Strategies to enhance routine physical activity in care home residents: the REACH research programme including a cluster feasibility RCT

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Scientific summary

The REACH research programme

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Scientific summary

Background

There has been a shift in the demographics of the population in the UK, with a particular expansion of the older age groups. As many health conditions are age-related, there is a concurrent increase in the demand for long-term care. Residents of care homes are among the frailest in the population. Observational research has demonstrated that care home residents are inactive for the majority of their time, despite the known benefits of maintaining (or increasing) levels of physical activity and decreasing sedentary behaviour. Encouraging residents to engage in more physical activity could deliver benefits in terms of physical and psychological health, and quality of life. Although one way to increase physical activity is for physiotherapists to provide exercise classes, because of the limited number of such staff available, this is an unrealistic option for many. An alternative approach is to create a whole-home initiative to enhance routine activity among residents.

Aims and objectives

The aim of the programme was to develop and preliminarily test evidence-based strategies designed to enhance physical activity in the daily life routines of residents of care homes for older people, to improve their physical and psychological well-being, and quality of life.

The objectives were as follows:

- for these strategies to be based on research evidence, shaped by the expressed views of residents, relatives and staff, and tailored to the care home environment
- to undertake preparation for a feasibility study, including clarification of measurements
- to develop strategies and implementation plans to facilitate embedding this complex intervention into routine care in the care home setting through intervention mapping
- to refine this complex intervention by engagement with care home staff and residents through action research
- to assess the feasibility of conducting a definitive large-scale cluster randomised controlled trial and to gather data to inform and improve its design (including approaches to recruitment, outcomes measurement and sample size) through a feasibility trial.

Setting

The feasibility trial was set in care homes in North and West Yorkshire in the UK.

Participants

The participants were elderly residents, carers and staff.

Methods

Five overlapping workstreams were undertaken, mirroring the five objectives.

Workstream 1: a mixed-methods research design in four purposively selected care homes

- Ethnographic work (observations).
- Qualitative interviews with residents, relatives and friends.
- Qualitative interviews with staff.

Using these methods, we sought to undertake a needs assessment and to gain an understanding of the opportunities for and barriers to enhancing physical activity in a care home setting to inform intervention development (workstream 3).

Workstream 2: clarification of measures

A range of proposed outcome measures to assess physical activity and mobility in a population of older care home residents were tested in six care homes (including the four participating in workstream 1).

Workstream 3

Informed by outputs from workstream 1 and previous work, the process of intervention mapping was used to guide the development of an intervention to enhance physical activity. Intervention mapping offers a systematic approach to the development of health interventions that target individual behaviour as well as environmental and organisational changes.

Workstream 4

In workstream 4, we worked with action groups (including residents and staff) in four care homes to refine the proposed mechanisms and methods to promote practical implementation in a range of care home settings.

Workstream 5

A feasibility cluster randomised controlled trial was conducted in 12 residential care homes, with embedded process evaluation and health economic study, to determine the feasibility and acceptability of conducting a future large-scale definitive trial. Objectives related to the feasibility and acceptability of implementing a full-scale randomised controlled trial in the following areas: recruitment and retention of care homes and residents, intervention delivery, completion and reporting of baseline data and outcomes, safety and cost data.

Results

Workstream 1

Ethnographic observations and conversations were conducted over a period of approximately 4 months in the four participating care homes. Fifty-five semistructured qualitative interviews with 22 staff members, 16 residents and 17 relatives were also undertaken.

A rich understanding of life in the care homes was developed. The patterns of residents' lives were influenced by the ethos of care, which shaped opportunities for occupation; activity and movement; the care environment (resident or task focused); use of space and the approach taken to risk; and whether or not care staff perceived interacting with and engaging residents in occupation to be an important part of their role. The meanings residents attributed to the setting and expectations of care home life also influenced the level of their physical activity.

Workstream 2

Forty-nine residents were recruited, all of whom were invited to wear an accelerometer. Twenty-two (73.3%) of the 30 residents who wore a hip accelerometer had valid data ($\geq$ 8 hours on $\geq$ 4 days). Residents wore the accelerometer for a mean of 6 days. Residents spent the majority of their time sedentary (90.5% of accelerometer wear time). The little physical activity they did engage in was predominantly of low intensity (9%), and primarily focused around mealtimes.

This workstream confirmed the validity of our intention to use accelerometers in the later work. It also enabled us to refine our procedures to optimise implementation in the later work. We also reviewed and undertook pilot use of the Assessment of Physical Activity in Frail Older People questionnaire but found it unsuitable for our needs.

We concluded that the Six-item Cognitive Impairment Test, the Barthel Index (assessment of activities of daily living), the Physical Activity and Mobility in Residential Care Scale and the Functional Ambulation Classification (functional walking ability) were appropriate measures for the feasibility trial.

Workstream 3

An Advisory Group of care home managers, care assistants/activity co-ordinators, residents and lay members was formed and met regularly (four external and six internal meetings) to consider the outputs from the intervention mapping process. Informed by the needs assessment in workstream 1, the process involved defining change objectives, and selecting determinants and strategies based on the available theory and evidence regarding behaviour change. Through this work, a provisional intervention, with supporting materials, was developed.

Workstream 4

Action groups, consisting of manager(s), care staff, residents, relatives/friends and a member of the research team, who acted as a facilitator, were established in all four participating homes. Although there were practical difficulties in sustaining the groups and maintaining interest in implementing change, our experiences informed enhancement of our proposed intervention. Indeed, the differences between 'movement' (something that all staff in the home should consider) and 'activity' (which was seen as the domain of the activity co-ordinator) were clarified. We streamlined supporting materials to create an 'ideas bank' and further developed an observational tool to enable care staff to undertake more objective views of activity/inactivity in their care home. A major success was the introduction of an artist who was able to engage both residents and staff in stimulating ideas to enhance activity. Thus, the intervention (MoveMore) was optimised prior to the feasibility trial. We also undertook further exploration of the applicability of outcome measures in this workstream.

The intervention

MoveMore is a whole-home intervention and implementation process involving all care home staff, designed to encourage and support the increase in movement of residents. It involves engagement with a stakeholder group to implement a cyclical process of change through three facilitated workshops (which includes input from a physiotherapist and an artist), an observation tool to enable staff to review current practice, development of plans for action and an 'ideas bank' to provide practical suggestions.

Workstream 5

A feasibility cluster randomised controlled trial was successfully implemented.

Recruitment of care homes

Of 392 care homes screened, 13 (7.6% of eligible care homes) provided consent. Twelve (7.0% of eligible care homes) were randomised. A range of care homes were recruited in terms of size, location, ownership and provision. Randomisation procedures resulted in five care homes being randomised to usual care plus the MoveMore intervention, and seven to usual care.

Recruitment of residents

Of the 300 residents in the 12 care homes screened for participation, 278 (92.7%) were eligible, 159 (57.2% of those eligible; 53.0% of those screened) consented (or agreement was provided by a personal consultee/nominated consultee) and 153 (55.0% of those eligible; 96.2% of those consenting) were registered to take part in the study. Baseline characteristics of the residents differed between arms: a higher proportion of residents in the MoveMore arm had a history of stroke and a lower level

of physical function, which reflected the differences observed between the arms in the screening populations. In addition, those in the intervention arm had greater cognitive impairment and comorbidities. We achieved the required recruitment rates for care homes and residents (green on our criteria for progression to a main trial).

Information on staff

Information on staff demographics was obtained via completion of staff booklets, which were distributed to all staff who had face-to-face contact with residents, with the exception of those acting as a nominated consultee. Overall return rates were low, ranging between 20% and 39%, with a higher proportion of staff in the usual care-arm care homes completing the booklets at each time point.

Intervention delivery

The three interactive workshops were delivered individually to each of the five intervention care homes as planned. At least 50% of homes completed the series of three workshops and at least one observation review and one action plan. However, the workshops took place over a longer time than envisaged. The detailed process evaluation work indicated that two homes were 'full implementers', pursuing change broadly as intended; two were 'partial' implementers; and one was a 'failed' implementer. Overall, this was amber on the progression criteria.

Assessment of outcome measures

Accelerometer wear

The proportion of registered residents agreeing to wear the accelerometer at baseline was high (intervention arm, 96.8%; usual care arm, 93.4%). At 9 months, the proportion wearing the accelerometer in the intervention arm was maintained (93.0%, 64.5% of those registered at baseline), whereas, in the usual care arm, the proportion decreased to 71.4% (54.9% of registered residents at baseline). In summary, at 9 months, 52.2% of the residents available (59/113) provided valid accelerometer data (red on our progression criteria). However, 65.6% (59/90) of residents who agreed to wear an accelerometer provided valid data.

The available data did not allow us to make a reliably informed decision on the most appropriate physical activity end point(s) for future use in a definitive trial, but they did help us to explore the utility of various accelerometer end points, alongside the appropriateness of having a primary outcome based on accelerometer data. However, it is noted that the data available for the accelerometer were similar to the resident-completed outcomes.

Physical activity

At baseline, residents in the intervention arm spent less time engaging in daily physical activity of any intensity (mean 1 hour 7 minutes, 8.5% of accelerometer wear time) than residents in the usual care arm (mean 1 hour 53 minutes, 13.4% of accelerometer wear time).

The mean daily time that residents in the intervention and usual care arms spent engaging in physical activity of any intensity at 9 months was 1 hour 25 minutes (standard deviation 47 minutes) and 2 hours (standard deviation 2 hours 16 minutes), respectively. This equated to accelerometer wear time of 10.9% (standard deviation 5.5%) in the intervention arm and 12.6% (standard deviation 10.8%) in the usual care arm.

Sedentary behaviour

At baseline, the mean daily time residents spent sedentary was 11 hours 38 minutes (standard deviation 1 hour 59 minutes) in the intervention arm and 11 hours 41 minutes (standard deviation 2 hours 39 minutes) in the usual care arm. The proportion of accelerometer wear time spent sedentary was 91.4% (standard deviation 4.7%) in the intervention arm and 86.6% (standard deviation 10.0%) in the usual care arm.

Completeness of follow-up questionnaire data

At least 75% of residents had patient-reported outcomes at 9 months, provided either by a staff informant or by proxy (green on the progression criteria), but self-reported resident outcomes were < 55% (red on the progression criteria). Completion differed between the trial arms: for all questionnaires completed by the researcher with the resident at all time points, completion levels were lower in the usual care arm.

Safety

The numbers of falls, hospitalisations, visits to the accident and emergency department, and deaths were similar between the two groups, indicating no adverse effects of the intervention.

Residents' follow-up

Residents were assessed 3, 6 and 9 months after registration to the trial. A total of 113 (73.9%) registered residents were followed up at 9 months: 69.4% in the intervention arm and 76.9% in the usual care arm. Overall loss to follow-up was 26.1%, just missing our green target of 25%. Residents not completing follow-up were more likely to be male, have dementia, have no history of stroke, have a lower level of physical function and have greater cognitive impairment.

Health economics

Data collection tools were developed and successfully implemented to collect economic data. Of the 153 residents, 126 had complete resource use and EuroQol-5 Dimensions, five-level version questionnaire results at all follow-ups.

Conclusions

This extensive quantitative and qualitative work has comprehensively explored a neglected area of health and social care research. The completion of ethnographic work and the range of settings involved enabled us to produce an in-depth picture of life in care homes that will be helpful for others considering organisational change in this setting. We have produced one of the largest ever accelerometer data sets for residents of care homes, to our knowledge, which provides unique insights into the levels of physical activity and sedentary behaviour in this population. We worked productively with a stakeholder group and through action groups in care homes to develop an intervention to enhance movement among care home residents. Although the content and process of the intervention (MoveMore) was consistent, implementation allowed care home staff sufficient flexibility to tailor implementation to the care home and residents' needs.

By successfully recruiting the target number of care homes and residents, we have demonstrated that it is feasible to undertake a cluster randomised controlled trial in the care home setting. The detailed process evaluation captures the complexities of introducing service change in this environment. Despite the extensive development work, and, although we were successful in collecting data through staff informants, the best methods for assessing relevant outcomes in the population remain a challenge.

Future work

An investigation of randomisation processes to avoid the imbalances in resident characteristics that we observed, optimisation of the intervention and clarification of the primary outcome are all required prior to a definitive trial.

Trial registration

This trial is registered as ISRCTN16076575.

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This report

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