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Warm Homes Prescription Impact and Value for Money Report

September 2023

Knowledge Applied

Warm Homes Prescription Impact and Value for Money Report

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Summary

Warm Home Prescription works to find vulnerable people with health conditions made worse by the cold and gives them immediate, effective support by paying for the heating they need to keep their home at a healthy, warm, temperature. Alongside this it provided measures to better control heating and manage associated energy use and emissions.

The 2022/23 service trial was designed and managed by the Energy Systems Catapult through partnerships with NHS and energy advice organisations across 4 areas. Health professionals identified patients unable to afford the heating they need to stay well. An energy advice organisation then gathered some details from the patient, visiting their home if needed, and paid their predicted heating bill.

This report provides an Impact and Value for Money assessment of Energy Systems Catapult's Warm Home Prescription (WHP) project, which was supported by BP. It has been produced by the Centre for Regional Economic and Social Research (CRESR) at Sheffield Hallam University.

The following bullets summarise the key points to emerge:

- In total 823 patients received a WHP.
- As is expected given the eligibility criteria for a WHP (people likely to be admitted to hospital as a result of living in a cold home): most patients were over 65 years old and were retired or not working due to disability. Many were also living in a low-income household and had poor levels of health and wellbeing, especially when compared to national benchmarks. Few lived in a newer property, built since 1999.
- Before receiving their WHP analysis of survey responses reveals a majority of patients (53 per cent) were only heating their home sometime, rarely or never and less than two fifths of patients agreed to normally feeling comfortably warm in their living room, suggesting they were not achieving healthy temperatures. Therefore, most patients perceived the temperature in their home had a negative impact on their physical and mental health.
- After receiving their WHP most patients reported that they set their heating to achieve a healthy temperature as recommended by NICE[1] and many more patients reported that they usually or always had their heating on.
- Temperature data collected from patients' homes after they received the Warm Home Prescription showed that on average, they were heating their homes to a healthy temperature, fairly consistently, throughout the day and night. Furthermore, longitudinal survey data showed that after receiving WHP there was a significant increase in the proportion of patients that were comfortably warm in their living room.

[1] https://www.nice.org.uk/guidance/ng6

- As a consequence:
  - Many patients reported that they worry less about their finances since receiving WHP and they are able to spend more on other essential items, such as food.
  - Patients reported much higher feelings of life satisfaction after receiving a WHP and in general had higher self-reported health.
  - There is less evidence on whether the WHP had improved the physical health of patients. As assessed by the EQ5D.
  - There is emerging evidence that patients used primary health services less than expected after receiving a WHP.
- The value for money assessment found:
  - The total estimated direct operating cost of the WHP project was just under £825,000 (excluding VAT).[2] Energy bill payments for patients who received a prescription comprised the largest cost category: 70 per cent of expenditure.
  - Given 823 patients received a WHP this translates to an average estimated cost per patient of £1,000. In evaluation terms this is the cost efficiency.
  - Cost effectiveness is the average cost per outcome reported by WHP patients. The analysis finds: the average estimated cost to provide a one patient reduction in the number who disagree that they are normally comfortably warm in their living room was £3,600; The average estimated cost to provide a one patient reduction in the number of patients with a low life satisfaction was £6,000.
  - A 'wellbeing adjusted life years' (WELLBY) approach provides a Treasury approved way to value the benefits of WHPs to the patients themselves. Using this approach we find the total value of the 1186 additional WELLBYs supported by the WHP project is just over £4.173 million. Comparing this monetised societal benefit to the estimated cost of the WHP project suggests for every £1 of expenditure, WHP supported £5.1 of wellbeing social value to patients.

[2] Based on actual and estimated costs related to the delivery of the WHP project.

Introduction

1

1.1. Introduction

Warm Home Prescription (WHP) works to find vulnerable people with health conditions made worse by the cold and gives them immediate, effective support by paying for the heating they need to keep their home at a healthy, warm, temperature.

The 2022/23 service was run through partnerships with NHS and energy advice organisations. Health professionals identified patients unable to afford the heating they need to stay well. An energy advice organisation then gathered some details from the patient, visiting their home if needed, and paid their predicted heating bill. A smaller trial piloting this concept was conducted in Gloucestershire during the 2021/23[3] winter, which this larger scale trial learnt from and further developed.

This report provides an impact and Value for Money assessment of the WHP project in 2022/23. It has been produced by the Centre for Regional Economic and Social Research (CRESR) at Sheffield Hallam University.

In 2022, Energy Systems Catapult – supported by BP - commissioned CRESR as an evaluation partner to work with them to co-produce an evaluation of the Warm Homes Project. CRESR's role has included:

- Developing a Theory of Change to inform the delivery of WHP and its evaluation; this is summarised in Chapter 2.
- Scoping and designing the evaluation framework and methods; this included a literature review and commissioner consultations to establish the current evidence base as well as stakeholder views on methods of evaluation, standards of evidence and key outcomes to inform commissioning decisions.[4]
- Supporting the data collection process.
- Informing and supporting access to secondary and administrative datasets.
- Reporting on the impact and value for money of the WHP project.

[3] Warm Home Prescription: Pilot Study Report (2022): https://es.catapult.org.uk/project/warm-home-prescription
[4] Appendix 1 contains key findings from the literature review and stakeholder consultations.

This report focuses on one aim of the evaluation: to assess the impact and Value for Money of WHP. Implicit in this question is whether the WHP has improved the situations of those who received a WHP and whether it led to reduced costs by reducing use of health care services. The results from this strand of the evaluation are central to WHP securing longer-term funding, as well as informing the financial mechanisms to fund it.

The analysis is based on an Impact and Value for Money (VFM) framework rooted in the Treasury's Green Book principles.[5] It includes reporting the service's cost (Inputs); the number of patients receiving a prescription and the support it has provided (the Outputs and Activity); and the difference this support has made (the Outcomes) as well as calculating cost efficiency and cost effectiveness. In simple terms:

- Cost efficiency is the average cost of the support provided to patients.
- Cost effectiveness is the average cost per outcome achieved.

Ultimately it is possible to put a monetary value on the change in service use to provide a Benefit Cost Ratio. The Benefit Cost Ratio shows for every pound spent what the impact has been on the cost of wider services used.

It is important to note that the outcomes analysis presented in this report is based on change data for patients. For the survey analysis it has not been possible to access a counterfactual sample to improve the assessment of additionality. This means all change between responses has been attributed to the WHP. In reality some of this change may have occurred anyway.

The next section summarises the data that underpin the analysis.

1.2. Data sources

This report is based on four data sources:

Data from ESC's Warm Home Prescription Digital Platform

Administrative data captured for all recipients of a Warm Home Prescription to support the assessment, energy cost pricing, delivery and monitoring of the WHP project.

Survey responses

To support the evaluation patients were invited to take part in two surveys. The first was at the time when they first received a WHP and the second was at the end of the winter 2022/23. Patients could complete a postal or online version of each survey. In total 496 responses were received to the first 'baseline' survey and 513 patients completed the second 'follow-up' survey. In total 340 WHP patients completed both a baseline and follow-up survey – there responses are particularly important when comparing change over time.

The surveys asked patients questions under the following themes:

- Their demographic and household characteristics.
- Their financial situations.

[5] HM Treasury (2003) The Green Book: Appraisal and Evaluation in Central Government. London, TSO. http://www.hm-treasury.gov.uk/d/green_book_complete.pdf

- Their physical and mental health situations.
- Their heating usage and thermal comfort in their homes.
- Their willingness to receive energy efficiency interventions.
- Their views about receiving a WHP.

Temperature logger data

Two temperature loggers were sent to all patients who received a WHP to assess whether they heated their home to a recommended temperature. Temperature loggers are portable measurement instruments that autonomously measure and record temperatures at set defined periods of time. The digital temperature data from the loggers can be retrieved, viewed and then evaluated.

In total 815 patients were sent two loggers and were asked to position one of the loggers in their living room and the other in their bedroom. By the end of the project 628 patients sent back the bedroom logger (giving a response rate of 77 per cent) and 643 patients sent back the living room logger (giving a response rate of 79 per cent).

There are three points to note about the loggers:

- Due to logistical reasons the loggers were sent after patients had started to receive the prescription. This means that they did not capture a baseline period before patients had started to increase the temperature in their home. Therefore it is not possible to use the logger data to assess the impact of the WHP on home temperatures.
- To simplify the process, the loggers were turned on and then sent to patients. This meant that the returned loggers included readings captured before they were positioned in homes. To overcome this issue the evaluation disregarded the first seven days' worth of data.
- Finally, analysis of the data suggests some loggers had been positioned in locations that were not generally reflective of the temperature for the respective room, such as next to a heating or draft source. These were excluded from our analysis.

Health Case usage data

Understanding the impact of WHP on health care services was cited by stakeholders as being is important to gain traction with commissioners and policy makers and to make the case for investment.

To respond to this demand the evaluation gained access to health care service data on WHP patients in Grampian and Teesside. Considerable work and efforts went into securing access to these data for WHP patients. These efforts were generously matched with valuable support and resources from the University of Aberdeen, The Grampian Data Safe Haven (DaSH)[6] and Holgate Primary Care Network (PCN).

For Aberdeen patients, DaSH we were able to provide access to the following patient level data: out of hours appointments, prescriptions, Accident and Emergency attendance and Outpatient and Inpatient episodes. This data was made available pseudonymised for consenting patients who received a WHP as well as a control group

[6] Sheffield Hallam University and Energy Systems Catapult acknowledges the support of the Grampian Data Safe Haven (DaSH) and the associated financial support from the University of Aberdeen and NHS Research Scotland through NHS Grampian investment in DaSH. In particular thanks are given to Shantini Paranjothy.

of patients who did not receive a WHP. To improve the scientific rigor of the analysis we used Propensity Score Matching (PSM) as part of a quasi-experimental design. PSM identifies statistical 'nearest neighbours' between WHP and control patients. These nearest neighbour matches are then used in the final analysis. This quasi-experimental design aims to minimise the differences between the WHP and control patients so that it can be assumed that any differences in change can be attributed to the intervention.

For Teesside patients Holgate PCN were able to provide data on Accident and Emergency attendance, GP appointments and acute medications issued. For WHP patients we received patient level data which were then aggregated to create monthly counts for the eight months December 2021 to April 2022 and December 2022 to April 2023. Holgate PCN were also able to provide monthly counts for two control groups who did not receive a WHP for the eight months December 2021 to April 2022 and December 2022 to April 2023. These control groups matched their two sets of criteria for receiving a WHP:

- Group A contain patients aged 60 years and over with a diagnosis of Chronic obstructive pulmonary disease (COPD).
- Group B contain patients aged 18-59 years with a diagnosis of asthma with a steroid prescribed in the last 12 months, 2 or more inhalers prescribed in the last 12 months.

1.3. Structure

The remaining sections of this report are organised as follows:

- Chapter 2 sets out the Warm Home Prescription project's Theory of Change.
- Chapter 3 provides data on who received a Warm Homes Prescription.
- Chapter 4 assesses the situations for patients before they received their Warm Homes Prescription.
- Chapter 5 assess what difference the Warm Homes Prescription made to patients home temperatures.
- Chapter 6 reports on outcomes for patients who received a Warm Homes Prescription.
- Chapter 7 assesses the Value for Money and Social Value of the Warm Homes Prescription project.
- Chapter 8 provides recommendations.

2

Warm Home Prescription's Theory of Change

2.1. Introduction

This Chapter sets out a Theory of Change (ToC) for the ESC's Warm Home Prescription project. A ToC describes how and why a change (or set of changes) is expected to occur in a particular context. By starting with a desired long-term goal and working backwards, the ToC approach helps provide a framework to articulate the relationship between the design of a project and its assumptions, the resources being committed to the outputs, outcomes and impact. The separation of these terms is a crucial step in the design of any evaluation framework by providing a circle of assumption testing, data gathering, analysis and learning. The ToC also provides a framework to understand the data which needs to be collected to ensure that key evaluation questions are answered.

Clarifying the Theory of Change drew upon desk-based reviews of WHP documentation as well as discussions and clarifications with ESC.

2.2. The Theory of Change

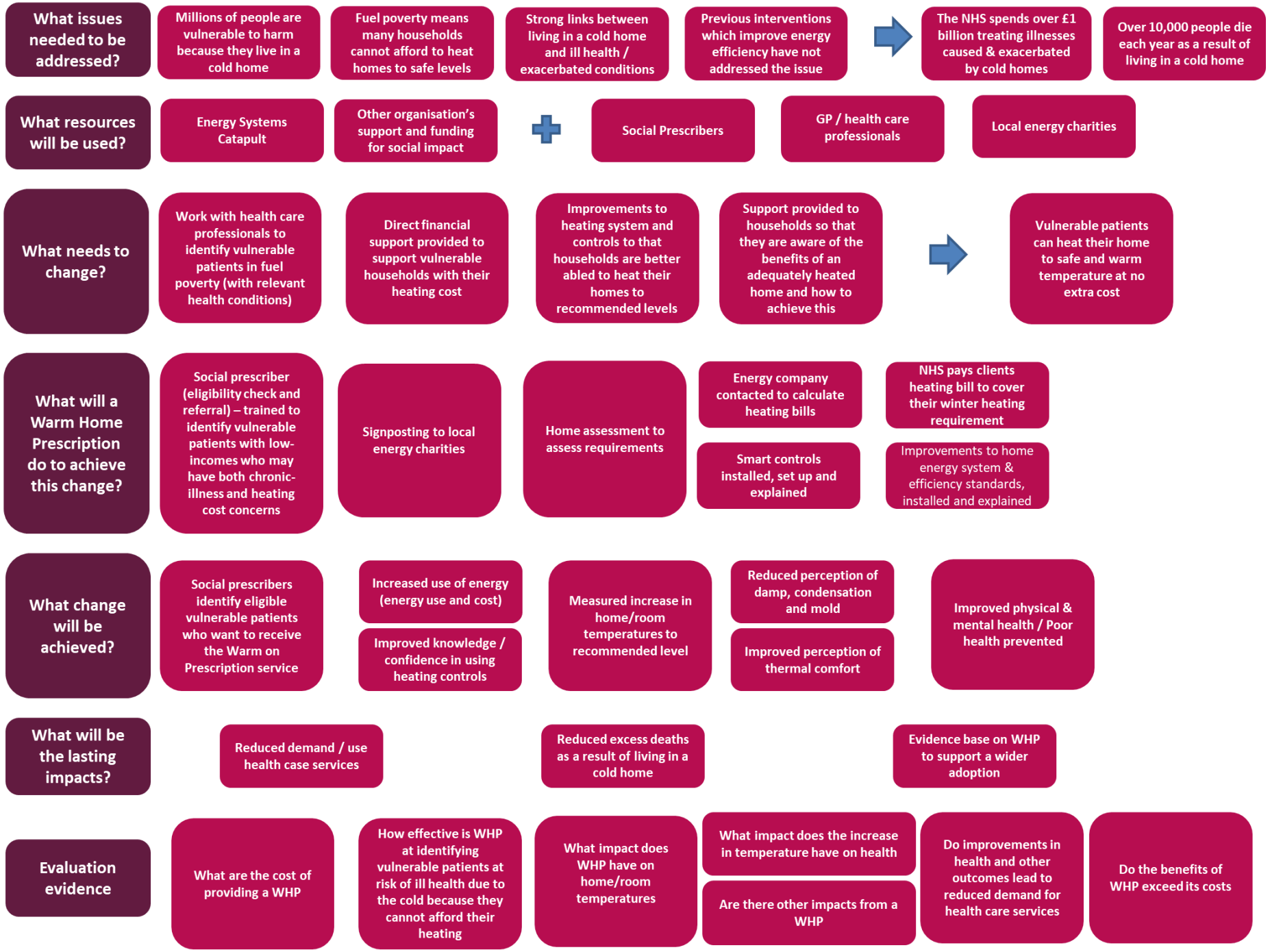
Figure 2.1 pictures a simplified ToC for the WHP project. This is a general ToC for the project and not necessarily an exact representation of how the 2022 trial ran. Clarifying the ToC has drawn upon desk-based reviews of documentation as well as discussion and clarifications with the team from the Energy Systems Catapult. The subsections below then explain the different aspects of the ToC in more detail.

What issues is the Warm Home Prescription project seeking to address?

WHP seeks to address the high levels of low-income households who cannot afford to heat their home and have a health condition made worse by the cold. It recognises:

- Millions of people are vulnerable to harm because they are living in a cold home; this includes those with respiratory diseases, cardio-vascular diseases and illnesses affecting the immune system (for example, arthritis, asthma, Chronic obstructive pulmonary disease (COPD) and those undergoing chemotherapy).
- The NHS spends around £1billion treating illnesses caused and exacerbated by cold homes. Furthermore over 10,000 people die each year as a result of living in cold homes in England and Wales.

Figure 2.1: Warm Home Prescription Theory of Change



- Prevention – direct intervention to reduce the number living in cold home - is better than the cure.
- People pay a set amount for prescriptions despite different medicines costing different amounts so why should people have varying levels of access to 'healthy temperatures' at home.

What resources will the Warm Home Prescription project use?

The project uses direct financial and in-kind support resources from a range of sources, including: Energy Systems Catapult, organisations providing investment for social impact, the NHS, social prescribers, health and social care professionals and local energy charities.

What needs to change?

Broadly speaking there are four aspects to the WHP change process:

- Identifying those in need: Working with health professional and social prescribers to identify vulnerable household whose health is likely to be made worse because they cannot heat their homes to health temperatures.
- Supplementary support: Improvements to heating systems and controls for vulnerable households so that they can maximise the benefit of direct support with their heating costs.
- Effective direct support: Supporting vulnerable households with their heating costs so that they can afford to heat their home to 'healthy temperatures.'
- Advice: Explaining to vulnerable households the importance of heating their home to healthy temperatures.

This combination of changes will enable vulnerable households to heat their homes to healthy temperatures, mitigating health risks caused living in a cold home. Consequently, leading to reduced use of primary and secondary health 'treatment' services. WHP may also contribute to patient's openness to the distribution involved in receiving further energy retrofits.

What will the Warm Home Prescription project do to achieve this change?

WHP has been designed, initially in partnership working between the Energy Systems Catapult, the NHS and health care professions, social prescribers and the local VCS. The services will be delivered entirely by local teams who would be expected to update, refine and improve the service to local conditions.

The possible versions of WHP are likely to involve the following key activities:

- Social prescribers and health care professionals will be trained to identify vulnerable patients who have heating cost concerns and a chronic illness that is likely to be made worse by living in a cold home.
- After assessing eligibility, social prescribers and health care professionals signpost households to local energy charities.
- Local energy charities assess patient existing heating system to see that it is working and residents can control it. They then get the details of the households fuel supplier and calculate heating needs and the payment that will be required to achieve a healthy indoor temperature during the winter heating period. Finally, they identify other suitable energy measures which will maximise the immediate and longer-term benefits of WHP.

- The NHS or other organisations, such as those supporting social impact, pay patient winter heating costs to enable them to achieve healthy indoor temperatures during the winter heating months at no additional cost.
- Alongside arranging payment of energy bill, local energy charities will identify and install heating controls, as well as improving relevant heating systems and energy efficiency measures so that households can maximise the immediate and longer-term benefits of WHP.

What change will we see because of the Warm Home Prescription project?

The WHP project aims to achieve change in terms of:

- **Support provided**. Local social prescribing link workers and health care professionals will be trained to identify eligible patients who have heating cost concerns and a chronic illness that is likely to be made worse by living in a cold home. Effective Partnership Working will be in place between social prescribers, health care professional and local energy charities to support patients with their heating cost and ensure that they are able to heat their home to health temperatures over the winter heating period.
- **The living environment**. WHP will lead to increased energy use and confidence in using heating controls. Consequently, measured indoor temperatures will increase during the winter months with households recording temperature in the health range (18 to 21 degrees). Patients will report improved perceptions of thermal conform and reduced perceptions of damp, condensation and mould.
- **Health outcomes**. The improvements to the living environment will lead to improved physical and mental health for WHP households.

What will be the longer-term impact of the Warm Home Prescription project?

WHP will produce longer term benefits:

- Reduced use of primary and secondary health care services, including mental health services.
- Reduced excess deaths as a result of living in a cold home.
- Wider social & economic benefits, e.g. increase productivity, fewer working days lost, more social interaction in the home.
- Provide an evidence base that supports the economic case for the wider adoption of the WHP project.
- Support a reimagined vision for winter fuel support to help the most vulnerable during the winter months while maximising benefits to services.
- Accessing the nation's most vulnerable and at-risk homes and providing further support to manage energy and retrofit homes to improve efficiency and decarbonise.

Who received a Warm Home Prescription

3

3.1. Introduction

This chapter uses data from ESC's Warm Home Prescription Digital Platform and baseline survey responses to assess who has benefited from a Warm Home Prescription. The following sections consider:

- How many patients received a WHP.
- The sociodemographic characteristics of the patients who received a WHP.
- The health and well-being of patients who received a WHP.
- The property characteristics for the patients who received a WHP.

3.2. Number of patients receiving a WHP

In total 823 patients received a WHP (Table 3.1). The largest group of patients, 59 per cent, lived in Aberdeen. Just under 300 WHP patients lived in the Tees Valley area and a small number of patients (6 per cent) lived in London and Gloucestershire.

Table 3.1: Who received a WHP by Region

Region	Number	Per cent
Aberdeen	486	59
Gloucestershire	23	3
London	22	3
Tees Valley	292	35
Total	**823**	**100**

Source: ESC Warm Home Prescription Digital Platform

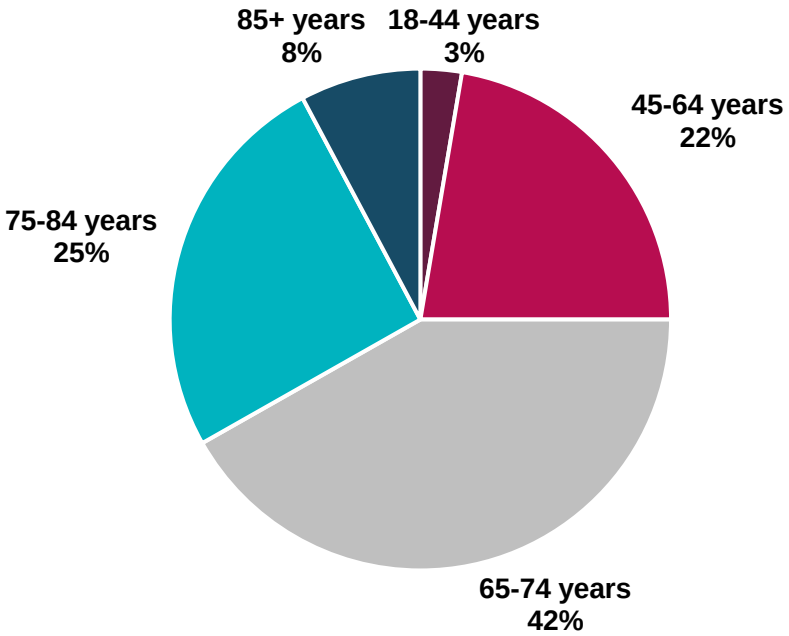
3.3. Sociodemographic characteristics of patients receiving a WHP

This section considers the characteristics of customers who have benefited from the WHP. It is based on 621 patients responded to our surveys to give feedback on their experience of receiving WHP.

Analysis of their socio-demographic characteristics reveals:

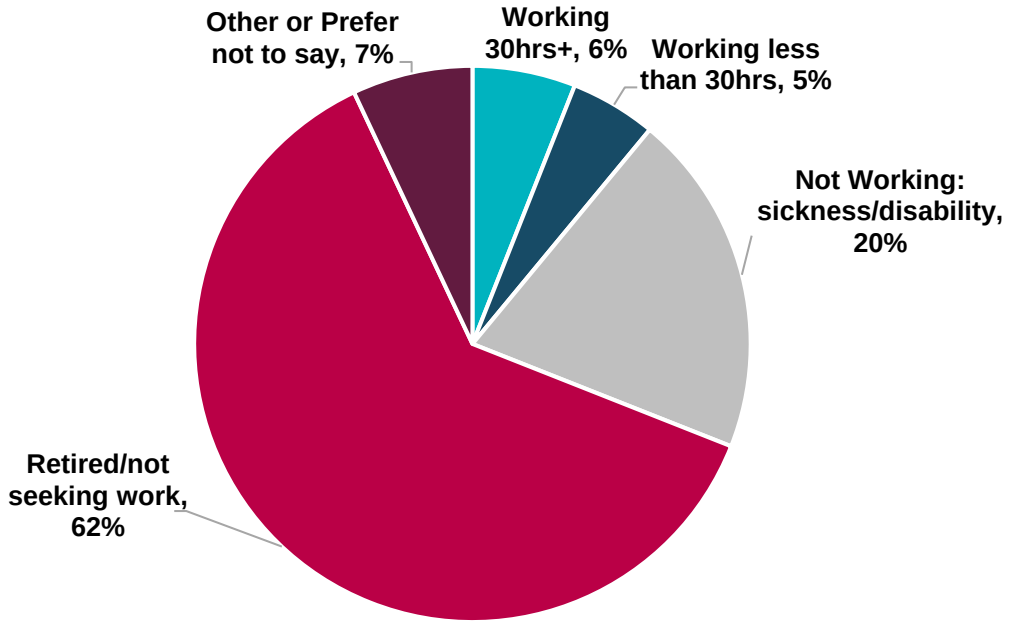
- A slightly higher proportion of females (52 per cent) received a WHP compared to males (48 per cent).
- The majority of patients were from a White British or Irish ethnicity background: 94 per cent. This is broadly representative of the older person population in the WHP areas.
- Three quarters of patients were aged over 65, including eight per cent who were aged 85 years or older. Figure 3.1 shows a full breakdown of participants' age groups.
- As a consequence of the age profile, 62 per cent of respondents were retired or not seeking work. Figure 3.2 shows that twenty per cent were not seeking work due to sickness or disability. Six per cent were working more than 30 hours per week and five per cent were working part time, less than 30 hours per week.

Figure 3.1: Age of patients receiving a WHP



Source: WHP Baseline survey; Base: 488 patients.

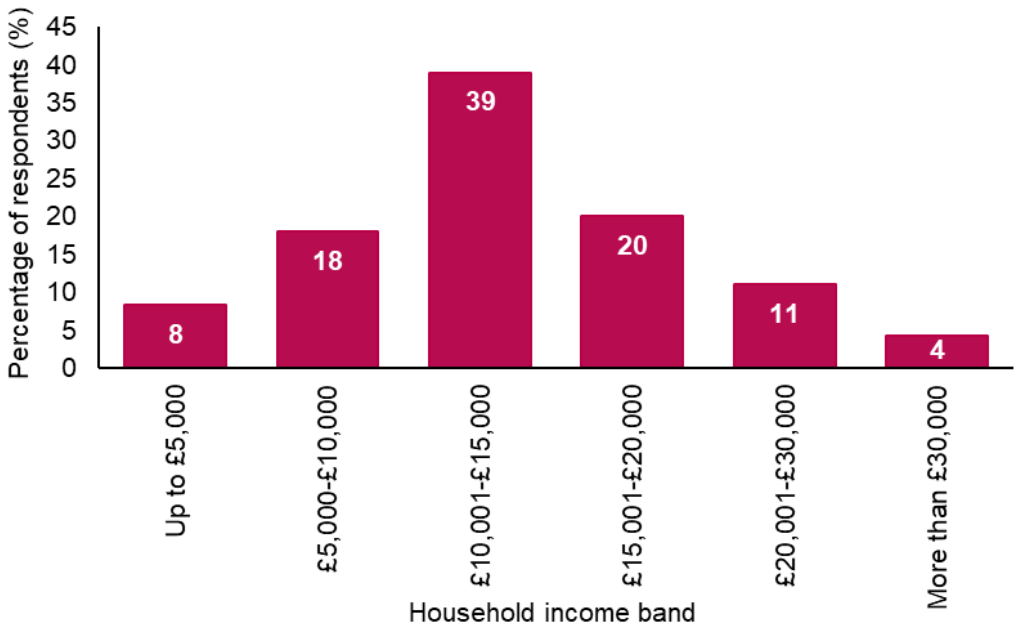
Figure 1.2: Employment situation



Source: WHP Baseline survey; Base: 490 patients.

Figure 3.3 shows that patients who received a WHP were often living in a low-income household. Twenty-five per cent of patients who provided a response had a gross household income of less than £10,000 per year. Thirty-nine per cent were living on between £10,000 and £15,000 a year and only four per cent of patients had a household income of more than £30,000 per year.

Figure 3.3: Total gross household income

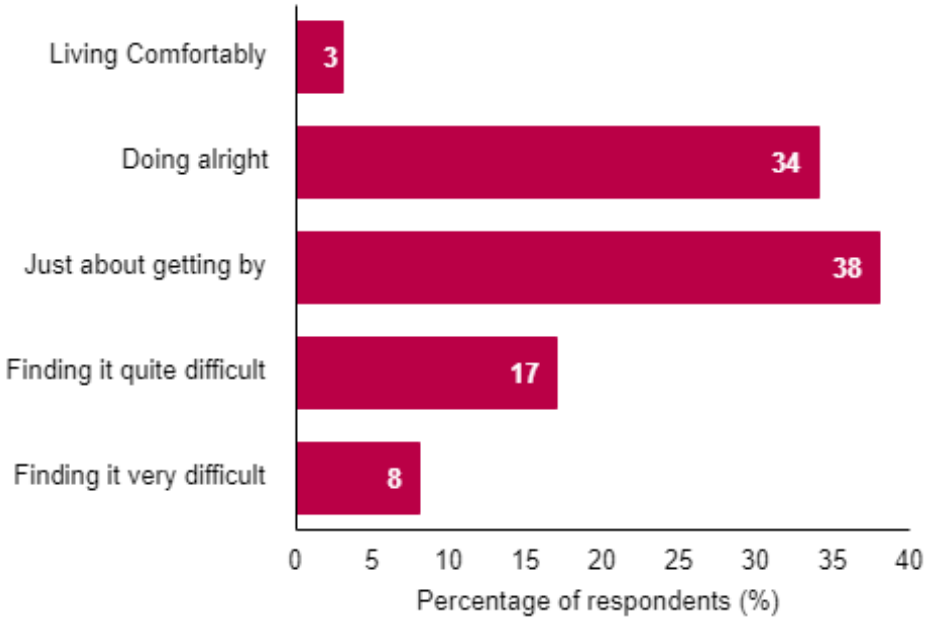


Source: WHP Baseline survey; Base: 351 patients who provided a response, note an additional 141 patients responded 'prefer not to say.'

The survey also asked patients how their household was managing financially nowadays. The responses reveal (Figure 3.4):

- 37 per cent of patients said they were 'doing alright' (34 per cent) or 'living comfortably' (three per cent).
- A further 38 per cent were 'just about getting by'.
- However a quarter were finding it 'quite' (17 per cent) or 'very' (eight per cent) difficult to manage financially.

Figure 3.4: How are you managing financially these days?



Source: Baseline Survey, Base: 458

3.4. Health and wellbeing of patients receiving a WHP

This section considers the health and wellbeing of patients before they started receiving a WHP.

EQ-5D is a standardized instrument developed by the EuroQol Group. Respondents were asked to describe five dimensions of their health (mobility, self-care, usual activities, pain/discomfort and anxiety/depression) on a three-point scale. The results provide a measure of health-related quality of life (QALY) that can be used to identify health barriers and measure outcome change.

Of particular note:

- 92 per cent of patients are in 'some' or 'extreme' pain or discomfort.
- 85 per cent of patients have at least some problems performing usual tasks.
- 83 per cent of patients have at least some problems with mobility/walking.
- 69 per cent of patients are 'moderately' or 'extremely' anxious or depressed.
- 53 per cent of patients have at least some problems with self care.

An additional EQ5D question asks respondents to rate their health today on a scale between 0 (worst health you can imagine) and 100 (best health you can imagine). The average rating reported was '50'. However, this hides a sizable variation in responses:

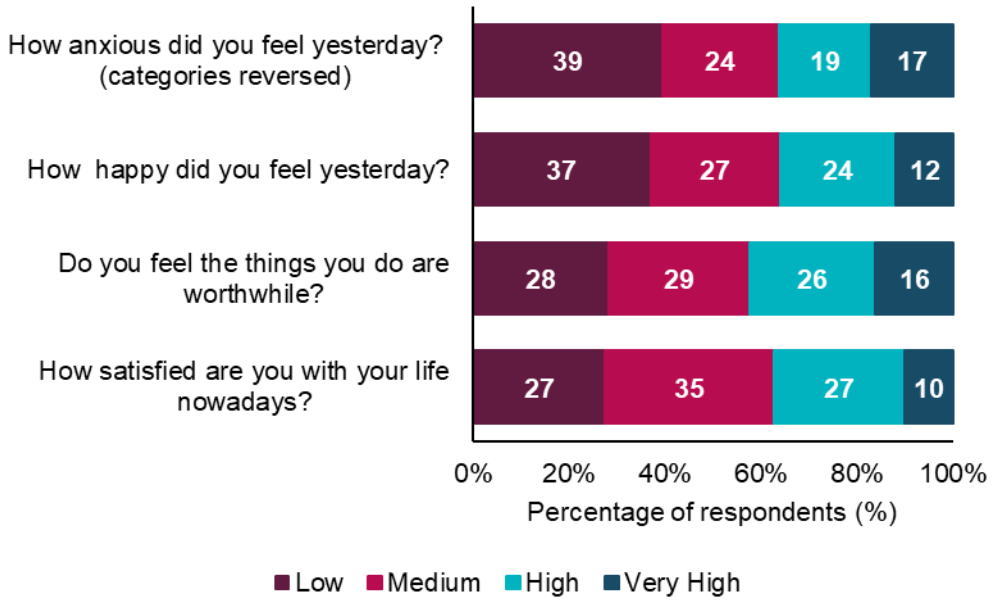
- 24 per cent gave a rating of 30 or below, suggesting their health was below tended toward the worst imaginable.
- 49 per cent gave a rating from 50 to 75, suggesting their heath was better than average, but short of the best imaginable.
- 14 per cent report their heath was 76 to 100, suggesting their health was tending toward the best imaginable.

The survey asked respondents the ONS's four wellbeing questions to understand their current situation. Analysis of responses to the Baseline Survey reveals patients who received a WHP initially had relatively low levels of wellbeing compared to national benchmarks:

- 39 per cent of respondents reported 'high' levels of anxiety, compared to 17 per cent with a 'very low' level; nationally 22.5 per cent of the population have a 'high' level of anxiety.[7]
- 37 per cent of patients reported a 'low' level of happiness, this compares to 12 per cent with a 'very high' level of happiness; nationally 8.5 per cent of the population have a 'low' level of happiness.[8]
- 28 per cent of patients reported a 'low' level of worth, whereas only 16 per cent had a 'very high' level of worth; nationally just 4.1 per cent of the population have a 'low' level of worth.[9]
- 27 per cent of patients reported a 'low' level of life satisfaction, whereas only ten per cent had a 'very high' level of life satisfaction; nationally just 5.1 per cent of the population have a 'low' level of life satisfaction.[10]

[7] Source ONS Annual Population Survey April – March 2022
[8] Source ONS Annual Population Survey April – March 2022
[9] Source ONS Annual Population Survey April – March 2022
[10] Source ONS Annual Population Survey April – March 2022

Figure 3.5: ONS Wellbeing questions



Source: Baseline Survey; Base: between 481 and 491

*(Low denotes feeling very anxious, not happy and not feeling things you do are worthwhile; Very high denotes not feeling anxious, feeling very happy and feeling things that you do are very worthwhile).

3.5. Property and tenure characteristics of patients receiving a WHP

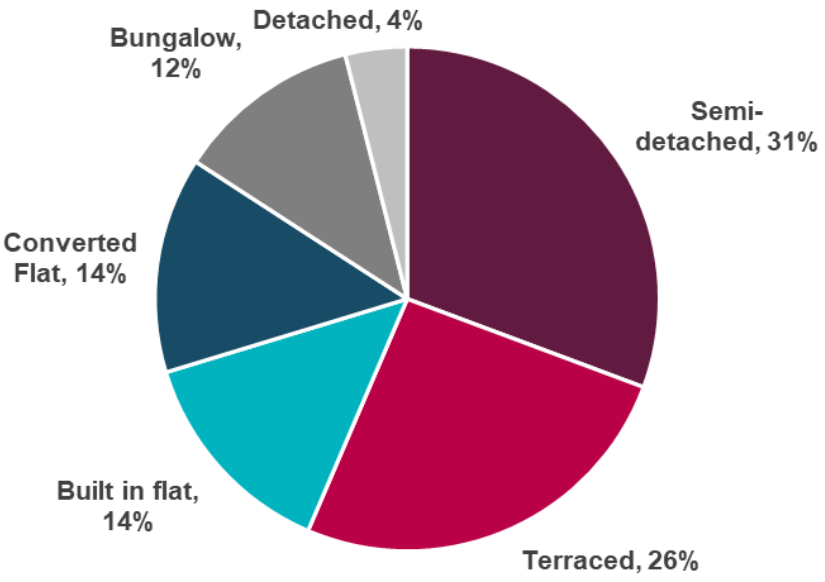
This section presents characteristics of the properties that patients who received a WHP were living. The characteristics considered are:

- Property type.
- Number of bedrooms.
- Property age.
- Tenure.

Property type

Data collected from ESC's Warm Home Prescription Digital Platform reveals patients who received a Warm Home Prescription lived in a range of different property types (Figure 3.6). The most common types of homes were semi-detached (31 per cent) and terraced (26 per cent) housing. Twenty-eight per cent of patients lived in flats of some kind and 12 per cent lived in bungalows. Four per cent lived in detached houses.

Figure 3.6: Property type

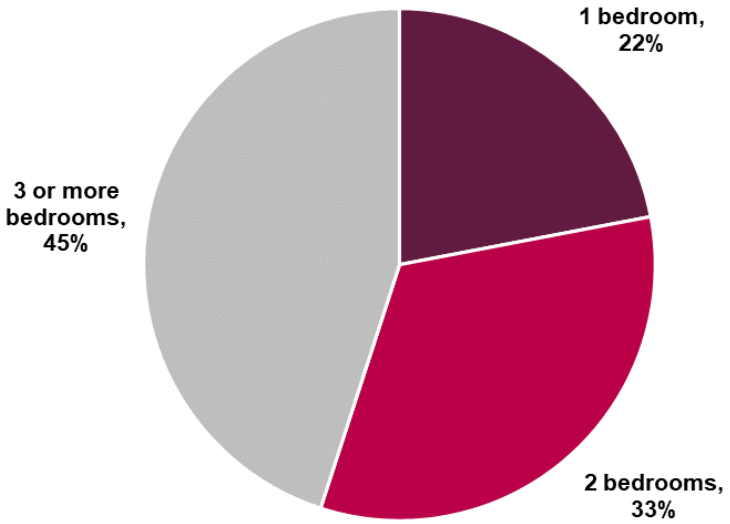


Source: ESC Warm Home Prescription Digital Platform; Base: 823.

Number of bedrooms

Figure 3.7 shows just under half (45 per cent) of WHP patients lived in homes with 3 or more bedrooms. Whereas a third lived in 2-bedroom property and 22 per cent lived in 1-bedroom property.

Figure 3.7: Number of Bedrooms

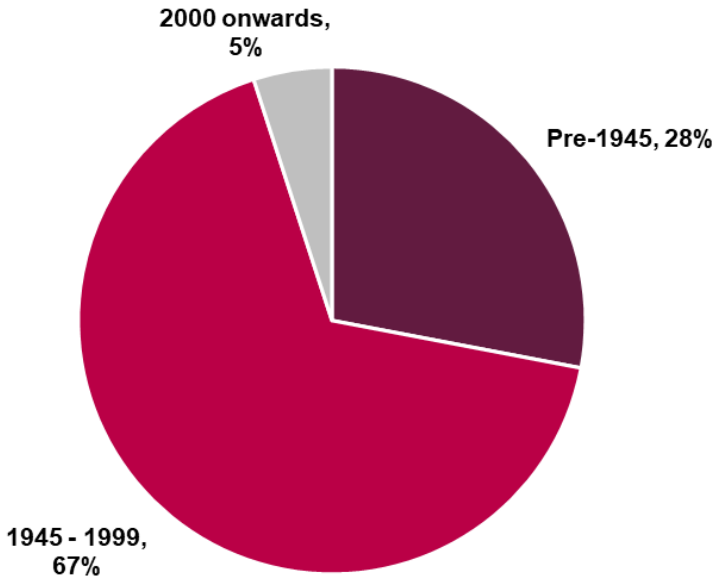


Source: ESC Warm Home Prescription Digital Platform; Base: 823.

Property age

Two thirds of patients lived in a home built between 1945 and 1999 and a further 28 per cent lived in homes built prior to 1945 (Figure 3.8). Just five per cent of patients lived in a newer home, built after 1999.

Figure 3.8: Property Age

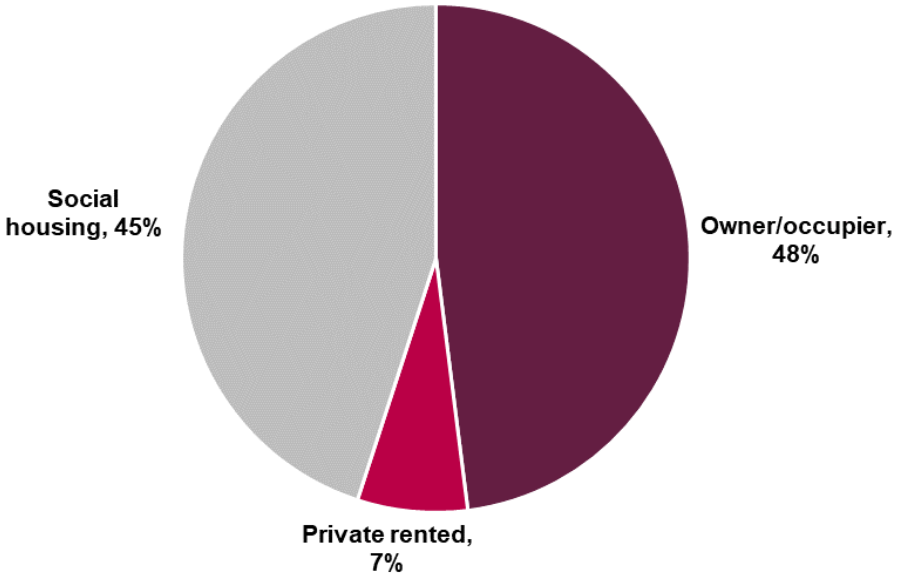


Source: ESC Warm Home Prescription Digital Platform; Base: 823

Tenure

The tenure mix of patients receiving a WHP is fairly evenly split between 48 per cent of patients who live in social housing, and 45 per cent of people who own their own homes outright or with a mortgage. A small proportion (seven per cent) live in a private rented property.

Figure 3.9: Housing tenure of patients receiving a WHP



Source: ESC Warm Home Prescription Digital Platform; Base: 823

3.6. Summary

In total 823 patients received a Warm Homes Prescription.

As is expected given the eligibility criteria for a WHP, this Chapter has illustrated:

- Most patients were over 65 years old and were retired or not working due to disability.
- Most patients were living in a low income household and a fifth were finding it 'fairly' or 'very' difficult to manage financially; this suggests many of those on a low income felt that they were coping or doing alright.
- Levels of health and wellbeing were relatively low, especially when compared to national benchmarks.
- Most patients lived in owner-occupied housing or social housing, with few living in a newer property, built since 1999.

4 What was the temperature situation for patients before they received the WHP?

4.1. Introduction

This short chapter considers factors related to the temperature of patient's homes before they received their Warm Home Prescription. In particular it presents data on:

- How patients heated their homes before receiving a WHP.
- Patient perceptions of the temperature in their home.
- Patient perceptions of how the temperature in their home affects their physical wellbeing and mental health.

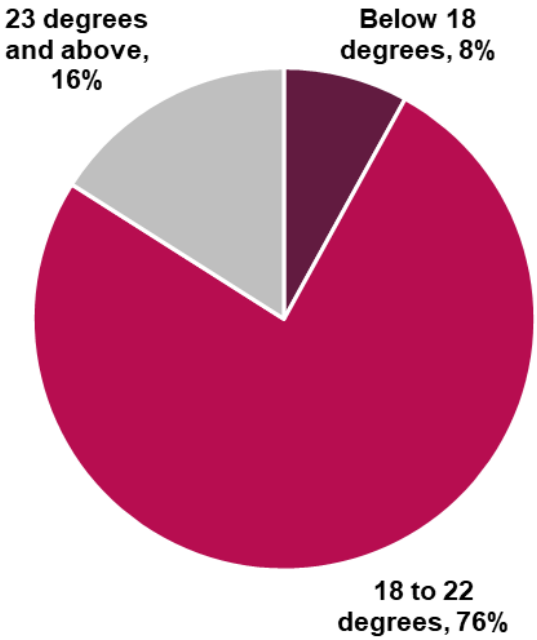
4.2. How patients heated their homes before receiving a WHP

The baseline survey asked respondents 'what temperature do you set your heating to in late afternoons?' Note this is the temperature that their heating system is set too, not the temperature that is achieved. Analysis of the responses reveals (Figure 4.1):

- Just over three quarters of patients set their temperature within the recommended healthy temperature range (18 to 22 degrees Celsius).
- Only eight per cent of patients set their heating to a temperature lower than the recommended healthy temperature range, including five per cent who set it to 16 or 17 degrees.
- 16 per cent of patients set their temperature to 23 degrees or more.

In addition to asking about the temperature that patients usually set their heating system to they were also asked how they heated their home during a normal winter. Almost a quarter (24 per cent) said that their heating 'always on,' and a further 20 per cent reported it was 'usually on.' Conversely 56 per cent were heating their home only 'sometimes' (28 per cent) or 'rarely/never' (five per cent).

Figure 4.1: What temperature do you set your heating at in the late afternoons? (Celsius)



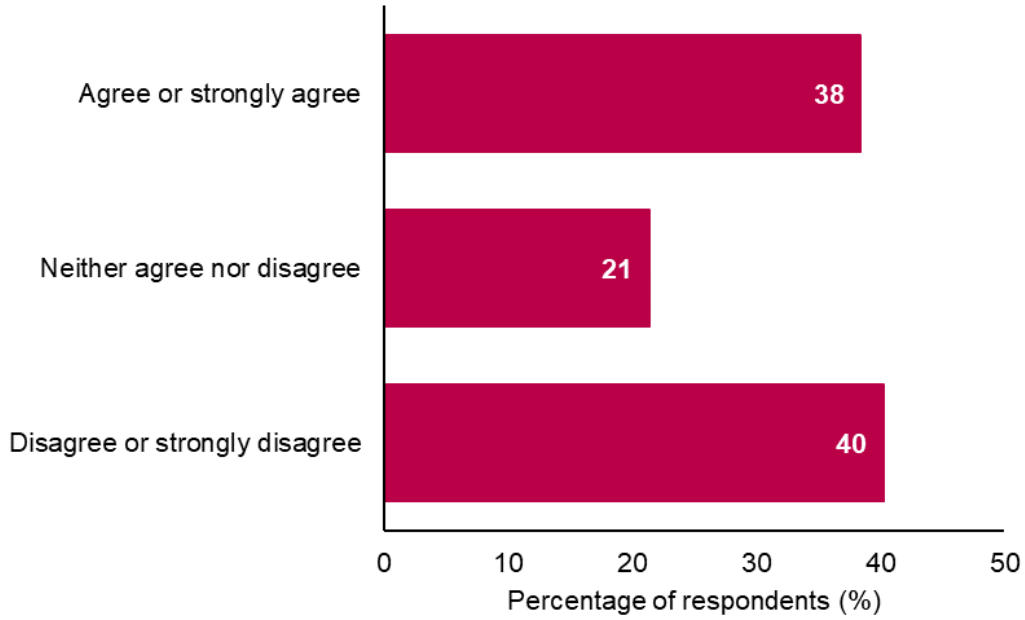
Source: Baseline survey; Base: 496

4.3. Patient perceptions of the temperature in their home

This section considers patient perceptions of the temperatures in their home. Specifically, it presents perceptions of thermal comfort, damp and mould and overall satisfaction with home.

As part of the baseline survey patients were asked - before they received a WHP – whether they normally feel comfortably warm in their living room during a normal winter. Figure 4.2 shows that two fifths stated they 'disagree' or 'strongly disagree' with this statement. This is slightly higher than the 38 per cent who either 'agree' or 'strongly agree' with the statement.

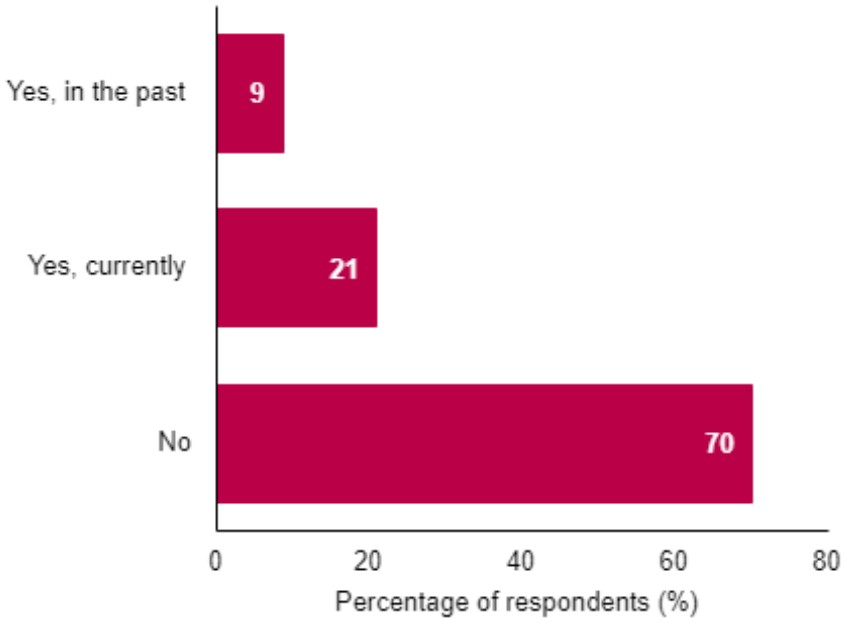
Figure 4.2: Normally feel comfortably warm in their living room during a normal winter



Source: Baseline Survey; Base=487

Most patients (70 per cent) who received WHP said that they did not have any damp or mould in their home Figure 4.3. Just over one in five (21 per cent) said that they currently had damp or mould in their home and 9 per cent said they had done in the past.

Figure 4.3: Is there any damp or mould in your home?

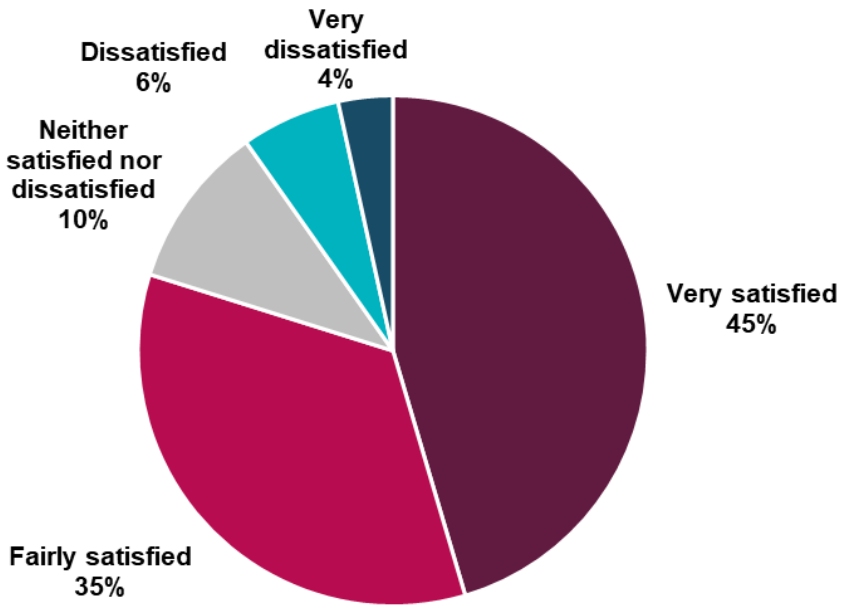


Source: ESC Warm Home Prescription Digital Platform; Base: 821

Finally, Figure 4.4 shows 80 per cent of patients receiving a WHP were 'very' (45 per cent) or 'fairly' (35 per cent) satisfied with their accommodation. Conversely only 10 per cent said they were 'fairly' or 'very' dissatisfied. Although these levels of satisfaction are similar to those for the population as a whole, they are below the levels for the

older person population. Nationally 94 per cent of households aged 65 years or over are ‘very’ or ‘fairly' satisfied with their accommodation.

Figure 4.4: Are you satisfied with your accommodation? (Values show per cent of patients)

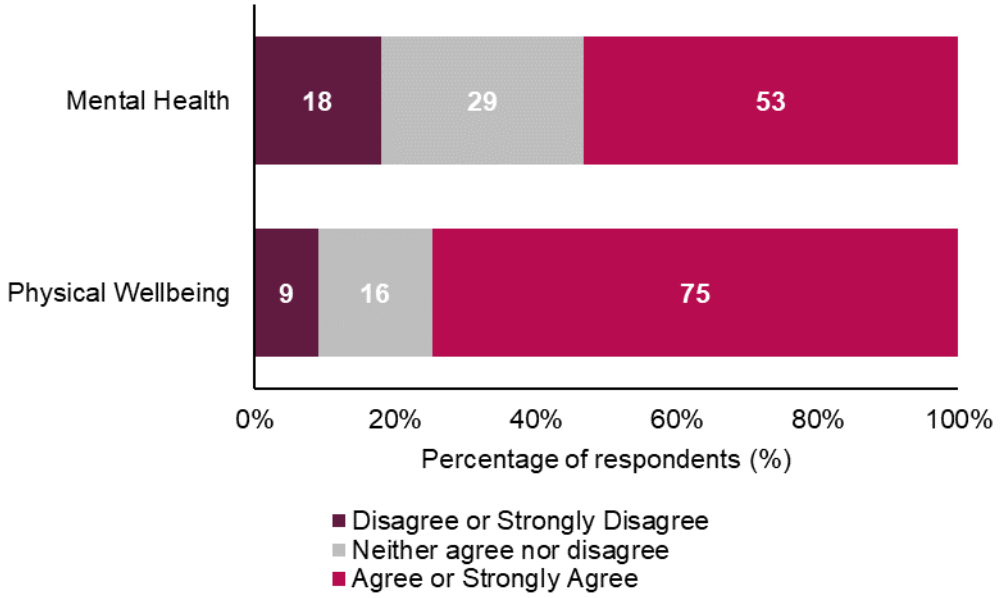


Source: Baseline survey; Base: 496.

4.4. Patient perceptions of how the temperature in their home affects their physical and mental health

Figure 4.1 shows that nearly all patients had set their home temperature to a health temperature or above. However, despite this most patients thought that the temperature of their home affected their physical wellbeing and mental health (Figure 4.5). Fully 75 per cent of patients think that the temperature of their home affects their physical wellbeing and a little over half (53 per cent) said that the temperature affects their mental health. Just under one in five patients (18 per cent) said they didn’t think the temperature of their home affects their mental health.

Figure 4.5: Perception that home temperature affects patient's physical wellbeing and mental health



Source: Baseline survey; Base: 496.

4.5. Summary

This Chapter shows that during late afternoons nearly all patients were heating their home to a temperature within or above the recommended health range. However:

- A majority of patients were only heating their home sometimes, rarely or never.
- Less than two fifths of patients agreed to normally feeling comfortably warm in their living room, suggesting they were not achieving healthy temperatures.
- As a consequence, most patients perceived the temperature in their home had a negative impact on their physical and mental health.

5

What difference did the WHP make to home temperatures?

5.1. Introduction

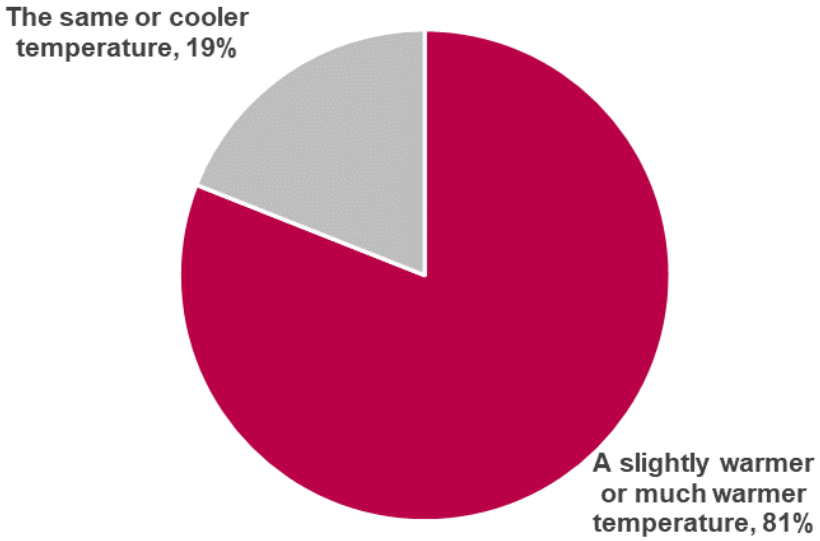
This chapter presents survey and temperature logger data to assess what difference a Warm Home Prescription made to home temperatures. It considers:

- How patients heated their home after receiving a WHP.
- The recorded temperatures in patient homes.
- Patients' perceptions of thermal comfort in their home.

5.2. How patients heated their home after receiving a WHP

After receiving a WHP, in the follow-up survey, more than four out of five patients (81 per cent) reported that they had heated their home to a warmer temperature than in previous winters (Figure 5.1). Furthermore, to a separate question, 90 per cent of patients said they had used their heating as much as they wanted.

Figure 5.1: The temperature patients heated their home to compared to previous winters

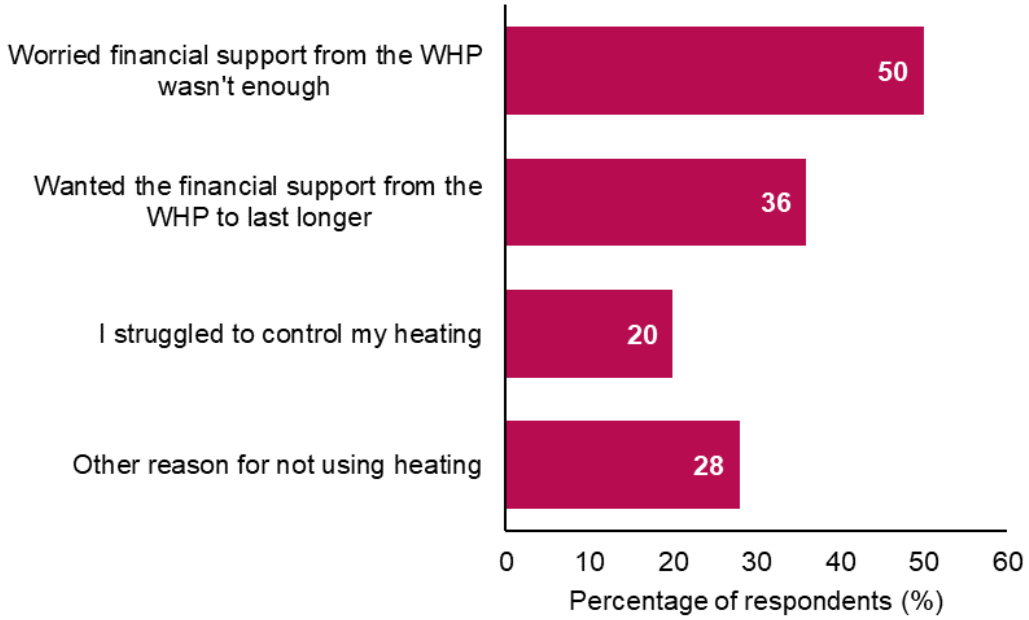


Source: Follow-up survey; Base: 503.

10 per cent of patients reported that they had not used their heating as much as they wanted while receiving a WHP. The reasons given by this 10 per cent are displayed in Figure 5.2:

- 50 per cent of those who said they hadn't used their heating as much as they wanted said they were worried that the financial support from WHP wasn't enough.
- 36 per cent said they wanted the financial support from WHP to last longer.
- Small numbers of respondents said they struggled to control my heating (20 per cent) or gave another reason (28 per cent).

Table 5.2: If you didn't use your heating as much as you wanted, why not?



Source: Follow-up survey; Base: 50; *Asked only to people who responded that they didn't heat their home as much as they wanted.

In addition to the temperature that patients set their heating systems, in both the Baseline and Follow-up surveys patients were asked about their normal heating use. In the Baseline Survey, 59 per cent of patients said their heating was sometimes, rarely or never on. In the follow-up survey – after patients had received a WHP – this proportion had fallen to 24 per cent. This reduction was statistically significant at a 0.000 level.

5.3. Recorded temperatures in patient homes

The temperature logger data showed that most WHP patients had heated their home to a healthy temperature of between 18 and 23 degrees Celsius.

The average temperature was calculated for each patient at hourly intervals throughout the day. We then computed the overall 'average of averages' temperatures across all WHP patients who returned their temperature logger. This method accounts for differences in the length of time that patients had the temperature trackers in their properties.

Figure 5.3 shows that across the 24-hour period average bedroom temperatures were:

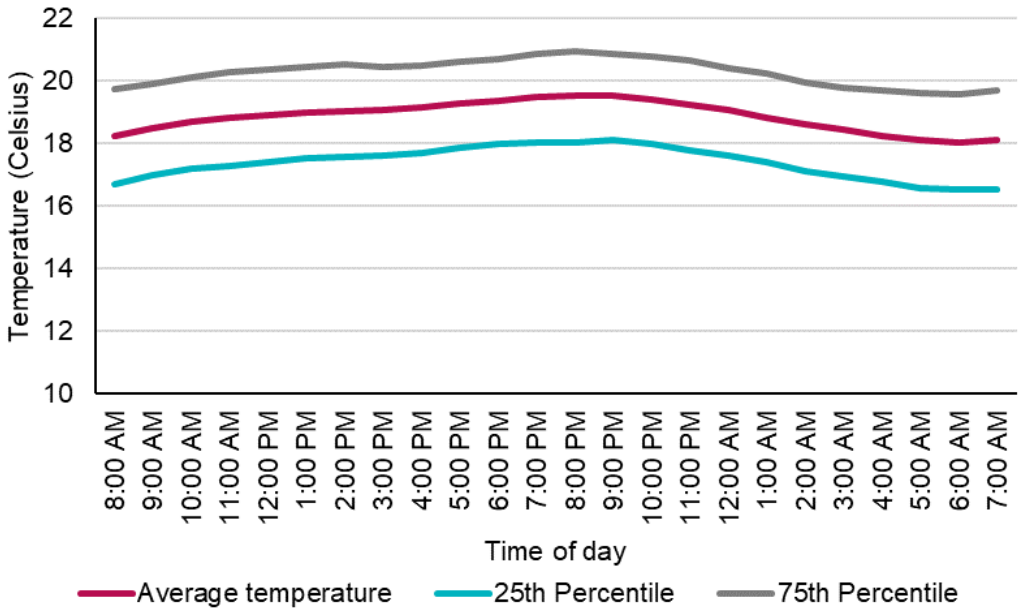
- Between 18 and 18.5 degrees Celsius between 3am and 8am in the morning.

- Between 9am and midday, average bedroom temperatures were between 18.5 and 19 degrees Celsius.
- From 1pm until midnight, average bedroom temperatures were in the range of 19 to 19.5 degrees.

Figure 5.7 also shows the 25th and 75th percentiles to highlight the variation across patients. At the 25th percentile, average bedroom temperatures were 16.5 degrees Celsius in the early hours of the morning. Average temperatures at the 25th percentile rose throughout the morning to 17.5 degrees at midday and peaked at 18.1 degrees at 9pm. At the 75th percentile, temperatures were also at the lowest in the early hours of the morning at 19.5 degrees Celsius. They rose throughout the day to 20.5 degrees at midday and 20.9 degrees at 9pm.

It is unclear exactly why some patients recorded temperatures outside of the recommended healthy range. The reasons are likely to include, preferences for lower temperatures, issues achieving a healthy temperature in their home, concerns about the WHP project, as well as the positioning the temperature logger in a draft.

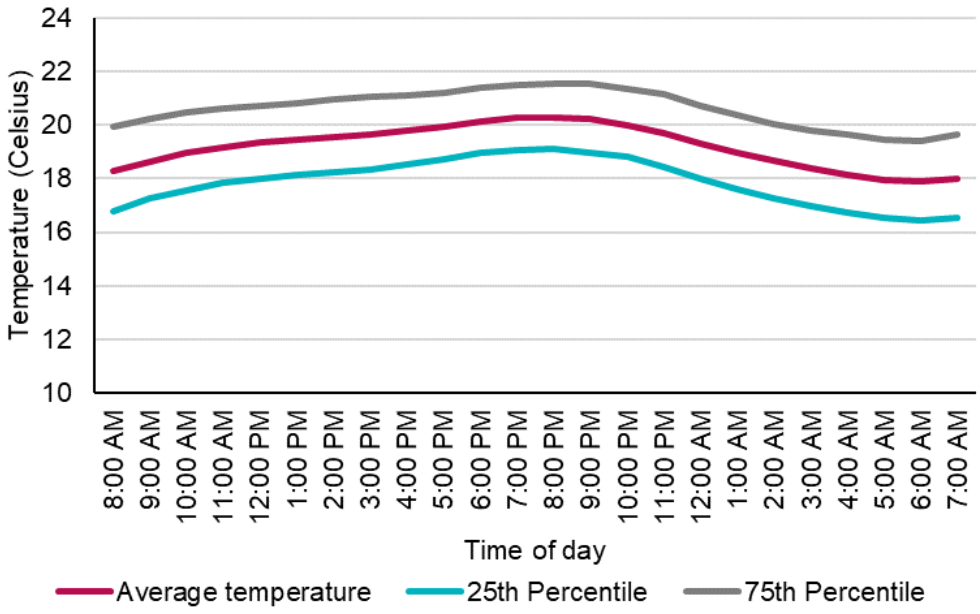
Figure 5.3: Bedroom average temperature over a 24-hour period



Source: Temperature Loggers; Base: 628.

Overall, average living room temperatures trended slightly warmer but followed a similar pattern (Figure 5.4). The lowest average temperature in patients' living rooms was 17.9 degrees Celsius at 6am and the highest average was 20.3 degrees Celsius at 8pm in the evening. In the morning between 7am and 12noon average living room temperatures rose from 18.3 degrees to 19.3 degrees. During the afternoon temperatures were between 19 and 20 degrees and throughout the evening, from 6pm to 10pm, average temperatures remain at 20 degrees or just above. During the night, average temperatures fell by two degrees. At the 25th percentile, the lowest average temperature was 16.4 degrees Celsius and the highest 19.1 degrees at 8pm in the evening. At the upper quartile, the lowest temperature was 19.4 degrees Celsius and the highest 21.6 degrees.

Figure 5.4: Living Room average temperature over a 24-hour period

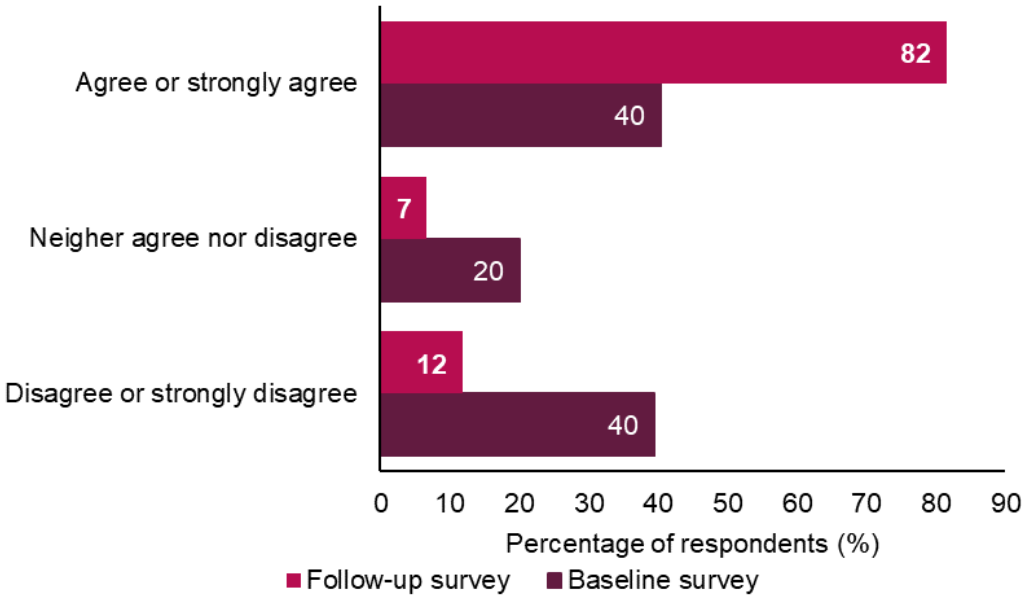


Source: Temperature Loggers; Base: 642.

5.4. Patients' perceptions of thermal comfort in their home.

It is important to place the temperature logger data in the context of the thermal comfort experienced by patients. In both surveys patients were asked whether they agree that they are 'normally comfortably warm in their living room.' Figure 5.5 shows that after receiving a WHP there was a statistically significant increase (at a 0.000 level) in the proportion of patients who 'agreed' or 'strongly agreed' that they are normally comfortably warm in their living room. In the baseline survey, 40 per cent of patients either 'agreed' or 'strongly agreed' that they are normally comfortably warm in their living room. This percentage increased to 82 per cent in the Follow-up survey, following receipt of a WHP.

Figure 5.5: 'I am normally comfortably warm in my living room'



Source: Baseline survey and Follow-up survey; Base: Baseline 382, Follow-up 381

5.5. Summary

This Chapter has illustrated:

- After receiving their WHP most patients reported that they set their heating to achieve a healthy temperature and many more patients reported that they 'usually' or 'always' had their heating on.
- Temperature data collected from patients' homes after they received the WHP showed that on average they were heating their homes to a healthy temperature, fairly consistently, throughout the day and night.
- Furthermore, longitudinal survey data showed that after receiving a WHP there was a significant increase in the proportion of patients that agreed they were comfortably warm in their living room.

6 What outcomes were reported by patients who received a WHP?

6.1. Introduction

The previous chapter found that, in general, patients took advantage of their Warm Home Prescription: they increased the temperature in their home to a recommended healthy level for most or all of the time. This Chapter considers the outcomes that they experienced as a result of the WHP. The structure is as follow:

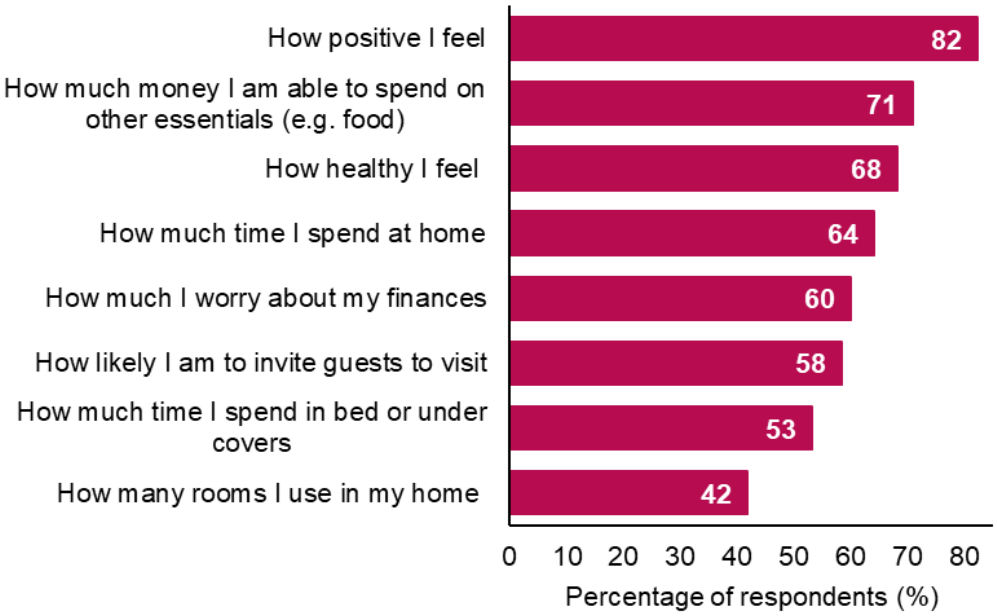
- Section 6.2 presents a summary of patients' perceptions of what difference the WHP made.
- Section 6.3 considers health and wellbeing outcomes.
- Section 6.4 considers the impact of WHP on patients' usage of health care services.
- Section 6.5 considers what difference receiving a WHP has made to patients' feelings about heating their home and willingness to undertake energy efficiency related home improvements.

6.2. Perceptions of what difference the WHP made

The Follow-up survey asked respondents a general question about how eight aspects had changed for them since they received a WHP. Figure 6.1 summarises the results showing the percentage of patients who reported a positive change. The results show:

- 82 per cent reported that it had a beneficial effect on how positive they feel.
- 71 per cent of patients said that WHP had a positive effect on how much money they were able to spend on other essentials such as food.
- 68 per cent said that they felt it had a positive effect on how healthy they feel.
- Just under two thirds on patients (64 per cent) said WHP had a positive effect on increasing how much time they spent at home.
- 60 per cent said that WHP had a positive effect on how much they worry about their finances.

Figure 6.1: Patients' experiences since receiving WHP

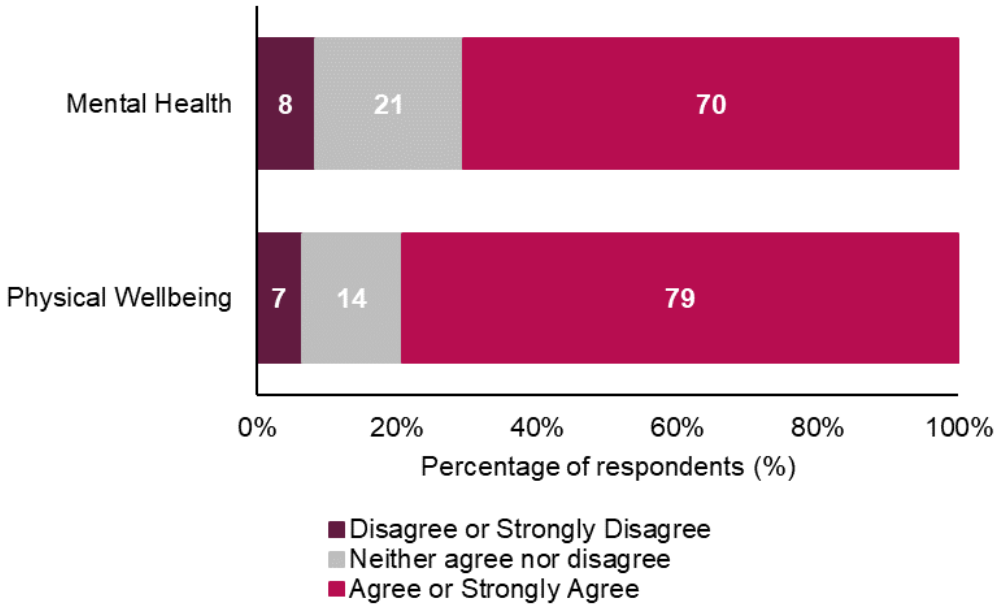


Source: Follow-up survey; Base: 513.

6.3. Health and wellbeing outcome change since receiving a WHP

In the Baseline survey, the majority of patients said they thought the temperature of their home had a negative effect on their physical and mental health (Figure 4.5). Responses to the Follow-up survey indicate that this had changed after receiving a WHP. Figure 6.2 shows that 79 per cent of patients said that since receiving their WHP the temperature of their home has positively affected their physical wellbeing and 70 per cent said it had positively affected their mental health.

Figure 6.2: Perception of the effect of temperature in their home on their physical wellbeing and mental health after receiving a WHP



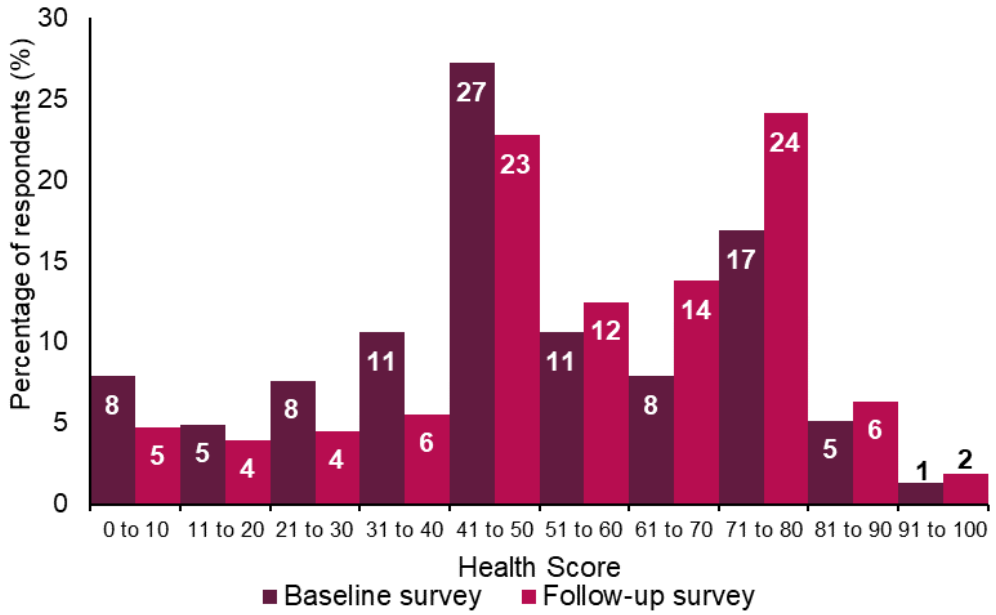
Source: Follow-up survey; Base: 513.

The evaluation used the EQ5D health assessment to assess the impact of WHP on patient health. An advantage of the EQ5D health assessment instrument is that responses to each of the five questions can be combined into a Quality Adjusted Life Year (QALY) score. QALY is a measure of disease burden, including both the quality and the quantity of life lived. A QALY score of one equates to one year in perfect health. If an individual's health is below this maximum, QALYs are accrued at a rate of less than 1 per year. A QALY score of zero equates to being dead. Analysis of responses to the Baseline and Follow-up surveys show that average QALY scores improved by 0.01 units from 0.43 to 0.44. However, this improvement was not statistically significant at a 0.05 level.

The EQ5D health assessment also askes patients to score how good or bad their health was yesterday on a scale of 0 to 100, where 0 was the worst it could be and 100 was the best. This question was asked to patients in both the Baseline and Follow-up surveys. Figure 6.3 shows responses from patients who answered this question in both surveys. Key points to highlight:

- There was a general trend in patients scoring their health higher in the follow-up survey compared to the baseline survey.
- The average score increased by a statistically significant amount from '52' to '59'.
- The proportion of patients who rated their health at a score of 30 or less reduced from 21 per cent to 13 per cent.
- The proportion of patients who rated their health at a score of 70 or more increased from 29 per cent to 43 per cent.

Figure 6.3: Self-reported Health Score



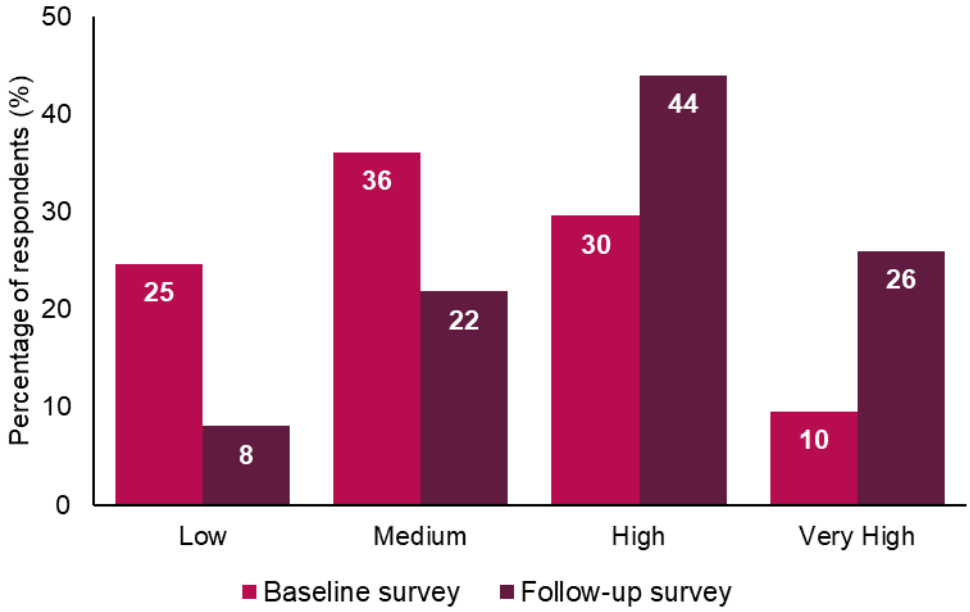
Source: Baseline survey and Follow-up survey; Base: Baseline survey: 368; Follow-up survey: 378.

There was a statistically significant improvement in customer responses to the ONS Life Satisfaction question - 'How satisfied are you with your life nowadays?' - between their baseline and follow-up survey. The average response across customers improved from a score of 5.7 to 7.2 in the Follow-up survey. This statistically significant improvement is applied in Chapter 7 to assess the social value from the WHP project.

Figure 6.4 shows in the baseline survey, a quarter of patients scored their life satisfaction as 'low', In the follow-up survey the proportion had fallen to eight per cent.

In the baseline survey 40 per cent of patients ranked their life satisfaction as 'high' or 'very high.' On the follow-up survey, the proportion of patients saying they had 'high' or 'very high' levels of life satisfaction had increased to 70 per cent. A McNemar test showed that the change in responses was statistically significant.

Figure 6.4: Patients feelings about life satisfaction



Source: Baseline survey and Follow-up survey; Base: Baseline survey: 385; Follow-up survey: 384.

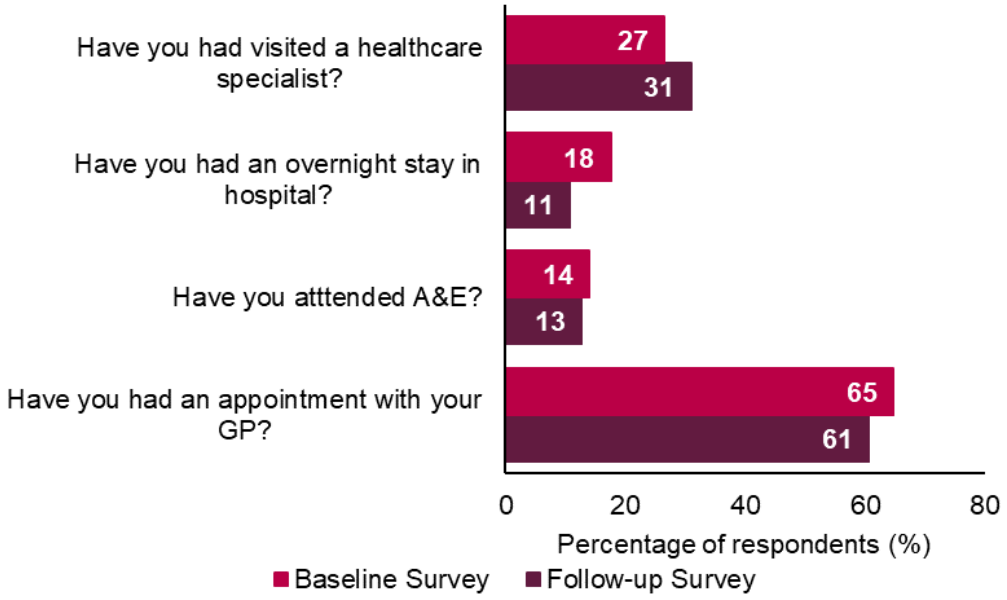
6.4. The impact of WHP on patients' usage of health care services

The evaluation accessed two types of data to consider the impact of WHP on patients' usage of health care services: survey responses and administrative data.

Both the Baseline and Follow-up surveys asked respondents to self-report the number of times they had received four types of treatment in the previous three months. The four types of treatment were: GP appointments, Accident and Emergency visits, nights spent in hospital and visits to a health care specialist (e.g., cardiologist, mental health support). Separately respondents were asked about the number of prescriptions that they had received. The evaluation aimed to consider change in the numbers of incidents to assess the impact of WHP on health care services. Unfortunately, the responses received meant that it was not possible to consider this change since many respondents provided a 'yes/no' response rather than a count of incidents. Therefore, the evaluation has focused on binary change in the survey responses: change in the proportion of respondents reporting any incidents of the four types of treatment in the previous three months.

In general, patients reported that they had visited healthcare settings about their condition less often in the Follow-up survey compared to their responses to the Baseline survey (Figure 6.5). The proportion of people reporting that they had recently spent the night in hospital changed from 18 per cent in the Baseline survey to 11 per cent in the Follow-up survey. We ran a McNemar statistical significance test on this longitudinal data and it showed that there is a statistically significant decrease in the proportion of patients who reported an overnight stay in hospital in the Baseline and Follow-up surveys. However, no statistical significance was found in relation to access to other healthcare services.

Figure 6.5: Changes in use of health services



Source: Baseline survey and Follow-up survey; Base: 388.

The evaluation was also able to access administrative data on usage of health care service for WHP in Aberdeen and Teesside from NHS Grampian (via DaSH) and Holgate PCN respectively. Section 1.2 outlines these datasets, the types of information that they contain and our approach to analysing the data.

Our analysis of these datasets is constrained to a presentation of emerging results. This is due to the limited time that we had to analyse the data as well as some apprehension about the possible analysis and results. We provide strong caution when interpreting the results and advise against using them to conclude whether, or not, the WHP project has had an impact on patient health care usage. We reflect on this further in our recommendations (Chapter 8).

Gaining access to the patient level data from NHS Grampian took time due to a range of practical factors, including completing the necessary training and contractual obligations as well as the practical issue of needing to wait for the data to become issued in DaSH in digital form. This severely limited the time available to complete the planned analysis in this report. Consequently, we are only able to report a basic analysis for one of the outcomes: change in the proportion of patients with a GP out of hours appointment.

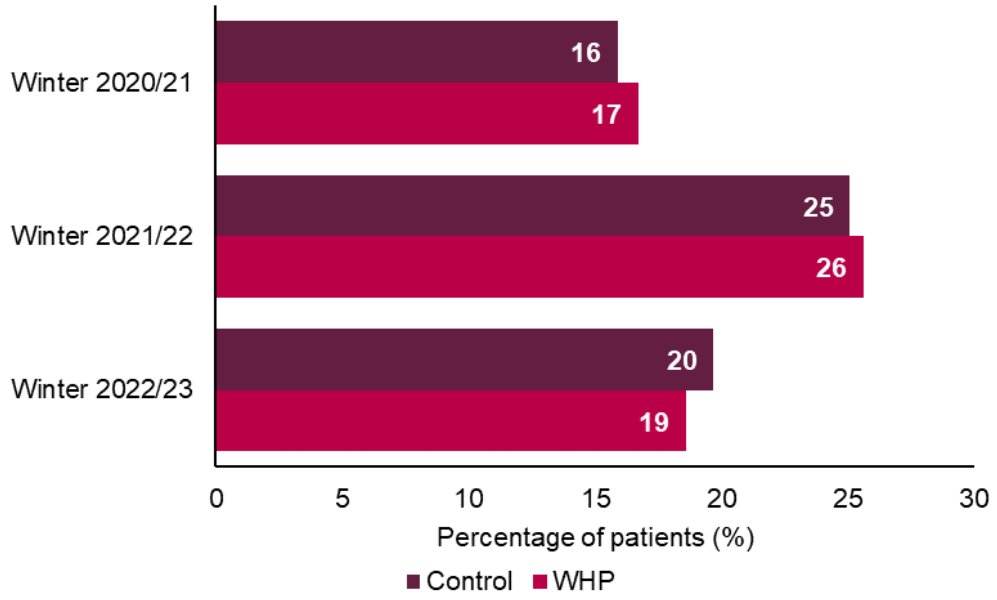
Analysis of the DaSH data[11] for patients in Aberdeen reveals:

- The percentage of WHP patients with an out of hours appointment was higher than its matched control group of patients in Winter 2020/21 and Winter 2021/22.
- However in Winter 2022/23 – the Winter WHP received their prescription – the percentage of WHP patients with an out of hours appointment was lower than their match control group of patients: 19 per cent and 20 per cent of patients respectively.

[11] Sheffield Hallam University and Energy Systems Catapult acknowledges the support of the Grampian Data Safe Haven (DaSH) and the associated financial support from the University of Aberdeen and NHS Research Scotland through NHS Grampian investment in DaSH

- This suggests there was a reduction in the proportion of patients with an appointment in the Winter that they received their WHP compared to what may have been expected if they had followed a similar pattern to their matched control group.

Figure 6.6: Percentage patients with a GP out of hours appointment; NHS Grampian



Analysis of the GP appointment and acute prescription data made available by Holgate PCN data for patients in Teesside reveals:[12]

- For all patient groups the average number of GP appointments increased in the winter of 2022/23 compared to Winter 2021/22 (Figure 6.7).
- Both patient groups who received a WHP on average had more GP appointments than their respective control group. However the proportional increase in the average number of appointments from Winter 2021/22 to Winter 2022/23 was less than their control group; this suggests there was a smaller increase in the average number of GP appointments per patient in the Winter that they received their WHP compared to what may have been expected if they had followed a similar pattern to their matched control groups.
- The average number of acute prescriptions per patient also increased for both the control groups and patient groups receiving a WHP in Winter 2022/23 in comparison to Winter 2021/22 (Figure 6.8).
- However the proportional increase in the average number of appointments was again greater from the two Control groups compared to the patient groups who received a WHP; this suggests there was a smaller increase in the average number of acute prescriptions per patient in the Winter that they received their WHP compared to what may have been expected if they had followed a similar pattern to their matched control groups.

[12] Note data for Accident and Emergency admission have not been presented due to insufficient cases being available which may lead to a disclosure. Group A Patients aged 60 years and over with a diagnosis of COPD; Group B Patients aged 18-59 years with a diagnosis of asthma with a steroid prescribed in the last 12 months, 2 or more inhalers prescribed in the last 12 months.

Figure 6.7: Average number of GP appointment per patient; Holgate PCN

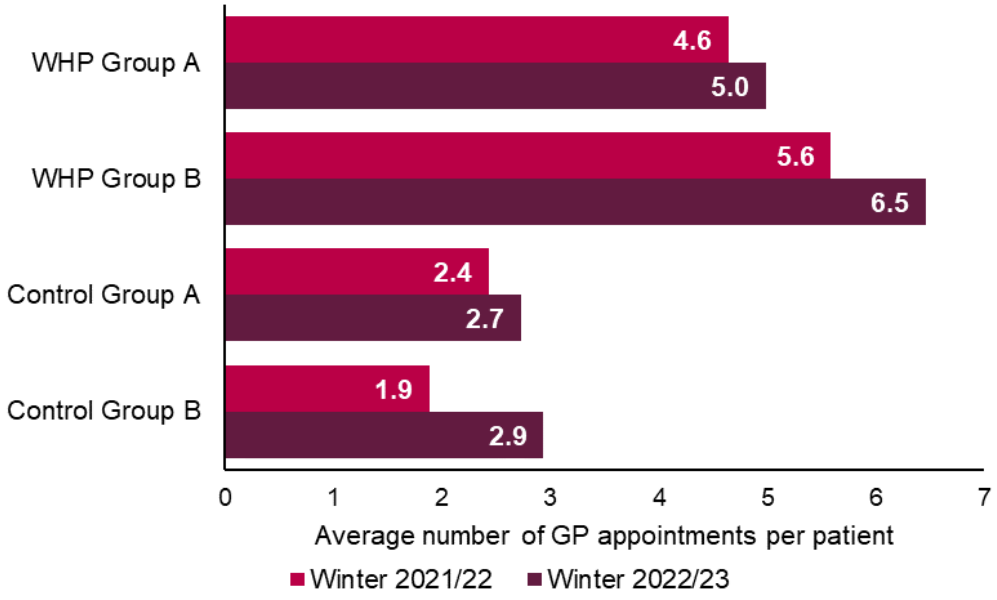
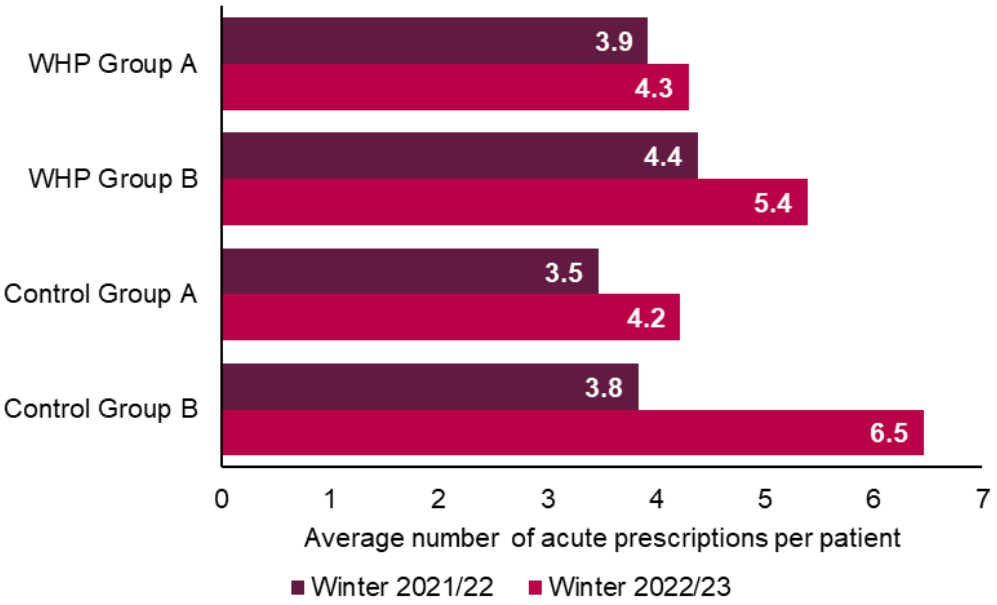


Figure 6.8: Average number of acute prescriptions per patient; Holgate PCN



Caution is needed when interpreting the results in this subsection. However, taken in the round, the data suggest that patients who received a WHP have had a lower usage of primary care health services (GP appointments, out of hours appointments and prescriptions) this winter compared to what may have been otherwise expected. As yet, there is less evidence of a change in secondary care services. Although this is expected due to the low incidence of these episodes as well as the plausible lag between receiving a WHP and it affecting secondary care demand.

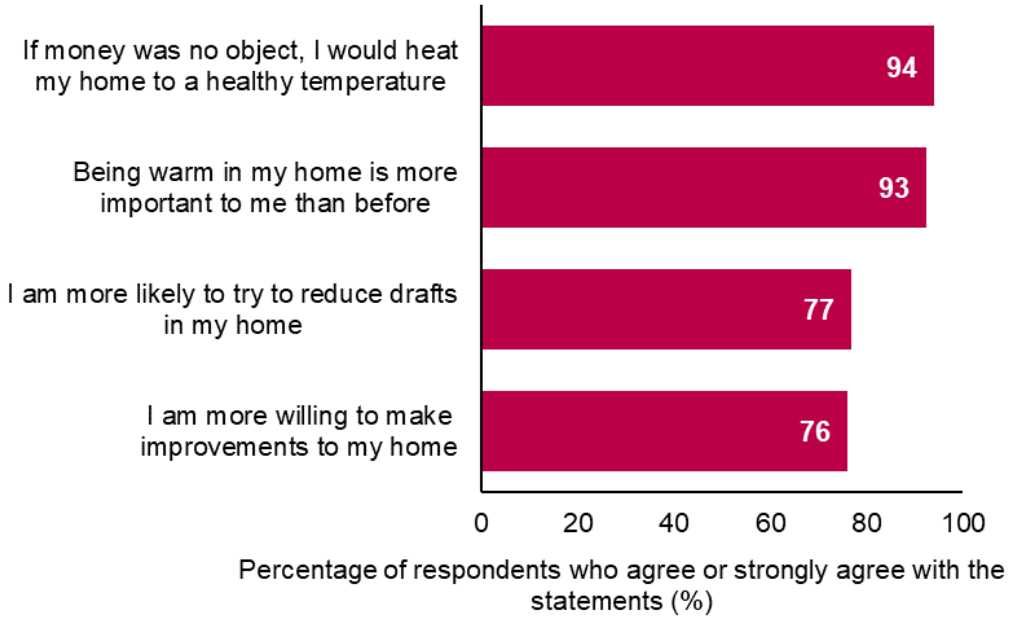
6.5. The impact of WHP on patients' feelings about heating their home and willingness to undertake energy efficiency related home improvements

A key objective of the WHP project is to increase patients' willingness towards improving the temperature of their home and undertaking energy efficiency related home improvements.

In the Follow-up survey patients generally reported positive feelings about heating their home. Figure 6.6 shows since receiving WHP:

- 94 per cent of patients 'agreed' or strongly agreed' that if money were no object they would heat their homes to a healthy temperature.
- 93 per cent of patients 'agreed' or strongly agreed' that being warm in their own home was more important to them that it had been before.
- 77 per cent of patients 'agreed' or strongly agreed' that they were more likely to try to reduce drafts in their home.
- Similarly, 76 per cent of patients 'agreed' or strongly agreed' that they were more willing to make improvements to their home.

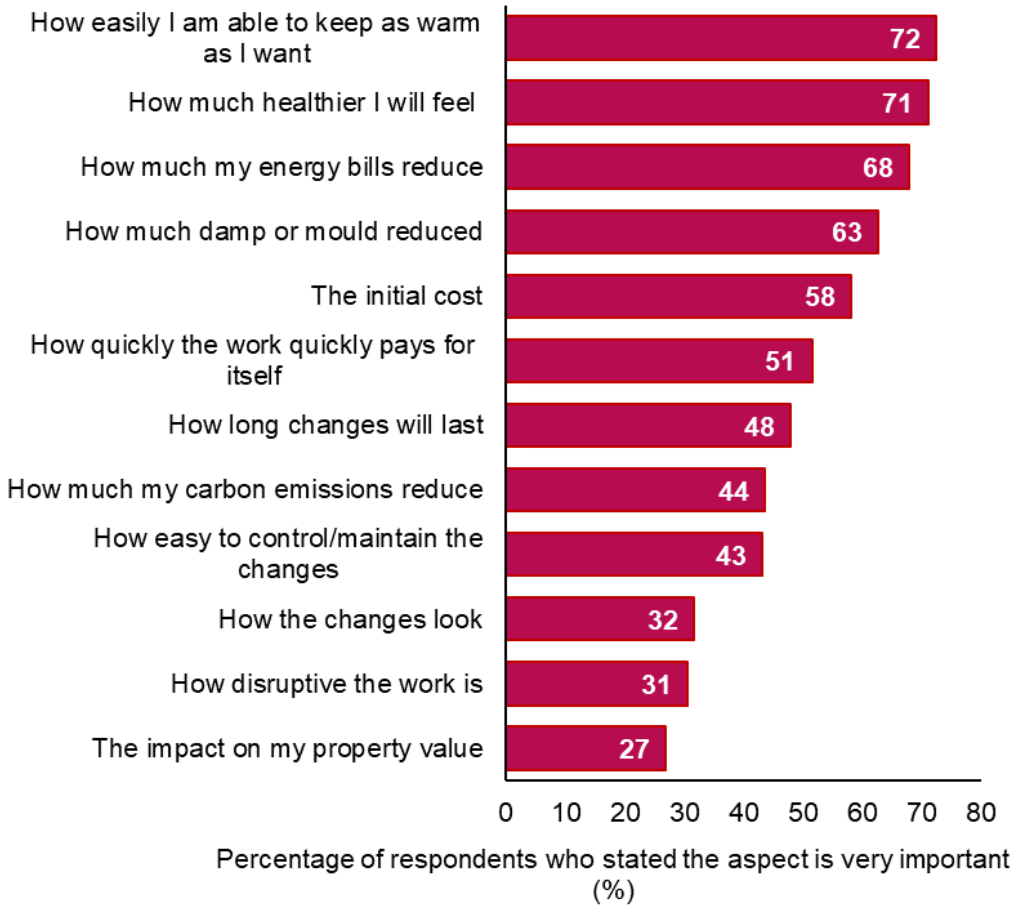
Figure 6.6: Patients feelings about heating their home after receiving WHP



Source: Follow-up survey; Base: 513.

The Follow-up survey also asked patients about which factors were important to them when considering making home improvements (Figure 6.7). Some respondents did not answer these questions if they were renting and did not have control over making improvements to their home. Of those who did answer, over 70 per cent of patients said 'how easily I am able to keep as warm as I want' (72 per cent) and 'how much healthier I will feel' (71 per cent) were very important factors when considering making home improvements. 68 and 63 per cent, respectively, of respondents said that 'how much my energy bills reduce' and 'how much damp or mould is reduced,' are very important factors in terms of doing home improvements. For 58 per cent of respondents 'the initial cost' was a very important factor.

Figure 6.7: Percentage of patients agreeing that the following are very important when considering home improvements



Source: Follow-up survey; Base: 513.

6.6. Summary

The chapter highlighted that:

- Many patients reported that they worry less about their finances since receiving WHP and they are able to spend more on other essential items, such as food.
- Patients reported much higher feelings of life satisfaction after receiving a WHP and in general had higher self-reported health.
- There is less evidence on whether the WHP had improved the physical health of patients; as assessed by the EQ5D.
- There is emerging evidence that patients used primary health services less after receiving a WHP.

WHP's Value for Money and social value

7

7.1. Introduction

This chapter considers the Value for Money (VFM) and social value of the Warm Home Prescription project. In evaluation, VFM refers to a judgement about the optimal use of resources associated with a particular investment and its stated aims and objectives. The assessment is framed in terms of:

- **Economy:** the cost of the project and whether it can be considered to be economically advantageous i.e., low cost? This is considered in section 7.2.
- **Cost Efficiency:** did the project deliver a high volume of activities/outputs in relation to costs? This is considered in section 7.3.
- **Cost Effectiveness:** did the project achieve a high volume and/or range of outcomes in relation to costs? This is considered in section 7.4.

The chapter also considers – in section 7.5 - the social value and return produced from its outcomes.

7.2. Cost expenditure

The overall estimated direct expenditure related to the delivery of the Warm Home Prescription project was £825,000 (excluding VAT). This has been computed based on actual known costs and estimated costs. Actual costs relate to: energy bill payments, costs of replacement heating controls and electric heaters and licences for the ESC Warm Home Prescription Digital Platform. The estimated costs relate to costs for home visits, welcome notes, technical support and platform maintenance for the ESC Warm Home Prescription Digital Platform and staffing costs faced by delivery partners such as energy advisors and operational manager and teams. The amount also excludes costs that were faced in the project, but which are not related to delivery. This includes costs relating to evaluation, the Project Advisory Taskforce etc.

Energy bill payments for patients who received a prescription comprised the largest cost category (£573,700; 70 per cent of expenditure). Given the historically high energy costs over winter 2022/23 it is likely that this amount would be lower in future winters - assuming energy costs fall back to more typical levels. Estimated partner delivery and management salary costs comprised the second largest cost category: £152,300 or 18 per cent of direct expenditure.

Also of note:

- Just over £70.5 thousand (nine per cent of expenditure) was estimated to have been spent on the ESC Warm Home Prescription Digital Platform which underpinned the delivery and management of project.
- Replacement of heating controls and providing electric heaters accounted for just over £17.5 thousand (two per cent of expenditure).

7.3. Cost efficiency - Average cost per patient

Given 823 patients received a WHP this translates to an average estimated cost per patient of £1,000. In evaluation terms this is the cost efficiency of the intervention, with lower cost per patient indicating an intervention has a higher – and therefore better - level of cost efficiency.

However, it is important to note that this assessment of WHP's cost efficiency is likely to provide a higher average cost per patient than may otherwise be expected due to the following three factors:

- Energy costs over winter 2022/23 were at historically high levels and are expected to reduce in future years. Given the energy bill payment accounted for 70 per cent of expenditure, a reduction in energy costs will noticeably reduce the average cost per patient (improving the level of cost efficiency).
- There is a strong likelihood that learning from this test of the WHP model can be used to identify efficiencies and refinements to the WHP model which will reduce the average cost per patient.
- Although the analysis has sought to exclude non-delivery related costs it is likely that some of these are still within the expenditure figures underpinning the analysis.

7.4. Cost effectiveness - Average cost per outcome

This section considers the average cost per outcome reported by WHP patients. In evaluation terms this is the cost effectiveness of WHP. This is calculated by dividing the cost of the WHP project by the number of patients who have reported an improved outcome following receipt of a WHP.

Our assessment takes a fairly narrow focus on two outcomes which emerged as having a statistically significant level of improvement between the Baseline and Follow-up survey. These are: the reduction in patients who agreed or strongly agree that they are normally comfortably warm in their living room and the improvement life-satisfaction

There are a range of other outcomes considered in this report where it was not possible to assess whether the WHP has made a statistically significant level of improvement. We have also not included the cost effectiveness of WHP in supporting health services use outcomes due to caution about the interpretation of what this data shows.

The results show:

- The estimated average cost to provide a one patient increase in the number who 'agree' or 'strongly agree' that they are normally comfortably warm in their living room was £2,400.
- The estimated average cost to provide a one patient reduction in the number of patients with a low life satisfaction was £6,000.

7.5. Social value

The final stage of a traditional value for money analysis involves valuing the benefits identified in monetary terms to produce a cost benefit analysis and establish an overall figure or range for return on investment.

Value to the health system

An important way of value the benefits of the WHP project is to consider the benefits to the health system in terms of costs avoided and demand reduced from preventing the onset of poor health, tackling symptoms sooner or stopping them from getting worse. The costs of primary and secondary health services can be very high, particularly when needs are more severe and require more intensive treatment.

The evaluation aimed to measure the impact and costs savings of WHP on health care services. In particular: GP appointments, out of hours appointments, prescriptions, Accident and Emergency attendance and Outpatient and Inpatient episodes. Considerable work and effort went into securing access to these data for WHP patients in Grampian and Teesside. These efforts were generously matched with valuable support from the University of Aberdeen, The Grampian Data Safe Haven (DaSH) and Holgate PCN. The evaluation was ultimately able to access relevant health service usage data. However we have some concerns about these results which mean we have decided to exclude their reporting in this social value analysis.

The Recommendations chapter (Chapter 8) provides learning from our work to inform future work so that the important impacts of WHP on health care services can be included in a VFM and cost benefit analysis.

Value to individuals

An alternative way of valuing the benefits of WHPs is to consider the benefits to the patients themselves. We have done this using a WELLBY approach. WELLBY - or 'Wellbeing-adjusted Life Year' - is a methodology to measure and value improvements in wellbeing (HMT, 2021).[13] It is used to refer to the total amount of well-being experienced by an individual over one year. One WELLBY is defined as a change in life satisfaction of one point on a scale of 0-10, per person per year (ONS4 measure). WELLBYs equate wellbeing to personal income (i.e., as income increases so does wellbeing) and estimate the increase in income required to achieve an equivalent increase in wellbeing.

WELLBYs are an appropriate measure of value where it is considered that the concept of wellbeing fully captures all the outcomes created by a project or programme. HM Treasury guidance indicates that WELLBYs can be particularly relevant when the direct aim of the policy is to improve the wellbeing of a certain group. As such the WELLBY approach was deemed to be an appropriate valuation approach given improved mental health is a core assumption of WHP's Theory of Change (Figure 2.1).

Within our assessment an assumption has been made that the improvement in wellbeing is short lived over the winter of 2022/23. After this time wellbeing level return to typical levels as the warm weather returns and the WHP is no longer provided.

[13] HMT Treasury (2021) Wellbeing Guidance for Appraisal: Supplementary Green Book Guidance https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005388/Wellbeing_guidance_for_appraisal_-_supplementary_Green_Book_guidance.pdf

The analysis shows:

- Patients on average experienced a 1.4 WELLBY increase over the winter period; across all 823 patients this means the WHP project supported 1186 additional WELLBYs.
- The average expected social value of the increase in WELLBYs is £5,100 per WHP patient.
- This means the total value of the 1186 additional WELLBYs supported by the WHP project is £4.173 million.
- Comparing this monetised benefit to the estimated cost of the WHP project suggests for every £1 of expenditure, WHP supported £5.1 of wellbeing social value to patients.

It is important to acknowledge that this value is not additional 'real' money that patients receive. Rather it is the expected equivalent value of household income that would be required to produce an equivalent improvement in life satisfaction than that induced by the WHP. It is also worth stating that this improvement in life satisfaction has been supported by multiple aspects such as improvement health, improved thermal comfort and satisfaction with their living environment as well as improving their financial situation.

7.6. Summary

This chapter has considered the Value for Money of the WHP project. It has found:

- The total direct operating cost[14] of the WHP projects was just under 825,000 (excluding VAT). Energy bill payments for patients who received a prescription comprised the largest cost category: 70 per cent of expenditure.
- Given 823 patients received a WHP this translates to an average estimated cost per patient of £1,000. In evaluation terms this is the cost efficiency.
- Cost effectiveness is the average cost per outcome reported by WHP patients. In evaluation terms this is the of WHP. The analysis finds:
  - The average estimated cost to provide a one patient increase in the number who 'agree' or 'strongly agree' that they are normally comfortably warm in their living room was £2,400.
  - The average estimated cost to provide a one patient reduction in the number of patients with a low life satisfaction was £6,000.
- A WELLBY approach provides a Treasury approved way to value the benefits of WHPs to the patients themselves. Using this approach, we find:
  - the total value of the 1186 additional WELLBYs supported by the WHP project is just over £4.173 million.
  - comparing this monetised societal benefit to the estimated cost of the WHP project suggests for every £1 of expenditure, WHP supported £5.1 of wellbeing social value to patients.

[14] Based on actual and estimated costs related to the delivery of the WHP project.

Recommendations

8

The evaluation results in this report provide strong **support for the effects of the WHP project**. Positive outcomes were reported for WHP patients, particularly thermal comfort in their homes and their wellbeing. There is also emerging evidence that WHP patients had a reduced demand for primary care services this winter compared to what may otherwise be expected.

Further testing and evaluation of the WHP project is needed to validate these findings in other contexts and to consider the extended (i.e. receiving a WHP over multiple winters) and longer-term impacts of a WHP, particularly on health care demand where the evidence is currently weakest.

Further evaluation of the impact of WHP on the demand health care services is required to strengthen its economic case. Our scoping work for the evaluation cited the importance of this evidence to commissioners. Commissioners are interested in whether a WHP reduces patient demand for services, and potentially saves money. Although an aspiration, unfortunately it was not possible for this evaluation to satisfactorily assess WHP's impact on health case services. However, significant lessons have been learnt to inform future evaluation. Most notably:

- Accessing health care data requires considerable time and effort. It is also a process that can be beset by unexpected delays and issues accessing the required data. It requires appropriate resourcing (including financial) for all relevant stakeholders to, for example, scope the data request, set up the necessary agreements, complete training and provide access to the data. This needs to be factored in from the outset with realistic expectations set. As stated in the report although the current evaluation had allowed an extended timeframe for the analysis there were unexpected delays which limited the time available to complete a full analysis. However, the analysis that was possible is presented reflecting a strong desire to make insights available so that ESC could learn and act before another winter.
- Gaining access to health care data for a suitable control sample of patients not in receipt of a WHP is particularly important to assess the impact of a prescription. Health care usage data are affected by a range of factors beyond whether a patient received a WHP. Therefore a rigorous control is need to isolate the impact of a WHP over and above other factors.
- Once access to the data is in place, the reporting timetable needs to allow time - several months - for detailed analysis, given the lag for data to become available and the complexity of the data.

- Analysis plans need to ensure that there is the time and scope to consider outcomes for sub-groups of patients within the overall population as well as more specific outcome measure (such as attendance for particular health conditions, rather than any condition).
- Assessing the impact of a WHP on demand for secondary care services requires trials of the project with a large number of patients which is based on power calculations for the baseline incidents level. Incidence of secondary care services are low so a robust and reliable evaluation will need a large number of WHP patients to detect a statistically significant result compared to a suitable control group.

Work should be undertaken to improve the Value for Money of the WHP project work. This includes exploring refinements to its delivery model so that is it is more cost efficient – delivered at a lower cost - and more effective in producing outcomes. For example whether it is possible to develop an easier and quick process to identify possible patients; whether there is a more effective mechanism to triage patients for their suitability for a WHP; and whether standardised methods, tools or templates can be developed to aid delivery of WHP.

Given significance of energy costs in the overall expenditure for the WHP project it is recommended that Energy Systems Catapult **work with energy suppliers to design, develop and explore whether they can gain access to lower tariffs for WHP patients**. This may seek to gain a favourable tariff in return for the, guaranteed, credit being placed on a patient's energy accounts.

Appendix 1

A1

This appendix provides a summary from the literature review and commissioner consultations that were completed as part of scoping the evaluation.

Literature review

The following bullets summarise the learning to emerge from the review of the literature:

- No equivalent intervention to WHP was found. Consequently, there is no strong evidence on which to base WHP's likely effectiveness, impact and cost benefits.
- The literature can be broadly grouped into the following categories:
  - Recommended indoor temperature levels.
  - The impact of domestic energy and energy efficiency improvements on temperature (and in turn mental and/or physical health).
  - The relationship between low indoor temperature and mental and/or physical health.
  - The relationship between fuel poverty and mental health.
- There is strong statistical evidence on the relationship between indoor temperatures (including cold homes) and health (including both mental and physical health as well as other outcomes such as excess winter deaths). This has led to guidance on recommended healthy indoor temperatures.
- In most cases the impact of energy efficiency measures on indoor temperatures was found to be small or not statistically significant. Explanations for this include the relatively small nature of interventions; beneficiaries taking back the benefits of measures in other ways; improper use of measures; and the speed at which necessary behaviours change too place.
- Overall reviews support the view that there are health benefits to be obtained from improvements in household energy efficiency. Several studies identified statistically significant relationships between energy efficiency interventions/increased indoor temperatures and improved mental health. However fewer studies have considered the relationship/impact with physical health. Generally impacts were found to be small or not statistically significant. The main explanation provided for this finding being the time required for physical health benefits to emerge.
- The economic case for energy efficiency improvements is unlikely to be sufficient based on physical health benefits and changes in demand for health services alone. However, the economic case is likely to be more convincing when health, social, environmental and economic objectives are considered together. Further evidence is needed before full assessment can be made of the potential costs and benefits of interventions.

- The balance of costs and benefits appears to vary appreciably (e.g. in relation to target population, type of intervention etc). There was a general agreement across studies that the most vulnerable (e.g. older people, those in fuel poverty and those with a chronic illness) were statistically more likely to experience more sizable impacts.
- Recent evaluations of Warm Homes Discount and Winter Fuel Allowance provide some evidence on impact of more direct interventions by providing direct subsidies and payments.
- Reviews of the evidence base conclude that the level of scientific rigor is mixed and ultimately not very strong. This led a 2013 systematic review to conclude the evidence base is not strong enough to make the economic cases for energy efficiency measures. There are a few instances of Random Control Trial (RCT) designs being used (most notable New Zealand study on Warmth and energy efficiency improvements). However, before-and-after assessments are most prevalent - with or without a control.

Commissioner and policy consultations

To support the literature review we spoke to 10 commissioners and policy representative to establish their views on methods of evaluation, standards of evidence and key outcomes to inform commissioning decisions. The following points emerges from these discussions:

- Understanding financial cost information and economic returns is important to gain traction with commissioners and policy makers and to make the case for investment.
- However those we spoke to also referenced how 'hearts and mind' arguments (such as patient case studies) are persuasive – often on combination with economic evidence; especially when building a longer term case for investment and seeking to influence those who may be less knowledgeable on economic standards of evidence (e.g. elected representatives).
- More immediate impacts (occurring within 1-2 years) are preferred due to how budgets and political/policy cycles last. Those who we spoke to questioned whether the WHP evaluation would identify statistically significant secondary care health impacts within 1 to 2 years. Impacts are more likely to be identified within this timeframe concerning quality of life and perception outcomes.
- Commissioners and policy makers place greater value on interventions that deliver against multiple objectives and policy domains. For example, in the context of WHP this may include supporting household incomes, reducing social isolation and measures that improve the energy performance of properties.
- The evaluation should ensure commonly used, and understood, outcome metrics are adopted. For example rather than the SF12 measure of wellbeing there was a strong preference for ONS's life satisfaction measures and/or the Warwick-Edinburgh Mental Wellbeing Scale.
- There is some difference of opinion in terms of the importance of scientific standards of evaluation evidence. In general national stakeholders preferred evidence that has higher standards of scientific rigor. Whereas local stakeholders are more accepting of lower standards of evidence – recognising the challenges that are involved in evaluating smaller scale interventions.