Main findings

- Two years after installation, the SE Central Heating Programme (CHP) had no clear impact on respondents’ current health or their use of health services or medication.
- The prevalence of poor environmental conditions – specifically, the presence of condensation, dampness and/or mould (long term exposure to which is associated with poor health – in individual rooms within the home was significantly lower for those who received heating under the CHP than for the comparison group.
- Receipt of central heating under the CHP was associated with a reduced probability of receiving a first diagnosis of heart disease, or of high blood pressure, during the period examined by the evaluation, although this finding must be treated with caution for the reasons given above.
- Heating recipients were more likely than the comparison group to report receiving a first diagnosis of a nasal allergy (such as hayfever) during the evaluation period.
- A further fourteen outcome measures representing specific symptoms and health conditions exhibited no significant associations with the receipt of heating under the Programme.
- The CHP did not show any significant relationship with respondents’ usage of primary or secondary health services.
- Receipt of heating via the Programme was associated with better outcomes on two dimensions of the SF-36 Health Survey questionnaire[1]: physical functioning (i.e. fitness and mobility) and general health. However, the estimated size of the difference between recipients and non-recipients of heating was small in both cases.
- The Programme was not associated with any significant effect on respondents’ experience of long-standing illness or disability.
- Heating recipients were found not to be significantly different from the comparison group in their use of medications, either prescribed or ‘over the counter’.
- There is no evidence to suggest that the CHP had different effects on specific subgroups, e.g. owner occupiers versus tenants or different age groups, among those who received heating.

[1] The SF-36 is a 36 item self-administered questionnaire which measures health-related quality of life in the general population. Eight health profiles are derived from the summarised scores: physical functioning, social functioning, role limitations due to physical problems, role limitations due to emotional problems, mental health, energy/vitality, pain and general health perception. There is a separate measure of health change over the past year.
Key message

Two years after installation, the SE Central Heating Programme had no clear impact on respondents’ current health or their use of health services or medication. While receipt of heating under the programme was associated with a reduced probability of receiving a first diagnosis of heart disease and of high blood pressure, this finding must be treated with caution: it was based on self-reported data, rather than clinical records, and was not accompanied by any reduction in the use of medical services or medication which might be expected as a consequence. The Programme did significantly reduce condensation, dampness and cold in recipients’ homes, long-term exposure to which is associated with poor health.

Background to the Central Heating Programme

The Central Heating Programme was announced on 19 September 2000 (Scottish Executive Press Release SE2497/2000). It was intended to provide free central heating and associated thermal efficiency measures (such as cavity wall-fill and loft installation) to all households in the public rented sector (Local Authority or Housing Association) which lacked central heating, and to households in the private sector in which the head of household (or her/his partner or spouse) was aged 60 or over, and whose home either lacked any form of central heating or contained a central heating system which was broken beyond repair. Receiving heating was expected to reduce problems such as dampness, cold and condensation. These factors are associated with poor health, including problems with lungs and blood pressure.

To assess the effect of the CHP on the health of households which received heating, the Scottish Executive commissioned an evaluation. This was carried out by a team from the University of Edinburgh (led by the Research Unit in Health, Behaviour and Change) and the MRC Social and Public Health Sciences Unit at the University of Glasgow. Data collection for the evaluation was conducted by TNS.

How was the research carried out?

A sample of households receiving heating under the Programme (‘the recipients’) was compared with a group of households not involved in the Programme (‘the comparison group’). Recipient and comparison households were matched on key characteristics so that the two groups were as similar as possible. Both groups were contacted at three different time points. First, an initial interview was conducted in the home, just before heating was installed for the recipients. A short postal questionnaire was sent one year after this. Finally, two years after the first, a final interview was conducted. The same data were collected for recipient and comparison households. The experiences of recipient and comparison households were compared using statistical methods to take account of any other differences between the two groups. This method means that any differences between the groups in terms of changes in health and home environment may reasonably be attributed to the effect of the Central Heating Programme.

How many households took part in the study?

A total of 2,365 respondents provided data at both the initial and final interviews. Of these, 1,281 (54.2%) were heating recipients.

Results

The health of recipients

Overall it was found that two years after installation the Programme had no clear impact on respondents’ current health or their use of health services. Results referring to the respondents current health are listed below. Although poor quality housing may cause poor health, there are many other factors, operating throughout our lives, which contribute to poor health.

Specific symptoms and health conditions, and use of primary and secondary health services: Heating recipients were less likely to report having received a first diagnosis of heart disease and high blood pressure during the two-year period between the initial and final interviews. However, those receiving heating also reported an increased likelihood of being given a first diagnosis of nasal allergy during the same period. Receipt of heating under the programme made no difference to 14 other measures relating to specific symptoms and health conditions.

Receipt of heating under the programme also made no difference to respondents’ use of health services, use of medications or health behaviours, such as smoking and drinking. All these measurements relied on the respondent reporting their condition, rather than clinical records. Taken overall, they offer no clear evidence of a meaningful impact of the Programme on health and health service use after two years (see Discussion).

Health-related quality of life: Recipients reported higher scores on two measures of health-related quality of life (the SF-36 Health Survey questionnaire). The measures were: fitness and mobility; and perception of general state of health. However, although these were statistically significant benefits, the size of the difference between recipients and the comparison group was very small.


**Conditions in the home**

These results are important as, over the long term, they are risk factors for poor health, including cardio-respiratory disease.

*The home environment:* After two years, recipients were less likely to report the presence of mould, condensation and/or dampness in their homes. Recipients were also less likely to avoid using particular rooms in their home due to difficulty in heating them or be unable to use one or more rooms due to problems of dampness or condensation.

*Patterns of heating in the home:* After two years, recipients heated more rooms in their homes, for longer.

*Warmth in the home:* After two years, recipients were more likely to report always being adequately warm in cold weather, and more likely to be ‘very satisfied’ or ‘fairly satisfied’ with their heating, than the comparison house.

**Day-to-day lives of recipients**

The third set of results refers to day-to-day lives of study participants.

*Financial strain:* The SE commissioned a very detailed study of the Programme’s impact on fuel poverty; results are reported elsewhere[2]. However, the present study did monitor inability to ‘manage financially’. The recipient group were less likely to report this kind of financial strain than the comparison group.

*Social contacts:* Recipients were less likely than the comparison group to report having dissuaded friends or relatives from staying overnight or visiting, due to poor housing conditions such as dampness or cold.

**Impacts of the Programme for different kinds of people**

Impacts of the programme were explored to see if they were different for groups defined by housing tenure (contrasting social renters and owner occupiers), house type (contrasting various types of property including detached, semi-detached, tenement and terrace), gender of respondent and age group of respondent. No clear and systematic differences between these groups in terms of the impact of the Programme were identified. This suggests that, where the Programme ‘worked’, it worked equally well for everyone.

**Discussion**

Results showed no evidence for a clear and systematic direct effect on health.

However, overall the results indicate that receipt of heating under the Central Heating Programme had considerable impacts on the home environment, including on conditions such as cold, dampness and mould. Long-term exposure to these adverse conditions is associated with poor health and it is possible that their reduction will bring health benefits to recipients in the longer term.

The finding that the recipient group were subsequently less likely to be diagnosed with heart disease and high blood pressure than the comparison group must be treated with caution. A diagnosis of heart disease would place an individual into a programme of monitoring and care. We would have therefore expected to see higher rates of service use in the comparison group – reflecting their greater incidence of diagnosis. The absence of differences in service use between the recipient and comparison groups suggests that the apparent difference in incidence of diagnosis may not be reliable.

The effects of environmental conditions, such as dampness and cold, on cardio-respiratory health occur over a relatively long time period. While a respondent may feel warmer, and their walls may dry out relatively quickly following installation of heating, changes to their physiology which may delay or even prevent a diagnosis of heart disease or high blood pressure will take longer. The two year follow-up period is unlikely to have been long enough for any clear impact on cardio-respiratory health to be seen. Furthermore, housing conditions are not the only influences on health: wider economic circumstances and behaviours (e.g. diet and exercise) can also exert considerable impact. Health benefits of the Programme may be insignificant if the rest of the individual’s life and behavioural circumstances become or remain unhealthy.

**Conclusions**

Receipt of heating under the Scottish Executive’s Central Heating Programme was associated with reduction of problems with cold, dampness and mould, with higher levels of heating in the home, with feeling warmer in winter, and with greater level of satisfaction with heating. Despite the finding of reduced first diagnosis of high blood pressure or heart disease (which, for the reasons already stated, must be treated with caution) participation in the Programme was not clearly or consistently associated with direct impacts on the cardio-respiratory health of recipients, nor with reductions in NHS service use. It is possible that these ‘direct’ health impacts will become visible over a longer period of time.

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The report, ‘The Scottish Executive Central Heating Programme: Assessing Impacts on Health’, which is summarised in this research findings is a web only document and is available on the publications pages of the Scottish Executive website at http://www.scotland.gov.uk/Publications/Recent

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