related morbidity and fuel poverty (Clinch and Healy, 2001). When this is considered increasing the energy efficiency of respondent’s homes not only has benefits in relation to fuel costs, but may have an impact on the health of participants. This is discussed later in this paper.

An aspect, which respondents felt would compliment the insulation and indeed their new heating systems, was the installation of double-glazing. Some respondents felt that although there was an improvement in how well insulated their home was, this improvement was perhaps being hindered by the presence of single glazed windows. Weight is added to this argument by Balaras *et al* (2000) when he states that heat losses through the roof have in all cases, the lowest percentage and that heat losses through floor, windows and cracks represent significant percentages of total losses, indicating high energy conservation potential. The WWtBH scheme is thus addressing some of the areas where the least heat is being lost in the homes of respondents (roof) instead of the areas where significant heat is being lost (windows). This is one measure, which could be perhaps included in the scheme for future participants and indeed those who have already had measures installed under the scheme.

The results of this study in relation to energy efficiency are encouraging when (Rugkasa *et al* 2007) claims are considered: research that has been conducted suggests that energy efficiency interventions have the potential to improve people's health and to lift people out of fuel poverty and when those made by Somerville et al (2000) are considered: The evidence for improvements in child health and respiratory diseases as a result of interventions is particularly encouraging (Somerville *et al.* 2000) it becomes evident how important this aspect of the scheme really is.

C. Inefficient or expensive heating systems

The WWtBH scheme addresses the issue of inefficient or expensive heating systems by installing oil and gas-fired central heating systems to participants who qualify as well as thermostatic radiator valves and central heating programmers. All these measures if used properly can increase significantly the energy efficiency of a household. There are clear links between heating type and fuel poverty, with more households heated by solid fuel glass fronted fires or electric storage heaters being fuel poor than those that were heated with oil or gas (DSD, 2004). The majority of those who took part in the telephone interview indicated that their homes had previously been heated by an open/glass fronted fire or by electric storage heaters.

This finding compliments the claim that NI’s homes are much more likely to use solid fuel than other areas of the UK (DSD, 2004).

Over half of respondents had oil-fired central heating installed under the scheme. This was the most popular measure installed among respondents, followed by energy efficient light bulbs, loft insulation and thermostatic radiator valves.

It is quite worrying that energy efficient light bulbs were the second most popular measure installed and thermostatic radiator valves were the fourth most popular measure installed under the scheme when (Parnell R, & Popovic-Larsen O 2005) claims are considered. He claims that energy saving light bulbs and thermostatic radiator valves offer relatively little improvement in energy efficiency.

What potential for energy efficiency improvements there may be as a result of the installation of these measures under the scheme may not be harnessed in all cases. There may be many reasons for this, Vanraaij & Verhallen (1983) states that if household members accept lower thermostat settings and avoid heat losses through windows and doors as much as possible, considerable savings will be attained. This claim highlights the fact that although potentially significant savings can be made from the installation of energy efficiency measures, unless the behavior of householders compliments these measures the full energy efficiency potential will not be reached. This point is reinforced by the claim that consumers do not behave in an energy-conscious way due to their social environment and consumers do not always know the energy costs of many household behaviors (Vanraaij & Verhallen 1983). It thus seems that educating householders on energy efficient practices and the differences they can make to their fuel bill is every bit as important as installing energy efficiency measures. The majority of respondents in this study indicated that they did not receive any energy advice under the WWtBH scheme. This is a significant shortcoming of the scheme.

Although those who had a heating system and or thermostatic controls installed and were not able to operate them properly or were not given instructions on how to operate them properly were in the minority, this is still a significant issue. When it is considered that some of the measures installed cost quite significant amounts of

money, if this money is not to be simply wasted, all participants of the scheme should be fully educated on and aware of how to operate the measures installed.

The vast majority of those who had oil fired central heating system installed under the WWtBH scheme indicated that they would not have installed this and other measures without assistance from the scheme. This value further highlights the importance of the WWtBH scheme in improving the energy efficiency of households and addressing the issue of fuel poverty in NI. The most prevalent reason for not installing oil-fired central heating without assistance from the scheme was affordability. Several respondents commented on the questionnaire that they would not have been able to afford to have this work done with all of the telephone interviewees also claiming affordability as the main obstacle. Although these findings are extremely encouraging in relation to the improvement of energy efficiency in these households there is also potential for an impact on a national level if (Herring 2006) is to be believed. (Herring 2006) claim that improving energy efficiency lowers the implicit price of energy and hence make its use more affordable. This is an interesting claim in relation to improving energy efficiency across the whole of the UK. It is also worth pointing out that more affordable energy use could have a significant negative impact on Carbon Dioxide (CO_2) emissions (Herring 2006).

D. Lack of access or availability of affordable fuel

Pachauri and Spreng (2003) state that real access to energy services can be limited by the purchasing power of the household, the cost of energy and cost of energy using equipment. There is evidence of this in this study in relation to the cost of energy using equipment. As previously stated the vast majority of those who had an oil fired central heating system installed under the WWtBH scheme indicated that they would not have installed this and other measures without assistance from the scheme. Pachauri and Spreng (2003) also claim that the affordability of the different energy types for households depends on the market prices of the energy sources themselves. When this claim is considered along with the recent dramatic increase in oil prices, it is quite worrying that over half of respondents to the scheme had oil fired central heating installed. This raises the question is the WWtBH scheme contributing to the problem of lack of access or availability of affordable fuel? In saying this it is

difficult to see what affordable alternative heating systems can be offered to participants.

Some may argue that the installation of more gas fired central heating systems is an option. A very small percentage of respondents indicated that they had gas-fired central heating installed under the scheme. Those whom had gas fired central heating installed under the scheme were all located within the same council area being Ballymoney. This result adds weight to the argument that the particularly high number of fuel poor households in Northern Ireland relates to the lack of an adequate gas network and other associated factors (CSE/NRFC, 2001). Although this is not the fault of the WWtBH scheme, it is still an interesting statistic in relation to fuel poverty as a whole in NI.

E. Under-occupation of homes

The UK Fuel Poverty Strategy refers to the contribution of under-occupation to fuel poverty (DTI/DEFRA, 2002). This is because it costs households a lot more to heat large properties that exceed their needs than smaller properties (Baker *et al* 2003). Of those participants who took part in this study just over two fifths indicated that there were two people living in their household. This was followed by just under one fifth of respondents who indicated that they lived on their own. DSD (2004) found that 50% of single person households were likely to suffer fuel poverty. Perhaps ensuring that more single person households are made aware of the scheme could increase this figure.

Baker *et al* (2003) state that the problem of under-occupation is typically associated with older households where children have left the family home and goes on to say that for this reason, under-occupation is likely to be highly correlated with pensioner households (Baker *et al* 2003).

There are certain vulnerable groups in relation to fuel poverty. Laburn-Peart *et al* (2004) state vulnerability covers three broad areas: families with children under 16 years; families with persons aged over 60 years; and households with people who have long-term illness and/or disability. This paper aims to examine the impact the

WWtBH scheme has performed in relation to these vulnerable groups as well as examine the WWtBH scheme's performance generally.

Age of head of household (Vulnerable group)

When these claims made by Baker *et al* (2003) are considered it is extremely encouraging that in this study just under half of respondents indicated that their head of household fell into the 40 – 59 age bracket, which was closely followed by over two fifths of respondents indicating that their head of household fell into the 60 – 79 age bracket. These figures are significant when it is considered that older people are disproportionately represented among the fuel poor households (Healy and Clinch, 2004; & Sefton, 2002). This is a claim which is reinforced at a local level by DBERR (2007): NI's Interim House Condition Survey revealed that 54% of households headed by those aged 60+ experience fuel poverty.

The WWtBH scheme thus seems to be assisting those groups who are particularly at risk of living in fuel poverty. Only a small percentage of heads of household fell into the 18 – 39 age and into the 80+ age bracket.

Fuel poverty can exacerbate the social isolation felt by many older household owners, especially those situated in rural areas (Lawlor *et al,* 2002); as they cannot afford to socialise (DBERR, 2001). It seems that the WWtBH scheme is helping to address this problem, with one fifth of respondents living in a rural area where the head of the households is aged 60 – 79.

Rural/Urban areas

Just under two fifths of respondents indicated that they lived in a rural area. This is quite a significant imbalance. In terms of individual council areas, the only two council areas where the majority of people indicated that they were from a rural area were Ballymoney and Magherafelt. Just over three fifths of respondents from the Ballymoney Borough Council area indicated they lived in a rural area and just over four fifths of respondents from the Magherafelt District Council area indicated that they lived in a rural area. Perhaps more should be done across all the relevant council areas to ensure those living in rural areas are made aware of and take part in the WWtBH scheme. One fifth of respondents who lived in rural areas indicated that

they heard about the scheme through the media. This was the most popular choice among those living in a rural area. Of those living in urban areas the most popular choice was leaflets, with under a third of those respondents indicating leaflets. Perhaps these statistics can be used to improve the number of people who are aware of the scheme.

(Baker et al 2003) suggest that there may be a rural dimension to excess winter deaths.

Health (Vulnerable group)

This is a topic, which has been touched upon earlier in this paper. One aspect of this study asked participants about whether or not they or any member of their household had noticed any improvements in an illness or disability since the installation of measures under this scheme. It was important to obtain this information due to the fact that DBERR (2001) claims that the likelihood of ill health is increased by cold homes, with illnesses such as influenza, heart disease, and strokes all exacerbated by the cold. Burholt and Windle (2006) claim that older people are often susceptible to the effects of cold temperatures.

Just over three fifths of respondents indicated that they, or someone in their household suffered from an illness or disability. Of those households containing someone who suffers from an illness or disability just under two fifths indicated that they had noticed an improvement in their health since the installation of measures under the scheme. This is a significant and encouraging improvement in the health of participants, which can perhaps be attributed to the WWtBH scheme. The scale of ill health as a result of fuel poverty is touched upon by (Williams, 2008) when he states that fuel poverty presents a serious risk to the health and well being of thousands of people.

The British Geriatric Society and the UK Government recommend a temperature of 21^{o}C for the living room for older people (Burholt & Windle 2006) and the World Health Organisation set a household temperature benchmark for thermal comfort at 18^{o}C with increases of 2–3^{o}C for those more vulnerable to the effect of cold such as sedentary older people (Healy and Clinch, 2002). In relation to thermal comfort, the

overwhelming majority of those who took part in the telephone interviews indicated that their homes were much more thermally comfortable as a result of the installation of measures under the scheme.

Indirectly the WWtBH scheme has contributed to the health of participants in an unexpected manner. Some of those respondents who indicated that they had noticed improvements in illness or disability stated that complaints such as back problems and arthritis had improved due to the fact that they didn't have to carry large bags/buckets of coal or sticks anymore to heat their home. This health impact is one, which has not been considered and is another positive impact of the scheme in relation to the health of participants.

Children (Vulnerable group)

In this study almost a third of households who responded contained children under the age of 18. A very small percentage of respondents indicated that there were children in there household aged 0 – 4. Families with children account for 15-20% of fuel poor households (DBERR, 2001). It is thus encouraging that the "Warmer Ways to Better Health" scheme is helping so many families with children, especially when the claims made by DBERR (2001) are considered; cold homes can affect the length of time children are off school through illness and it can also affect their ability to do homework. Just over a sixth of respondents had children who were primary school age (5 – 11) and just over a sixth of respondents had children who are secondary school age (12 – 17).

Awareness of the scheme

In relation to where respondents heard about the WWtBH scheme the most popular choice overall was via leaflets, closely followed by through the media and then a friend. The least popular choice was the Citizens Advice Bureau (CAB) with a very small number of respondents choosing it. It was evident that from the results obtained that the ways in which people are finding out about the scheme varies significantly from council area to council area. It is thus important to use all the different mediums to spread the word about the WWtBH scheme.

Contractors

The opinions on the contractors who installed the measures were exceptionally good. The overwhelming majority of respondents indicated that in their opinion the contractors were tidy, on time and well mannered.

The large majority of respondents indicated that they knew when the work was going to be done beforehand, however several respondents commented that they only received notice the day before the work was to commence. These respondents felt that more time would be required to allow them to make preparations for the contractors coming (lifting carpets etc). This is an area, which can be easily rectified and must surely be addressed.

A minority of respondents indicated that they didn’t know prior to the commencement of the work what measures they were having installed under the “Warmer Ways to Better Health” scheme. Although this was only the case with a small percentage of respondents, all participants should have the right to know and should know what work is being done in their homes. This is another aspect, which should be improved upon in future.

The most telling statistic of all is that the overwhelming majority of respondents indicated that they would recommend the WWtBH scheme to someone else.

Conclusion

This study allows a number of conclusions to be drawn in relation to the success of the WWtBH scheme in tackling fuel poverty at a local level and in relation to participant's experience of the scheme. This study confirms that the WWtBH scheme is addressing the main factors, which contribute to fuel poverty at a local level.

Other positives that have been uncovered during this study include there has been an improvement in the health of those who have benefited from the scheme, a significant number of households with members in education have been helped by the scheme, the overwhelming majority of respondents felt that contractors were tidy, well mannered and on time.

Although these discoveries are encouraging, there are areas where the WWtBH scheme can improve. From the results of this study the following recommendations can be made:

- Inclusion of double-glazing as one of the measures available under the scheme. Some respondents felt that the measures installed were being under minded by the lack of double-glazing in their homes.

- Education is such an important aspect in relation to improving the energy efficiency of households. Not all respondents were given energy advice, which could have a major bearing on the efficiency of their home. It should also be ensured that all participants are given full instructions on how to operate measures installed. Follow up visits should also be carried out to ensure participants are using equipment correctly.

- More should be done to increase the number of single householders making use of the scheme.

- Steps should be taken to tackle the divide between rural and urban areas. The large majority of respondents in this study indicated that they lived in an urban area.

- Participants should be given more notice of when work is going to be done. Furthermore all participants should be fully aware of the work they are going to have done before its commencement.

Limitations and Considerations for Further Research

Time was a limiting factor in this study. If more time was available more respondents would have been contacted via telephone and their views and opinions recorded. Another aspect, which would have allowed for more in depth analysis, would have been information on house size. The fact that house size can have a major impact on the ability of a person to heat their home means that this information would have been very useful in the context of this study. This however would have been very difficult in practice and may have required visits to people’s homes. This wouldn’t have been possible due to the confidentiality assured during this study.

Further study could be carried out to examine fuel poverty and the schemes in place to address the issue across the whole of Northern Ireland, rather than just in the Northern Health and Social Services Board area.

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