



Aug 08, 2025

Evaluating the feasibility and acceptability of a community-based intervention on nutrition, health, wellbeing and social engagement in older adults – the LEMONADE study protocol.

DOI

<https://dx.doi.org/10.17504/protocols.io.x54v95d8pl3e/v1>

Sophia D. Amenyah¹, Alison Benzimra², Lee-Ann Fenge³, Jane L. Murphy³, Camila Devis-Rozental⁴

¹Faculty of Health and Life Sciences, Northumbria University, Northumberland Building, College Street, Newcastle upon Tyne, NE1 8SG, UK;

²United St Saviour's Charity, 16 Crucifix Ln, London SE1 3JW, UK;

³Faculty of Health and Social Sciences, Bournemouth Gateway Building, Bournemouth University St Pauls Lane, BH8 8GP, UK;

⁴Office of the Vice Chancellor, Poole House, Bournemouth University, Talbot Campus, Fern Barrow, Poole, BH12 5BB, UK



Sophia SDA Amenyah

Northumbria University

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.x54v95d8pl3e/v1>



Protocol Citation: Sophia D. Amenyah, Alison Benzmra, Lee-Ann Fenge, Jane L. Murphy, Camila Devis-Rozental 2025. Evaluating the feasibility and acceptability of a community-based intervention on nutrition, health, wellbeing and social engagement in older adults – the LEMONADE study protocol.. **protocols.io**
<https://dx.doi.org/10.17504/protocols.io.x54v95d8pl3e/v1>

License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this protocol and it's working

Created: August 05, 2025

Last Modified: August 08, 2025

Protocol Integer ID: 224094

Keywords: Older adults, community, nutrition, health, wellbeing, social connectedness, inclusive community food model for health wellbeing, social engagement with older adult, inclusive community food model, social engagement in older adult, intervention with older adult, lemonade study protocol, health in older adult, intervention on nutrition, wellbeing of older adult, acceptability of intervention activity, participatory research, physical activity scale for the elderly, intervention activity, social engagement, lemonade, based participatory research, exclusion of older adult, based intervention, intervention, acceptability of these intervention, older adult, experiences of the intervention, community organisation, enrolment in the intervention, communities questionnaire, elderly, health wellbeing, insights into participant, effects of the intervention, dietary intake, poor health with adverse effect, poor health, activities questionnaire, food, produced community

Funders Acknowledgements:

Vivensa Foundation

Grant ID: SLEF2110\4

Abstract

Introduction: Older adults living in socially deprived circumstances experience poor health with adverse effects on their quality of life. Community-based interventions focused on food have been proposed to address some of these challenges. Despite the beneficial effects, a limited number of studies have examined the feasibility and acceptability of these interventions, and there is a paucity of data on objective, measurable outcomes. This study aims to determine the feasibility and acceptability of a co-produced community-based intervention on nutrition, health, wellbeing and social engagement with older adults.

Methods and analysis: The LEMONADE (An inclusive community food model for health wellbeing and social connectedness of older people) will use community-based participatory research and mixed-methods to co-produce and examine the feasibility and acceptability of a community-based intervention to improve the health and wellbeing of older adults aged ≥ 60 years. A pre-post study design will be used, and the primary outcome is the feasibility and acceptability of implementing the intervention. This will be assessed using participant recruitment and retention rates, the number of sessions delivered and completed by participants and the acceptability of intervention activities and evaluation methods. Secondary outcomes will include health-related quality of life measured using the EuroQol EQ-5D-5L, dietary intake using Myfood24, Physical Activity Scale for the Elderly (PASE) for physical activity, Social Engagement and Activities Questionnaire (SEAQ) for social engagement and the Age-Friendly Cities and Communities Questionnaire (AFCCQ) to measure ageing friendliness of the community. Objective measures will include blood pressure and body composition. Outcomes will be measured at baseline and at 12 weeks.

Qualitative data collected using Photovoice will provide insights into participants' experiences of the intervention. Participants' characteristics and measures of feasibility will be analysed using descriptive statistics. The effects of the intervention will be analysed using Parametric or non-parametric equivalent for continuous variables and chi-square statistics for categorical variables. Qualitative data will be analysed using both deductive and inductive thematic analysis.

Ethics and dissemination: Ethical approval has been obtained in line with the Bournemouth University Research Ethics Committee Code of Practice (Ethics ID: 51979). Informed consent will be obtained from participants prior to enrolment in the intervention. Study findings will be shared with a wide range of stakeholders, including participants, community organisations, policymakers and housing organisations through exhibitions, practice events and conferences.

Trial registration number: ISRCTN10147817 (<https://doi.org/10.1186/ISRCTN10147817>).

Strengths and limitations of this study

- This is a novel study exploring a co-produced approach to co-creation and implementing a community-based intervention with older adults.
- It addresses issues with social isolation, poor quality of life and health in older adults living in an inner-city area.
- A mixed-methods approach will be used to document the impact and co-produce a practical toolkit for future implementation.

- The exclusion of older adults who lack capacity to consent or to participate limit the generalisability of this study.

Attachments



Amenyah et al. 2025. B...

55KB

Guidelines

Table 1. Overview of the core elements and intervention activities

Education & health

- A healthier you in the new year
- Strength and balance and nutrition
- Relaxation techniques
- Protection against scamming
- Brain & heart health session & health check
- Diabetes/foot health
- Food labels & shopping for one
- Self-care & spa day

Cooking & meal sharing

- Stews from around the world
- Herbs around the world & their health benefits
- Easter lunch
- Fish dishes from around the world
- Afternoon tea
- Curries from around the world
- Healthy smoothies and juices
- Cheese, nibbles & music from the 70s & 60s
- Spices from around the world cooking session
- Favourite desserts from around the world
- Lunch at bus garage
- Winter immunity, juices and hot drinks
- Jollof rice cooking session

Gardening, growing and wellbeing

- Making food collage
- Easter decorations
- Chelsea Physic Garden
- Winter gardening - terrarium, Christmas scents and candles
- Botanical experience

Social engagement activities

- Trip to the cinema
- Trip to Borough market
- Visit to local biscuit factory
- Trip to the seaside
- Quiz & Board games
- Trip to the theatre

- Boat trip

Background

1 Life expectancy has significantly improved globally and in the UK, but with considerable inequality in health expectancy and for the majority of the population, increased life expectancy does not equate with healthy life years (1). Variations in deprivation, sex and ethnicity contribute to inequalities in health expectancy (1, 2) and older adults with limited economic and social resources are more likely to experience increased social isolation and loneliness with detrimental effects on their health and quality of life (3-6). Research demonstrates strong associations between socioeconomic inequalities, mortality and multimorbidity (7, 8). For example, based on the Office of National Statistics

(ONS) data (9), the number of excess deaths associated with inequality compared to the least deprived decile increased over time (9). In a recent population-based study of 17,438 adults aged 50+ from the English Longitudinal Study of Ageing (ELSA), living in a deprived area or having low wealth was

associated with frailty in middle-aged and older adults. This relationship was independent of the effects of individual demographic characteristics and health behaviours (10). Additionally, socioeconomic disadvantage has been associated with increased risks of developing multimorbidity in a longitudinal analysis of the Twenty-07 cohort (11). This emphasises the need to tackle the social determinants of health, including holistic health and social care, to address the rising burden of multimorbidity in disadvantaged populations.

Inner-cities and urban areas present a unique challenge for older adults in terms of social isolation and community living (12). For older adults living in sheltered or social housing settings in inner-city areas, the feelings of loneliness and loss of purpose may be further exacerbated (12). There is limited evidence on the impact of interventions that facilitate social engagement and network building in such areas. Relationships and ongoing active roles within the community are integral to self-worth, identity and provide security and comfort to older adults (13, 14). Therefore, creating long-term partnerships with the community can create meaningful engagement opportunities and help older people expand their social networks. As highlighted in recent policy publications by the Association of Public Health Directors (15), a whole system approach with a renewed focus on prevention across the life course has been suggested for supporting older adults to remain independent, healthy and to delay or prevent the onset of long-term conditions. The World Health Organisation (WHO) action plan for healthy ageing 'United Nations Decade of Healthy Ageing' (2021-2030) (16), recommends innovative and inclusive research that engages with older people, connecting stakeholders and building capacity are critical to achieving healthy ageing. This highlights the need for novel approaches that remove barriers, address inequities associated with ageing,

empower older people to continue to be productive, participate, engage and be an integral part of communities leading to significant impacts on their health and wellbeing. Community-based interventions including communal gardening, social activities, cooking and meal sharing, have been proposed as pathways to address some of these challenges. They offer

solutions for reducing loneliness, improve social connectedness and enhance engagement of older people and their communities, with the additional benefit of supporting healthy eating, leading to positive effects on health (17-20).

Despite the beneficial effects, a limited number of studies have examined the feasibility and acceptability of these interventions and there is a paucity of data on objective measurable outcomes to show beneficial effects and impacts on older people's health, wellbeing and social connectedness (21).

Furthermore, there is a lack of co-produced approaches to the implementation of these interventions, and very few have embedded the perspectives of older adults in the design or implementation. This underscores the need for interventions that are inclusive of all older adults, tailored to their needs to generate new evidence on interventions that suit their needs and aspirations for positive active ageing, shaping policy and practice. This study aims to co-produce and evaluate the feasibility and acceptability of a community-based intervention to improve nutrition, health, wellbeing and social engagement in older adults living in an inner-city area.

METHODS AND ANALYSIS

- 2 The LEMONADE (An incLusive coMmunity fOod model for health wellbeiNg and sociAl connectedness of olDer pEople) project (<https://www.bournemouth.ac.uk/research/projects/lemonade>) is an intervention co-created with older adults in inner-city London to improve health, wellbeing, and social connectedness through the implementation of socially-inclusive activities around food. The study is designed as interdisciplinary and mixed-method research using community-engaged research (CER) methods, specifically, participatory action research (PAR) (22, 23) and community-based participatory research (CBPR) methods (24). CER methods will enable fully collaborative partnerships with participants and the community, leading to higher participation rates whilst integrating research and practice as effective strategies for community engagement (25, 26). Based on the PAR cycle, proposed intervention and data collection methods will be co-developed with participants and adapted appropriately to suit the research context. The study design will incorporate guidance as outlined in the Medical Research Council (MRC) framework for developing and evaluating complex interventions (11) to facilitate genuine co-production with other stakeholders to design and conduct the research with diverse perspectives and appropriate methods.

Conceptual model and theory of change

A conceptual framework and theory of change model (**Figure 1**) co-produced with project advisory groups illustrates the underlying mechanisms, assumptions, outcomes and impact of the community-based intervention. Inputs and resources that will enable effective co-design and implementation include adequate funding, local knowledge and networks, volunteers, expertise in community development and engagement, transportation, trained staff, appropriate community space/facility and equipment or consumables. Mechanisms that would lead to change include building trust with older adults, clear communication using channels suitable to the needs of older adults, supportive accountability between participants and considerations for accessibility and functional capacity. A community focused approach, embedded researcher within the community, and establishing strong relationships with participants and community members will facilitate the identified change mechanisms.

Setting

The research will be set within a community facility and kitchen space located in an ultramodern, independent sheltered housing Almshouse, Appleby Blue Almshouse, in inner-city London. Both residents of the Almshouse and community members will be invited to participate.

Participants

Older adults will be recruited from the community using word of mouth, flyers, online posts, project website, social media, posters and through service providers for older adults. Participants will be eligible to take part if they meet the inclusion criteria. Inclusion criteria will be adults 60 years and older living in the catchment area of the community. Consistent with NIHR INCLUDE and MRC guidelines (27, 28) on inclusion of underserved communities in research, there will be no specific exclusion criteria applied and individuals who have capacity to consent and capacity to participate in activities will be allowed to do so.

The intervention

Intervention activities will focus on social activities, communal food growing and gardening activities, food preparation and cooking activities, meal sharing, enjoying and choosing a healthy diet, food-related craft activities and storytelling around food. Specific activities to be implemented within the model will be co-created with participants, tailored to suit the needs and functional capacity of the older adults and the community to ensure high participation rates, ownership and sustainability. Activities will be diverse, reflect differences in ethnicity, and culture, ensuring a range that will be of interest to people from different backgrounds. Activities, specifically the communal cooking and eating elements will be culturally-tailored to incorporate foods from diverse cultures to ensure a sense of belonging. Activities will consist of four interconnected elements with food as the central theme. The elements will include education around health behaviours, cooking and meal sharing, gardening,

growing & wellbeing and social activities. **Table 1** outlines the key intervention elements and details of activities under each element. Activities will be delivered by trained professionals and experienced volunteers to ensure they meet the needs of participants.

Data collection

Consistent with CER methodology, a mixed-methods approach will enable the measurements of the primary and secondary outcomes and will provide unique insights into the contexts and experiences of participants. This will include collecting both qualitative and quantitative data. The quantitative assessments will enable objective measurements of outcomes resulting from the intervention and qualitative assessments will provide additional insights into feasibility, acceptability, and how participants overall experience the project. Key learning that facilitated success of the project will be documented.

Quantitative data

Using a one-group pre-post study design, quantitative data will be collected before and after the intervention to examine effects on health, wellbeing and social engagement. This will include validated questionnaires and objective measures of health outcomes including blood pressure, weight, body mass index (BMI) and diet quality. Participants will be followed up over time and data will be collected at two time points T0 (at baseline) and T1 (at 12 weeks), to map participants' journey. At baseline (T0), the intervention will be explained to the potential participant, and consent will be obtained. This will be followed by administration of baseline questionnaires and measurement of baseline health metrics and dietary intake. Questionnaires will be piloted to ensure comprehension, clarity of questions and coherence with appropriate modifications made prior to data collection. A standard operating procedure for data collection will be used to ensure accuracy and adherence to international standards for assessing body composition, anthropometry and blood pressure.

Sampling strategy and sample size

Purposive sampling will be used to recruit participants for the research. As a feasibility study, formal sample size calculation may not be appropriate however, based on published literature (29), the median sample size per arm for feasibility studies with dichotomous endpoints was 36 (range 10 to 300). This will be consistent with other feasibility studies conducted in older adults (30).

Compliance, loss to follow up

To maximise participation, activities will be co-designed with participants to suit their needs and time pressures. Withdrawals and reasons for exiting the research will be documented.

Demographic data

Data on demographic characteristics including age, sex, level of education, income, ethnicity and marital status, will be collected using questionnaires.

Primary outcomes

The primary outcomes of the study will include the following:

Recruitment, participation and retention rates: Data will be collected on attendance and participation, rates of recruitment at baseline and retention at final follow-up.

Acceptability (e.g., content and delivery) and appropriateness of intervention activities: This data will be collected as part of Photovoice interviews, focus group discussions and qualitative feedback from participants.

Acceptability and engagement with evaluation measures and procedures: This data will be collected as part of Photovoice interviews, focus group discussions and qualitative feedback from participants.

Resource and cost requirements to co-produce and deliver intervention: A post-activity evaluation form will be used to collect data on resource requirements to deliver each session including number of staff, cost of consumables, resource requirements and participants' feedback on the session.

Secondary outcomes

Secondary outcomes focused on dietary intake, health, quality of life and social engagement will include the following:

Dietary intake and diet quality: Data on dietary intake will be collected using myfood24 an innovative online dietary assessment tool (31, 32). This is a web-based platform that provides a comprehensive food diary and offers distinct advantages compared to traditional paper-based methods. It consists of a unique food composition database and includes approximately 62,000 products including specific items more commonly consumed by minority ethnic groups, branded items from supermarkets, coffee shops, restaurant chains and fast-food outlets. It provides a vast database of pre-loaded food items (31, 32) and users can search for specific foods, select portion sizes, and add custom recipes. Myfood24 has been validated against a series of independent nutrient biomarkers, has shown to be effective, cost-saving (33) and validated for use in older adults (34). Based on the logged food entries, the platform automatically calculates the macro and micronutrient composition of the user's diet.

Health-related quality of life: This will be assessed using the five-level EuroQol EQ-5D-5L questionnaire (35). The EQ-5D-5L consists of a short descriptive system questionnaire and a visual analogue scale (EQ VAS) and provides a simple descriptive profile of a respondent's health state (35). The descriptive system comprises five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression.

Each dimension has 5 levels: no problems, slight problems, moderate problems, severe problems and extreme problems. The EQ VAS records the participant's self-rated health on a vertical visual analogue scale where the endpoints are labelled 'The best health you can imagine' and 'The worst health you can imagine'. The VAS can be used as a quantitative measure of health outcome that reflects the patient's own judgement. The instrument is one of the most widely used globally for measuring health status and has been proven to be valid, reliable, sensitive (36, 37). It has been shown to be suitable for use in older adults (38, 39) with high acceptability owing to ease-of-use and items in the EQ-5D-5L corresponding to the reality of their daily life.

Physical activity: Physical activity will be measured using The Physical Activity Scale for the Elderly (PASE). The PASE is an easily administered and scored instrument that measures the level of physical activity in older adults (40). This questionnaire comprises of self-reported occupational, household and leisure items over a one-week period and can be administered by telephone, mail or in-person. It has been validated as a measure of physical activity suitable for use in assessing physical activity, health, and physical function in older adults (40-42).

Social engagement: Social engagement will be measured using the Social Engagement and Activities Questionnaire (SEAQ) which is a 10-item measure that covers a range of social-group activities, interpersonal interaction activities with family and friends, and solitary activities while taking account of physical and functional health limitations (43). The 10 items, with follow-up open-ended questions are intended to identify the type of activities that older adults engage in.

Health and wellbeing: Self-reported health status will be assessed using 5-item Likert scale consisting of questions asking participants to rate their general health, physical health over the past 30 days and health compared to other people of the same age.

Age-friendliness of the community: This will be assessed using the Age-Friendly Cities and Communities Questionnaire (AFCCQ) validated, psychometrically sound comprehensive 23-item questionnaire (44). This questionnaire is appropriate for measuring older adults' experiences regarding the eight domains of the WHO Age-Friendly Cities model, and an additional financial domain. The AFCCQ allows practitioners and researchers to capture the age-friendliness of a city or community in a numerical fashion and enables monitoring of community age-friendliness and the potential impact of policies or social programmes.

Body composition and blood pressure: Health measurements, including body composition and blood pressure, will be measured. Body composition measures (weight, body fat percentage, BMI, visceral fat, skeletal muscle and resting metabolic rate) will be measured using the TANITA BC-401 (TANITA Europe) body composition monitor, a clinically validated device using Bio-electric Impedance Analysis (BIA)

Technology to assess body composition (45–48). Body composition will be measured according to standard operating procedure with minimal clothing and without shoes. Height will be measured using a stadiometer (Model number: Seca 213, Seca UK) according to standard procedure for measuring height to the nearest 0.1 cm.

Qualitative data

Qualitative data will be obtained from participants using Photovoice. Photovoice is a community-based participatory research (CBPR) technique which enables participants to identify, represent, and enhance their community through photographs and narratives (49). It provides an alternative to traditional qualitative methods and is suited for use with populations who have been disenfranchised by traditional research methods (50–52). As a methodology, it has been used extensively in research to explore wellbeing and enabled participants to identify activities and places that enhanced their wellbeing (53). Photovoice has been used to study a wide range of topics in older adults, ranging from health issues and the impact of the environment on health and wellbeing (53, 54). Using photovoice is empowering, facilitates interaction, reflection and connection with participants and enables researchers to capture lived experiences and perceptions of older adults (55). The method has been shown to act as a catalyst, bringing impacts ranging from an increased sense of accomplishment to a deeper understanding of the reality of participants' daily lives (50). Using participatory visual methods will enable the participants to be creators of their own stories. Participants will be able to exercise control

over the presentation of themselves and using visual images such as photographs can empower participants to recognise their autonomy (50, 51). Within the LEMONADE project, a subset of 15 participants purposively sampled will be encouraged to take up to 7 images documenting their experiences of the project using a pre-specified brief. These photos will be further discussed in a semi-structured interview to obtain insights into participants' experience of the intervention and the impact on their health, wellbeing and social engagement. All interviews will be recorded on a digital Dictaphone for the purpose of transcription.

Data analysis

Statistical analysis of quantitative data will be conducted using Statistical Package for Social Sciences (SPSS) IBM statistics (version 29.0.2, SPSS UK Ltd Chertsey, UK). The normality of continuous variables will be checked using QQ-plots and the Shapiro-Wilk test. All tests will be carried out at the 95% confidence interval and in all analyses with a threshold of $p < 0.05$ considered statistically significant. Chi-square tests for independence will be used for comparing categorical variables such as sex, ethnicity and marital status. Means and standard deviations will be computed for continuous variables including age, blood pressure, BMI and other body composition measures. Paired t-tests and

repeated measures analysis will be used to examine the effect of the intervention on secondary outcomes including physical activity, social activity, health-related quality

of life, blood pressure and body composition of participants over time. Correlations and regressions or non-parametric equivalents, as appropriate, will be used to examine the relationships between continuous variables. The analysis will be conducted using intention-to-treat principles and for completers only. Participants' baseline characteristics will be presented descriptively in tables using appropriate summary statistics, with categorical variables reported as frequencies and percentages and continuous variables using means, medians, standard deviation (SD) and ranges.

Qualitative data, including photos and transcripts of semi-quantitative interviews from Photovoice study, will be analysed using NVivo Pro 12.5 (QSR International, 2020), which permits the coding of photos as well as text. Interviews will be audio recorded with the participants' consent and transcribed. Thematic analysis (56, 57) analyses using both deductive and inductive approaches (58,59) will be conducted to test initial theories while allowing for the emergence of new themes, and will include stages of familiarisation, coding, indexing and charting, mapping and interpretation. The deductive analysis will enable to test whether data are consistent with prior assumptions on intervention outcomes while the inductive approach will allow research findings to emerge from the frequent, dominant, or significant themes inherent in the raw data.

PATIENT AND PUBLIC INVOLVEMENT STATEMENT

- 3 Involvement and engagement of stakeholders within the community are integral to the co-production community-based interventions. This study has embedded patient and public involvement in key aspects of the research to ensure a central role of participants and public contributors. By nature of design, the study will be embedded within the community to facilitate the participation of as many different groups as possible across ethnicity, age and gender. We will also apply minimal inclusion and exclusion criteria, reflecting the real-world scenario and all older adults who have the capacity to consent will be allowed to participate in the research.

Project advisory groups: The project's Community Engagement Group (CEG) and Food Research Advisory Group (FRAG) will include older people and members of the community from diverse backgrounds. This will ensure that the project is inclusive, a true reflection of the community of Bermondsey and it will also facilitate ownership of the project. The knowledge and network of members of the CEG and FRAG will inform the co-creation of the intervention elements, implementation and dissemination.

EDI training for the research team: The project team will receive training on equitable ways of working with older adults from diverse backgrounds and underserved communities, inclusive language, unconscious bias and intersectionality. This will ensure that the team are well equipped with knowledge and skills to embed EDI within their roles in the project.

Promotional and recruitment materials: All promotional and recruitment materials will be designed to be inclusive, in accessible formats and representative of the diverse backgrounds of our target participants and in accessible formats to ensure that we attract participants from diverse backgrounds into the project.

Recruitment for the study using word of mouth, community champions and gatekeepers and the snowballing approach will ensure access to a wider pool of participants from diverse backgrounds.

Public engagement events and photo exhibition: Two end-of-project public engagement activities co-produced with and for older adults, key stakeholders and the wider community will showcase outputs including digital stories, a recipe book, photobooks, exhibitions and presentations from participants to share their unique experiences of the project.

DISCUSSION

4 This study will provide new knowledge on the feasibility and acceptability of a co-produced community-based intervention with food as a focus to improve nutrition, health, wellbeing and social connectedness of older people living in an inner-city area. The study will use a combination of CBPR methods, collecting both qualitative and quantitative data to determine the feasibility and acceptability of the intervention. While there have been few studies (60) reporting benefits of community-based interventions including lunch and social clubs, meals on wheels on the health of older adults, evidence of feasibility and effectiveness has been inconclusive (61). There is still a lack of data on objective measures of health outcomes and a range of barriers and facilitators that require consideration in future research. Therefore, the findings from this research will provide novel data on feasibility as well as the effects of the intervention on objective and subjective health outcomes in older adults.

The findings and new learning will provide an example of best practice and a template for co-producing and implementing inclusive community-based food initiatives that improve nutrition, health, wellbeing and quality of life of older adults, particularly those living in socially and economically deprived circumstances. While the research is set within an older people's social housing facility, we anticipate that the findings around feasibility and acceptability will be scalable and transferable to other urban settings with limited resources and infrastructure. New learning on scaling up and implementation will be informed through identifying and elucidating the contexts of the research, interactions between different elements of the intervention, intervention resources, participants' responses to the intervention and how this leads to outcomes.

Strengths of this protocol include the use of multidisciplinary, community-engaged and mixed-methods to co-produce and examine the feasibility and acceptability of the intervention tailored to the needs of older adults. The inclusion of both objective and subjective methods will ensure robust data demonstrating the effects of the intervention. The pre-post evaluation method chosen will also minimise the effect of

interindividual variation on outcomes. In conclusion, this research is very timely and responds to several national and global initiatives including the WHO global strategy on ageing, recommendations from the UK Older People's Housing Taskforce and the UK Chief Medical Officer's report 2023 which all highlight the importance and benefits of co-produced interventions set within the community on older adults' health, particularly around fostering a sense of community and reducing loneliness. The findings will highlight the need for support within the community with a focus on prevention and will inform future research to improve quality of life and independence in older age.

Acknowledgements

- 5 We thank all our participants, Community Engagement Group (CEG) and Food Research Advisory Group (FRAG) and co-researchers for their contributions towards co-producing the research.

REFERENCES

- 6 1. Jagger C. Future of an ageing population: evidence review. 2015. Government Office of Science. Available at: www.gov.uk/go-science
- 7 2. Centre for Ageing Better (2020) The State of Ageing 2020. Available at: <https://www.ageing-better.org.uk/sites/default/files/2020-11/The-State-of-Ageing-2020.pdf>
- 8 3. Holt-Lunstad J. The Major Health Implications of Social Connection. *Current Directions in Psychological Science*. 2021;30(3):251-9.
- 9 4. Holt-Lunstad J, Smith TB, Layton JB. Social relationships and mortality risk: a meta-analytic review. *PLoS Med*. 2010;7(7):e1000316.
- 10 5. Perissinotto CM, Stijacic Cenzer I, Covinsky KE. Loneliness in older persons: a predictor of functional decline and death. *Arch Intern Med*. 2012;172(14):1078-83.
- 11 6. Shankar A, Hamer M, McMunn A, Steptoe A. Social isolation and loneliness: relationships with cognitive function during 4 years of follow-up in the English Longitudinal Study of Ageing. *Psychosom Med*. 2013;75(2):161-70.
- 12 7. North TL, Harrison S, Bishop DC, Wootton RE, Carter AR, Richardson TG, et al. Educational inequality in multimorbidity: causality and causal pathways. A mendelian randomisation study in UK Biobank. *BMC Public Health*. 2023;23(1):1644.
- 13 8. Mishra V, Seyedzenouzi G, Almohtadi A, Chowdhury T, Khashkhusha A, Axiaq A, et al. Health Inequalities During COVID-19 and Their Effects on Morbidity and Mortality. *J*

- Healthc Leadersh. 2021;13:19-26.
- 14 9. Goldblatt P. Health inequalities life cut short report. 2024.
- 15 10. Maharani A, Sinclair DR, Chandola T, Bower P, Clegg A, Hanratty B, et al. Household wealth, neighbourhood deprivation and frailty amongst middle-aged and older adults in England: a longitudinal analysis over 15 years (2002-2017). *Age Ageing*. 2023;52(3).
- 16 11. Katikireddi SV, Skivington K, Leyland AH, Hunt K, Mercer SW. The contribution of risk factors to socioeconomic inequalities in multimorbidity across the lifecourse: a longitudinal analysis of the Twenty-07 cohort. *BMC Med*. 2017;15(1):152.
- 17 12. Van Hoof J, Kazak JK, Perek-Bialas JM, Peek STM. The Challenges of Urban Ageing: Making Cities Age-Friendly in Europe. *Int J Environ Res Public Health*. 2018;15(11).
- 18 13. Hatcher D, Chang E, Schmied V, Garrido S. Exploring the Perspectives of Older People on the Concept of Home. *J Aging Res*. 2019;2019:2679680.
- 19 14. Engel L, Chudyk AM, Ashe MC, McKay HA, Whitehurst DGT, Bryan S. Older adults' quality of life - Exploring the role of the built environment and social cohesion in community-dwelling seniors on low income. *Soc Sci Med*. 2016;164:1-11.
- 20 15. The Association of Directors of Public Health. Healthy Ageing Policy Position Statement. 2023. Available at: www.adph.org.uk
- 21 16. World Health organisation (2020) 'Decade of healthy ageing: plan of action'. Available at: <https://www.who.int/publications/m/item/decade-of-healthy-ageing-plan-of-action>
- 22 17. Crocker TF, Ensor J, Lam N, Jordao M, Bajpai R, Bond M, et al. Community based complex interventions to sustain independence in older people: systematic review and network meta-analysis. *BMJ*. 2024;384:077764.
- 23 18. Scott TL, Masser BM, Pachana NA. Positive aging benefits of home and community gardening activities: Older adults report enhanced self-esteem, productive endeavours, social engagement and exercise. *SAGE Open Med*. 2020;8: 113.
- 24 19. Birtalan IL, Bartha A, Neulinger Á, Bárdos G, Oláh A, Rácz J, Rigó A. Community Supported Agriculture as a Driver of Food-Related Well-Being. *Sustainability*. 2020;12(11).
- 25 20. Ohmer ML, Meadowcroft P, Freed K, Lewis E. Community Gardening and Community Development: Individual, Social and Community Benefits of a Community Conservation Program. *Journal of Community Practice*. 2009;17(4):377-99.

- 26 21. Sixsmith J, Makita M, Menezes D, Cranwell M, Chau I, Smith M, et al. Enhancing Community Participation through Age-Friendly Ecosystems: A Rapid Realist Review. *Geriatrics (Basel)*. 2023;8(3).
- 27 22. Flora Cornish NB, Ulises Moreno-Tabarez, Jenna Delgado, Mohi Rua, Ama de-Graft Aikins, and Darrin Hodgetts. Participatory action research. *Nat Rev Methods Primers*. 2023;3(34).
- 28 23. Vaughn LM, Jacquez F. Participatory Research Methods – Choice Points in the Research Process. *Journal of Participatory Research Methods*. 2020;1(1).
- 29 24. Goodman MS, Sanders Thompson VL, Johnson CA, Gennarelli R, Drake BF, Bajwa P, et al. Evaluating Community Engagement in Research: Quantitative Measure Development. *J Community Psychol*. 2017;45(1):17-32.
- 30 25. Collins SE, Clifasefi SL, Stanton J, The Leap Advisory B, Straits KJE, Gil-Kashiwabara E, et al. Community-based participatory research (CBPR): Towards equitable involvement of community in psychology research. *Am Psychol*. 2018;73(7):884-98.
- 31 26. Wallerstein NB, Duran B. Using community-based participatory research to address health disparities. *Health Promot Pract*. 2006;7(3):312-23.
- 32 27. Witham MD, Anderson E, Carroll C, Dark PM, Down K, Hall AS, et al. Developing a roadmap to improve trial delivery for under-served groups: results from a UK multi-stakeholder process. *Trials*. 2020;21(1):694.
- 33 28. Skivington K, Matthews L, Simpson SA, Craig P, Baird J, Blazeby JM, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ*. 2021;374:2061.
- 34 29. Billingham, S.A., Whitehead, A.L. & Julious, S.A. An audit of sample sizes for pilot and feasibility trials being undertaken in the United Kingdom registered in the United Kingdom Clinical Research Network database. *BMC Medical Research Methodology*. 2013;13(104):1-6.
- 35 30. Lim SER, Meredith S, Agnew S, Clift E, Ibrahim K, Roberts H. Evaluating the feasibility and acceptability of virtual group exercise for older adults delivered by trained volunteers: the ImPACT study protocol. *BMJ Open*. 2022;12(2):052631.
- 36 31. Carter MC, Albar SA, Morris MA, Mulla UZ, Hancock N, Evans CE, et al. Development of a UK Online 24-h Dietary Assessment Tool: myfood24. *Nutrients*. 2015;7(6):4016-32.
- 37 32. Carter MC, Hancock N, Albar SA, Brown H, Greenwood DC, Hardie LJ, et al. Development of a New Branded UK Food Composition Database for an Online Dietary Assessment Tool. *Nutrients*. 2016;8(8).

- 38 33. Wark PA, Hardie LJ, Frost GS, Alwan NA, Carter M, Elliott P, et al. Validity of an online 24-h recall tool (myfood24) for dietary assessment in population studies: comparison with biomarkers and standard interviews. *BMC Med.* 2018;16(1):136.
- 39 34. Ward HA, McLellan H, Udeh-Momoh C, Giannakopoulou P, Robb C, Wark PA, Middleton L. Use of Online Dietary Recalls among Older UK Adults: A Feasibility Study of an Online Dietary Assessment Tool. *Nutrients.* 2019;11(7).
- 40 35. Herdman M, Gudex C, Lloyd A, Janssen M, Kind P, Parkin D, et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res.* 2011;20(10):1727-36.
- 41 36. Feng YS, Kohlmann T, Janssen MF, Buchholz I. Psychometric properties of the EQ-5D-5L: a systematic review of the literature. *Qual Life Res.* 2021;30(3):647-73.
- 42 37. Janssen MF, Pickard AS, Golicki D, Gudex C, Niewada M, Scalone L, et al. Measurement properties of the EQ-5D-5L compared to the EQ-5D-3L across eight patient groups: a multi-country study. *Qual Life Res.* 2013;22(7):1717-27.
- 43 38. Marten O, Brand L, Greiner W. Feasibility of the EQ-5D in the elderly population: a systematic review of the literature. *Qual Life Res.* 2022;31(6):1621-37.
- 44 39. van Oppen JD, Conroy SP, Coats TJ, Mackintosh NJ, Valderas JM. Measuring health-related quality of life of older people with frailty receiving acute care: feasibility and psychometric performance of the EuroQol EQ-5D. *BMC Emerg Med.* 2023;23(1):137.
- 45 40. Washburn RA, Smith KW, Jette AM, Janney CA. The physical activity scale for the elderly (PASE): Development and evaluation. *Journal of Clinical Epidemiology.* 1993;46(2):153-62.
- 46 41. Dinger MKO, F;Taylor, E L;Vesely, S K;Able, J. Stability and convergent valid of the Physical Activity Scale for the Elderly (PASE). *Journal of Sports Medicine and Physical Fitness.* 2004;44(2):186-92.
- 47 42. Loland N. Reliability of the physical activity scale for the elderly (PASE). *European Journal of Sport Science.* 2002;2(5):1-12.
- 48 43. Marti CN, Choi NG. Measuring Social Engagement among Low-Income, Depressed Homebound Older Adults: Validation of the Social Engagement and Activities Questionnaire. *Clin Gerontol.* 2022;45(3):548-61.
- 49 44. Dikken J, van den Hoven RFM, van Staaldin WH, Hulsebosch-Janssen LMT, van Hoof J. How Older People Experience the Age-Friendliness of Their City: Development of the Age-Friendly Cities and Communities Questionnaire. *Int J Environ Res Public Health.* 2020;17(18).

- 50 45. Després J-P. Body Fat Distribution and Risk of Cardiovascular Disease. *Circulation*. 2012;126(10):1301-13.
- 51 46. van den Helder J, Verreijen AM, van Dronkelaar C, Memelink RG, Engberink MF, Engelbert RHH, et al. Bio-Electrical Impedance Analysis: A Valid Assessment Tool for Diagnosis of Low Appendicular Lean Mass in Older Adults? *Front Nutr*. 2022;9:874980.
- 52 47. Vasold KL, Parks AC, Phelan DML, Pontifex MB, Pivarnik JM. Reliability and Validity of Commercially Available Low-Cost Bioelectrical Impedance Analysis. *Int J Sport Nutr Exerc Metab*. 2019;29(4):406-10.
- 53 48. Jebb SA, Cole TJ, Doman D, Murgatroyd PR, Prentice AM. Evaluation of the novel Tanita body-fat analyser to measure body composition by comparison with a four-compartment model. *Br J Nutr*. 2000;83(2):115-22.
- 54 49. Wang, C. & Burris, M.A. Photovoice: Concept, methodology and use for participatory needs assessment. *Health education & behavior*. 1997;24(3):369-87.
- 55 50. Budig K, Diez J, Conde P, Sastre M, Hernan M, Franco M. Photovoice and empowerment: evaluating the transformative potential of a participatory action research project. *BMC Public Health*. 2018;18(1):432.
- 56 51. Conde P, Rivera-Navarro J, Gutierrez-Sastre M, Gonzalez-Salgado I, Franco M, Sandin Vazquez M. Photovoice versus focus groups: a comparative study of qualitative health research techniques. *Gac Sanit*. 2024;38:102423.
- 57 52. Anderson K, Elder-Robinson E, Howard K, Garvey G. A Systematic Methods Review of Photovoice Research with Indigenous Young People. *International Journal of Qualitative Methods*. 2023;22.
- 58 53. Heinz M, Benton N, Gleissner L. Older Adults Documenting Purpose and Meaning Through Photovoice and Narratives. *Gerontologist*. 2023;63(8):1289-99.
- 59 54. Ottoni CA, Winters M, Sims-Gould J. "I'm New to This": Navigating Digitally Mediated Photovoice Methods to Enhance Research With Older Adults. *International Journal of Qualitative Methods*. 2023;22.
- 60 55. Mysyuk Y, Huisman M. Photovoice method with older persons: a review. *Ageing and Society*. 2020;40(8):1759-87.
- 61 56. Braun V, Clarke V. Toward good practice in thematic analysis: Avoiding common problems and be(com)ing a knowing researcher. *Int J Transgend Health*. 2023;24(1):1-6.



- 62 57. Byrne D. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity*. 2021;56(3):1391-412.
- 63 58. Thomas DR. A General Inductive Approach for Analysing Qualitative Evaluation Data. *American Journal of Evaluation*. 2006;27(2):237-46.
- 64 59. Proudfoot K. Inductive/Deductive Hybrid Thematic Analysis in Mixed Methods Research. *Journal of Mixed Methods Research*. 2022;17(3):308-26.
- 65 60. Laggan, S., Beardmore, A. & Jones, M. (2020) Older people and community-supported shared meals in Bristol. Evaluation report on Bristol Ageing Better projects Talking Tables and Bristol Meets the World. Available at: <https://bristolageingbetter.org.uk/userfiles/files/BAB%20food%20evaluation%20report%20-%20October%202020.pdf>
- 66 61. Everson-Hock ES, Johnson M, Jones R, Woods HB, Goyder E, Payne N, Chilcott J. Community-based dietary and physical activity interventions in low socioeconomic groups in the UK: a mixed methods systematic review. *Prev Med*. 2013;56(5):265-72.

Protocol references

REFERENCES

17. Crocker TF, Ensor J, Lam N, Jordao M, Bajpai R, Bond M, et al. Community based complex interventions to sustain independence in older people: systematic review and network meta-analysis. *BMJ*. 2024;384:077764.
18. Scott TL, Masser BM, Pachana NA. Positive aging benefits of home and community gardening activities: Older adults report enhanced self-esteem, productive endeavours, social engagement and exercise. *SAGE Open Med*. 2020;8: 113.
19. Birtalan IL, Bartha A, Neulinger Á, Bárdos G, Oláh A, Rácz J, Rigó A. Community Supported Agriculture as a Driver of Food-Related Well-Being. *Sustainability*. 2020;12(11).
20. Ohmer ML, Meadowcroft P, Freed K, Lewis E. Community Gardening and Community Development: Individual, Social and Community Benefits of a Community Conservation Program. *Journal of Community Practice*. 2009;17(4):377-99.
21. Sixsmith J, Makita M, Menezes D, Cranwell M, Chau I, Smith M, et al. Enhancing Community Participation through Age-Friendly Ecosystems: A Rapid Realist Review. *Geriatrics (Basel)*. 2023;8(3).
22. Flora Cornish NB, Ulises Moreno-Tabarez, Jenna Delgado, Mohi Rua, Ama de-Graft Aikins, and Darrin Hodgetts. Participatory action research. *Nat Rev Methods Primers*. 2023;3(34).
23. Vaughn LM, Jacquez F. Participatory Research Methods – Choice Points in the Research Process. *Journal of Participatory Research Methods*. 2020;1(1).
24. Goodman MS, Sanders Thompson VL, Johnson CA, Gennarelli R, Drake BF, Bajwa P, et al. Evaluating Community Engagement in Research: Quantitative Measure Development. *J Community Psychol*. 2017;45(1):17-32.
25. Collins SE, Clifasefi SL, Stanton J, The Leap Advisory B, Straits KJE, Gil-Kashiwabara E, et al. Community-based participatory research (CBPR): Towards equitable involvement of community in psychology research. *Am Psychol*. 2018;73(7):884-98.
26. Wallerstein NB, Duran B. Using community-based participatory research to address health disparities. *Health Promot Pract*. 2006;7(3):312-23.
27. Witham MD, Anderson E, Carroll C, Dark PM, Down K, Hall AS, et al. Developing a roadmap to improve trial delivery for under-served groups: results from a UK multi-stakeholder process. *Trials*. 2020;21(1):694.
28. Skivington K, Matthews L, Simpson SA, Craig P, Baird J, Blazeby JM, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ*. 2021;374:2061.
29. Billingham SA., Whitehead, A.L. & Julious, S.A. An audit of sample sizes for pilot and feasibility trials being undertaken in the United Kingdom registered in the United Kingdom Clinical Research Network database. *BMC Medical Research Methodology*. 2013;13(104):1-6.
30. Lim SER, Meredith S, Agnew S, Clift E, Ibrahim K, Roberts H. Evaluating the feasibility and acceptability of virtual group exercise for older adults delivered by trained volunteers: the ImPACt study protocol. *BMJ Open*. 2022;12(2):052631.
31. Carter MC, Albar SA, Morris MA, Mulla UZ, Hancock N, Evans CE, et al. Development of a UK Online 24-h Dietary Assessment Tool: myfood24. *Nutrients*. 2015;7(6):4016-32.
32. Carter MC, Hancock N, Albar SA, Brown H, Greenwood DC, Hardie LJ, et al. Development of a New Branded UK Food Composition Database for an Online Dietary Assessment Tool. *Nutrients*. 2016;8(8).

33. Wark PA, Hardie LJ, Frost GS, Alwan NA, Carter M, Elliott P, et al. Validity of an online 24-h recall tool (myfood24) for dietary assessment in population studies: comparison with biomarkers and standard interviews. *BMC Med.* 2018;16(1):136.
34. Ward HA, McLellan H, Udeh-Momoh C, Giannakopoulou P, Robb C, Wark PA, Middleton L. Use of Online Dietary Recalls among Older UK Adults: A Feasibility Study of an Online Dietary Assessment Tool. *Nutrients.* 2019;11(7).
35. Herdman M, Gudex C, Lloyd A, Janssen M, Kind P, Parkin D, et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res.* 2011;20(10):1727-36.
36. Feng YS, Kohlmann T, Janssen MF, Buchholz I. Psychometric properties of the EQ-5D-5L: a systematic review of the literature. *Qual Life Res.* 2021;30(3):647-73.
37. Janssen MF, Pickard AS, Golicki D, Gudex C, Niewada M, Scalone L, et al. Measurement properties of the EQ-5D-5L compared to the EQ-5D-3L across eight patient groups: a multi-country study. *Qual Life Res.* 2013;22(7):1717-27.
38. Marten O, Brand L, Greiner W. Feasibility of the EQ-5D in the elderly population: a systematic review of the literature. *Qual Life Res.* 2022;31(6):1621-37.
39. van Oppen JD, Conroy SP, Coats TJ, Mackintosh NJ, Valderas JM. Measuring health-related quality of life of older people with frailty receiving acute care: feasibility and psychometric performance of the EuroQol EQ-5D. *BMC Emerg Med.* 2023;23(1):137.
40. Washburn RA, Smith KW, Jette AM, Janney CA. The physical activity scale for the elderly (PASE): Development and evaluation. *Journal of Clinical Epidemiology.* 1993;46(2):153-62.
41. Dinger MKO, F;Taylor, E L;Vesely, S K;Able, J. Stability and convergent valid of the Physical Activity Scale for the Elderly (PASE). *Journal of Sports Medicine and Physical Fitness.* 2004;44(2):186-92.
42. Loland N. Reliability of the physical activity scale for the elderly (PASE). *European Journal of Sport Science.* 2002;2(5):1-12.
43. Marti CN, Choi NG. Measuring Social Engagement among Low-Income, Depressed Homebound Older Adults: Validation of the Social Engagement and Activities Questionnaire. *Clin Gerontol.* 2022;45(3):548-61.
44. Dikken J, van den Hoven RFM, van Staalduinen WH, Hulsebosch-Janssen LMT, van Hoof J. How Older People Experience the Age-Friendliness of Their City: Development of the Age-Friendly Cities and Communities Questionnaire. *Int J Environ Res Public Health.* 2020;17(18).
45. Després J-P. Body Fat Distribution and Risk of Cardiovascular Disease. *Circulation.* 2012;126(10):1301-13.
46. van den Helder J, Verreijen AM, van Dronkelaar C, Memelink RG, Engberink MF, Engelbert RHH, et al. Bio-Electrical Impedance Analysis: A Valid Assessment Tool for Diagnosis of Low Appendicular Lean Mass in Older Adults? *Front Nutr.* 2022;9:874980.
47. Vasold KL, Parks AC, Phelan DML, Pontifex MB, Pivarnik JM. Reliability and Validity of Commercially Available Low-Cost Bioelectrical Impedance Analysis. *Int J Sport Nutr Exerc Metab.* 2019;29(4):406-10.
48. Jebb SA, Cole TJ, Doman D, Murgatroyd PR, Prentice AM. Evaluation of the novel Tanita body-fat analyser to measure body composition by comparison with a four-compartment model. *Br J Nutr.* 2000;83(2):115-22.
49. Wang, C. ■ Burris, M.A. Photovoice: Concept, methodology and use for participatory needs assessment. *Health education ■ behavior.* 1997;24(3):369-87.
50. Budig K, Diez J, Conde P, Sastre M, Hernan M, Franco M. Photovoice and empowerment: evaluating the transformative potential of a participatory action research project. *BMC Public Health.* 2018;18(1):432.
51. Conde P, Rivera-Navarro J, Gutierrez-Sastre M, Gonzalez-Salgado I, Franco M, Sandin Vazquez M. Photovoice versus focus groups: a comparative study of qualitative health research techniques. *Gac Sanit.* 2024;38:102423.

52. Anderson K, Elder-Robinson E, Howard K, Garvey G. A Systematic Methods Review of Photovoice Research with Indigenous Young People. *International Journal of Qualitative Methods*. 2023;22.
53. Heinz M, Benton N, Gleissner L. Older Adults Documenting Purpose and Meaning Through Photovoice and Narratives. *Gerontologist*. 2023;63(8):1289-99.
54. Ottoni CA, Winters M, Sims-Gould J. "I'm New to This": Navigating Digitally Mediated Photovoice Methods to Enhance Research With Older Adults. *International Journal of Qualitative Methods*. 2023;22.
55. Mysyuk Y, Huisman M. Photovoice method with older persons: a review. *Ageing and Society*. 2020;40(8):1759-87.
56. Braun V, Clarke V. Toward good practice in thematic analysis: Avoiding common problems and be(com)ing a knowing researcher. *Int J Transgend Health*. 2023;24(1):1-6.
57. Byrne D. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity*. 2021;56(3):1391-412.
58. Thomas DR. A General Inductive Approach for Analysing Qualitative Evaluation Data. *American Journal of Evaluation*. 2006;27(2):237-46.
59. Proudfoot K. Inductive/Deductive Hybrid Thematic Analysis in Mixed Methods Research. *Journal of Mixed Methods Research*. 2022;17(3):308-26.
60. Laggan, S., Beardmore, A. & Jones, M. (2020) Older people and community-supported shared meals in Bristol. Evaluation report on Bristol Ageing Better projects Talking Tables and Bristol Meets the World. Available at: <https://bristolageingbetter.org.uk/userfiles/files/BAB%20food%20evaluation%20report%20-%20October%202020.pdf>
61. Everson-Hock ES, Johnson M, Jones R, Woods HB, Goyder E, Payne N, Chilcott J. Community-based dietary and physical activity interventions in low socioeconomic groups in the UK: a mixed methods systematic review. *Prev Med*. 2013;56(5):265-72.

Acknowledgements

Patient and Public Involvement Statement

Involvement and engagement of stakeholders within the community are integral to the co-production community-based interventions. This study has embedded patient and public involvement in key aspects of the research to ensure a central role of participants and public contributors. By nature of design, the study will be embedded within the community to facilitate the participation of as many different groups as possible across ethnicity, age and gender. We will also apply minimal inclusion and exclusion criteria, reflecting the real-world scenario and all older adults who have the capacity to consent will be allowed to participate in the research.

Project advisory groups: The project's Community Engagement Group (CEG) and Food Research Advisory Group (FRAG) will include older people and members of the community from diverse backgrounds. This will ensure that the project is inclusive, a true reflection of the community of Bermondsey and it will also facilitate ownership of the project. The knowledge and network of members of the CEG and FRAG will inform the co-creation of the intervention elements, implementation and dissemination.

EDI training for the research team: The project team will receive training on equitable ways of working with older adults from diverse backgrounds and underserved communities, inclusive language, unconscious bias and intersectionality. This will ensure that the team are well equipped with knowledge and skills to embed EDI within their roles in the project.

Promotional and recruitment materials: All promotional and recruitment materials will be designed to be inclusive, in accessible formats and representative of the diverse backgrounds of our target participants and in accessible formats to ensure that we attract participants from diverse backgrounds into the project. Recruitment for the study using word of mouth, community champions and gatekeepers and the snowballing approach will ensure access to a wider pool of participants from diverse backgrounds.

Public engagement events and photo exhibition: Two end of project public engagement activities co-produced with and for older adults, key stakeholders and the wider community will showcase outputs including digital stories, a recipe book, photobooks, exhibitions and presentations from participants to share their unique experiences of the project.

Funding

This work is funded by a postdoctoral fellowship grant from the Dunhill Medical Trust (Grant number: SLEF2110\4). The funders had no role in, study design; in the collection, analysis and interpretation of data; in the writing of this report; and in the decision to submit the article for publication.

Authors' Contributions

Authors' contributions were as follows: SDA, L-AF, JM and AB conceived the study; SDA developed the study protocol; SDA led the writing of this paper with input from all authors. All authors read and approved the final

manuscript.

Competing interests

The authors (SDA, AB, JM, L-AF, CDR) declare that they have no competing interests.

Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Acknowledgements

We thank all our participants, Community Engagement Group (CEG) and Food Research Advisory Group (FRAG) and co-researchers for their contributions towards co-producing the research.