

British Journal of General Practice

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DOI: <https://doi.org/10.3399/BJGP.2022.0343>

To access the most recent version of this article, please click the DOI URL in the line above.

Received 01 July 2022

Revised 10 October 2022

Accepted 10 November 2022

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When citing this article please include the DOI provided above.

Author Accepted Manuscript

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Title: Which non-pharmaceutical primary care interventions improve mental health amongst socioeconomically disadvantaged populations? Systematic review

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Abstract

Background

Common mental health disorders (CMDs) are especially prevalent amongst people from socioeconomically disadvantaged backgrounds. Non-pharmaceutical primary care interventions, such as social prescribing and collaborative care, provide alternatives to pharmaceutical treatments for CMDs. Little is known about the impact of these interventions for socioeconomically disadvantaged patients.

Aim

To synthesise evidence for the effects of non-pharmaceutical primary care interventions on CMDs and associated socioeconomic inequalities.

Design and setting

Systematic review of quantitative primary studies published in English and undertaken in high-income countries.

Method

Six bibliographic databases were searched (Medline, ASSIA, CINAHL, Embase, PsycInfo and Scopus) and additional grey literature sources screened. Data were extracted onto a standardised proforma and quality assessed using the Effective Public Healthcare Panacea Project (EPHPP) tool. Data were synthesised narratively and effect direction plots produced for each outcome.

Results

Thirteen studies were included. Social prescribing interventions were evaluated in ten studies, collaborative care in two studies and a new model of care in one study. Positive results (based on effect direction) were reported for the impact of the interventions on wellbeing in socioeconomically deprived groups. Inconsistent (mainly positive) results were reported for anxiety and depression. One study reported that people from the least compared to the most deprived group benefitted most from these interventions. Overall, study quality was weak.

Conclusion

Targeting non-pharmaceutical primary care interventions at socioeconomically deprived areas may help to reduce inequalities in mental health outcomes. However, only tentative conclusions can be drawn from the evidence in this review and more robust research is required.

Keywords mental disorders, healthcare disparities, primary health care, systematic review, health inequalities, socioeconomic factors

How this fits in

New models of healthcare and clinical practice, such as social prescribing and collaborative care, are increasingly used as non-pharmaceutical alternatives for treating common mental disorders (CMDs) in primary care. However, there is a lack of evidence available to GPs about the effectiveness of

these types of interventions for socioeconomically disadvantaged patients, among whom CMDs are most prevalent. This systematic review synthesised the international evidence exploring the impact on CMD outcomes for socioeconomically disadvantaged patients. Although the evidence base was weak, there was evidence for an overall positive effect on anxiety, depression, self-reported mental health and wellbeing.

Introduction

Most patients with a common mental disorder (CMD), such as depressive and anxiety disorders, are seen only in primary care.(1) England's National Health Service (NHS) Improving Access to Psychological Treatment (IAPT) service embedded psychological 'talking' therapies in primary care in 2008, and since then an expanding range of non-pharmaceutical interventions are increasingly being offered as alternative forms of care for primary care patients with CMDs. For example, healthcare systems as diverse as those of the United Kingdom and the United States are introducing new models of personalised and collaborative care, such as social prescribing interventions that link patients with sources of community support, and primary care embedded clinical psychologists.(2, 3)

CMDs are most prevalent in people experiencing socioeconomic disadvantage and there is concern among primary care practitioners that overreliance on psychotropic medications risks medicalising everyday stresses and the distress caused by poverty.(4) In the UK, and other high-income countries, addressing both mental ill health and health inequalities are pressing policy goals.(5) There is a need for evidence about which non-pharmaceutical primary care interventions, such as social prescribing and new models of care, are effective at improving CMDs in patients living in socioeconomic deprivation, and whether these interventions reduce – or potentially increase – health inequalities. A recent systematic review and meta-analysis of the IAPT service found improvements in depression and anxiety. (6) However, there is evidence that socioeconomically disadvantaged patients struggle to access IAPT services. (7-9) Focussing on socioeconomically disadvantaged patient groups, this systematic review is the first to review the impact on CMD-related outcomes of a range of alternative non-pharmaceutical interventions delivered in primary care.

Method

The methods are described in detail in the published protocol(10) and summarised here. The protocol was also registered in PROSPERO (registration number: CRD42021281166). This review was undertaken following the PRISMA-E guidelines.(11) In line with PRISMA-E guidelines,(11) a framework was developed in the protocol (10) outlining the pathway between the intervention and mental health outcomes, in relation to social inequalities.

Research questions

The research questions for this review of quantitative evidence, incorporating the Population, Intervention, Comparators and Outcomes (PICO), are:

Which non-pharmaceutical primary care interventions:

1. Improve CMD-related outcomes amongst people from socioeconomically disadvantaged backgrounds compared to no, or an alternative intervention?

2. Reduce inequalities in CMD-related adverse health outcomes between the least and most socioeconomically disadvantaged backgrounds?

Literature search

The following bibliographic databases were searched from inception until 1st June 2021: Medline, ASSIA, CINAHL, Embase, PsycInfo and Scopus. Grey literature was identified from the Social Prescribing Network, and the Social Interventions Research and Evaluations Network (SIREN). Citation chaining of relevant systematic reviews and from the reference lists of included studies was additionally undertaken. The search strategy used in Medline is available in **Supplementary file S1**.

Study selection

Titles and abstracts were screened in Rayyan(12) to identify relevant studies and full texts of potentially relevant studies were sourced and assessed for eligibility, using the criteria summarised in **Supplementary table S1**. Socioeconomic disadvantage was defined based on aggregate area-level indicators (e.g., Index of Multiple Deprivation (IMD)) or individual-level characteristics (e.g., unemployment rate within the sample). One reviewer screened each record, and a second reviewer checked a random 10% sample at both stages of the screening process. Considerable time was spent as a group discussing the eligibility criteria to ensure these were being applied and any papers for which a screening decision was not clear cut were flagged to the team for consensus. Screening conflicts were resolved via discussion amongst the research team.

Data extraction

Data were extracted onto a spreadsheet and 10% of extracted data were checked by a second reviewer. The following information was extracted: citation details, study characteristics, intervention/control group characteristics, intervention details, comparators, outcomes, analysis and results.

Quality appraisal

The quality of each study was assessed using the Effective Public Healthcare Panacea Project (EPHPP) Quality Assessment Tool for Quantitative Studies.(13) This tool was chosen because it can be applied across a range of different quantitative study designs. Each study was assessed independently by a single reviewer and 10% of quality appraisals were checked by a second reviewer.

Data synthesis

Meta-analysis was not feasible due to heterogeneity in study designs, population characteristics and outcomes assessed. Narrative synthesis was used alongside effect direction plots.(14) The results were synthesised according to the type of outcome (i.e., anxiety and depression, distress, wellbeing, self-reported mental health and healthcare utilisation for CMDs). For continuous measures, we compared mean values (e.g., mean anxiety) before versus after the intervention for within group studies, and post-intervention scores (adjusted for baseline values) between the intervention and control groups for between group studies. For binary outcomes we compared outcome rates at baseline versus post-intervention for within group studies, and post-intervention outcome rates (adjusted for baseline values) between the intervention and control groups for between group studies, where the data were available.

Results

Study identification

Thirteen studies(15-27) were included in the narrative synthesis and effect direction plots (**Supplementary table S2**). **Supplementary figure S1** illustrates the flow of included and excluded studies.

Study characteristics

Included study designs comprised three RCTs,(16, 22, 24) one non-randomised controlled trial,(21) one cohort study with a between-groups design(25) and eight cohort studies with a before-after, within groups design. (15, 17-20, 23, 26, 27) Nine studies were from England, (16-20, 23-26) two from Scotland, (21, 22) one from Canada,(27) and one was from Australia.(15) Ten studies reported outcomes from a range of social prescribing interventions. (15, 17-23, 25, 27) Two reported on collaborative care interventions,(16, 24) using non-medical care managers working with a patient's clinician to support condition management and improve outcomes. A further study reported on a new model of care that combined aspects of social prescribing, social action and community linkage.(26)

Most of the interventions were targeted at people from socioeconomically deprived backgrounds, defined using area-level(16-18, 20, 22, 23, 25, 26) or individual-level measures (15, 19, 21, 24) (summarised in **Supplementary table S2**). A further study (27) indicated that participants were from low-income backgrounds, but it was not clear if this was based on an area-level or individual measure of deprivation. Only one study delivered a universal intervention to participants from a range of socioeconomic backgrounds and compared the effects of the intervention between IMD quintiles. (25)

Quality assessment

Quality assessment scores are summarised in **Supplementary table S3**. One RCT received a global 'strong' quality assessment rating;(16) one study received a global 'moderate' rating(24) and the remaining studies received a global 'weak' overall rating.

Effectiveness of the intervention

The characteristics, main results and direction of effect from the 13 included studies are presented in **Supplementary table S2** and in the narrative synthesis below.

Anxiety and depression

Four studies, including three cluster-RCTs(16, 22, 24) and one single arm before-and-after cohort study(20) reported effects of non-pharmaceutical primary care interventions on anxiety. The interventions (described in **Supplementary table S2**) included collaborative care(16, 24) and social prescribing.(20, 22) Three of the studies(16, 20, 24) reported positive effects of the interventions on reducing anxiety (based on direction of effect). The fourth study(22) reported that people who were referred to a community link practitioner (CLP) experienced reduced anxiety (adjusted for baseline levels) compared to a control group who received usual care. However, the benefit to the intervention group was dose dependent, with a reduction in anxiety relative to the usual care group for one and three or more meetings with the CLP, and an increase in anxiety for two meetings.

Five studies(16, 20, 22, 24, 26) reported effects of non-pharmaceutical primary care interventions on depression. These studies comprised three cluster-RCTs(16, 22, 24) and two single arm before-and-after cohort studies.(20, 26) The interventions (described in **Supplementary table S2**) involved social prescribing,(20, 22) collaborative care(16, 24) and a new model of care.(26) Four studies(16, 20, 24, 26) reported an improvement (reduction) in depression associated with the intervention. The fifth study(22) reported mixed/conflicting findings including a positive effect (reduction in depression compared to the control group) of meeting the CLP once or 3+ times, but a negative effect (increase in depression compared to the control arm) of being referred to a CLP and seeing the CLP twice.

The authors of a cohort (one group assessed pre- and post-intervention) study(18) reported that users of a social prescribing service (described in **Supplementary table S2**) in a socioeconomically deprived area showed improvements (reduction) in anxiety/depression according to the EQ-5D anxiety and depression subscale.(18) We classed this an inconclusive result as the study only reported the proportions of participants who had a reduction in anxiety/depression and did report the proportions whose anxiety/depression was unchanged or worsened following the intervention.

Measures of distress

One, single arm before-after cohort study(15) with a sample who were mostly unemployed, reported a reduction (positive outcome) in mean distress amongst recipients of a social prescribing intervention (described in **Supplementary table S2**).

Wellbeing

Five cohort studies(17, 18, 23, 25, 26) quantified the effects of non-pharmaceutical primary care interventions on wellbeing, assessed using either the Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS) or the short form version of this tool (SWEMWBS). Four of these were single arm before-and-after studies, while one(25) was a between-group study. Four of the studies evaluated social prescribing interventions(17, 18, 23, 25) and one study(26) included a multi-component new model of care intervention (described in **Supplementary table S2**). Four of the studies reported improvements in wellbeing based on direction of effect.(17, 18, 23, 26) The fifth study (25) reported a lower rate of improved wellbeing amongst individuals living in the most deprived IMD quintile compared to those living in the least deprived IMD quintile.

Self-reported mental health

One, single arm before-and-after cohort study(27) assessed the effects of a social prescribing intervention (described in **Supplementary table S2**) on self-reported mental health in participants, nearly half of whom were from low-income backgrounds. An increase in self-reported mental health was reported following the intervention.

Healthcare utilisation for CMDs

Two studies(19, 21) reported results for the effects of social prescribing (described in **Supplementary table S2**) on healthcare utilisation for CMDs. Both studies reported inconsistent (positive and negative) results.

Discussion

Summary

This review summarises the available quantitative evidence for the effects of social prescribing, collaborative care, and new models of care interventions on outcomes for patients with CMDs and experiencing socioeconomic deprivation. We identified 13 studies that reported data addressing the impacts on CMDs amongst socially disadvantaged patients. Results were positive overall, but not consistently for outcomes where multiple studies contributed data. For anxiety and depression, all but one study reported positive results – the other reported a dose-dependent effect. Inconclusive results were also reported in relation to anxiety and depression combined. For wellbeing, four studies reported a positive outcome. The results were also inconsistent for healthcare utilisation, with both studies reporting mixed results. The studies reporting effects on distress and self-reported mental health both indicated a positive effect.

Only one study addressed the impacts of interventions on socioeconomic inequalities in CMDs and suggested that participants from the most deprived areas were less likely to respond to the intervention compared to those from the least deprived areas.

Our ability to address research question 1 (which non-pharmaceutical primary care interventions improve CMD-related outcomes in socially disadvantaged communities?) is limited. This is because the positive effects of the interventions are likely to have been inflated due to the low-quality evidence. Also, the heterogeneous nature of the evidence on this topic prevented statistical pooling of the data to derive an overall effect estimate. It was also not possible for us to properly address research question 2 regarding the effects of non-pharmaceutical primary care interventions on CMD-related inequalities between people from the least and most socioeconomically disadvantaged backgrounds, due to limited primary evidence on this topic.

Comparison with existing literature

While non-pharmaceutical mental health interventions are increasingly being offered to primary care patients in socioeconomically disadvantaged communities, there is little robust published evidence regarding their effectiveness within this population. A recent review of IAPT services found that, although effective for some patients, the services often failed to reach patients with complex presentations, including socioeconomic disadvantage.(6) A recent review of social prescribing interventions found evidence of effectiveness in improving outcomes such as anxiety and depression, however, there was no evaluation of differential impacts on socioeconomically disadvantaged patients.(28)

Strengths and limitations of this review

To the authors' knowledge, this is the first review to synthesise evidence on the impact of interventions such as social prescribing, collaborative care and new models of care on CMD-related outcomes for socioeconomically disadvantaged patients. The searches for this review included bibliographic databases, grey literature sources and citation chaining. Bibliographic searches were undertaken on 1st June 2021 and have not been updated due to lack of resources. It is possible that new studies meeting the inclusion criteria have been published since the searches were undertaken. However, due to the low-quality evidence included in this review based on studies published up to June 2021, we feel it is unlikely that new evidence would significantly change the findings.

We used effect direction plots, which are not able to produce precise effect estimates and do not consider statistical significance.

There are multiple dimensions of disadvantage. We intended to synthesise evidence on different types of inequality in relation to the PROGRESS-Plus dimensions as described in the protocol,(29) however, we only had the resource to focus on one dimension of disadvantage (socioeconomic). Given the intersectionality of disadvantage, further research is needed to extend the focus of this review to other PROGRESS-Plus dimensions and to explore the implications of multiple and overlapping layers of disadvantage and inequality.

Strengths and limitations of the primary evidence

Much of the evidence was weak and further investigation involving more robust study designs (i.e., between-group studies with larger sample sizes, more objective outcome measures and statistical significance testing) is required. Most of the included studies used validated outcome assessment tools; however, the main limitation was the inability to blind participants to their intervention status. Coupled with the self-reported nature of the outcome assessments, this could introduce bias into the results. Many studies also either reported non-significant effects of the interventions or significance was not reported.

For most studies, area-level measures were used to assess socioeconomic deprivation, which is potentially ecologically fallacious as the sample was likely to include participants from non-socioeconomically deprived backgrounds. This potentially limits the generalisability of the findings. It would also be informative to identify which components of the intervention (e.g., speaking to a link worker, undertaking an activity, socialising with others) are associated with a positive effect. Finally, as most of the studies included in this review were conducted in the UK, generalisability to other countries is limited.

Most interventions in this review were targeted at people from socioeconomically disadvantaged backgrounds. This targeted approach enabled us to assess the effects of the interventions on those most at risk of experiencing a CMD. Only one study included participants from mixed socioeconomic backgrounds. Previous research has demonstrated that the delivery of universal interventions, proportionately applied to the most in need, are likely to reduce health inequalities across the whole population; whereas targeted interventions delivered to the most disadvantaged groups may raise the health of those targeted, but do not improve the health of those in the middle of the health inequalities spectrum.(30, 31)

Implications for research and practice

The increasing popularity of social prescribing, collaborative care and new models of care interventions to address CMDs and the focus on addressing health inequalities create a pressing need for evidence for practitioners on what works to improve outcomes for patients experiencing socioeconomic disadvantage. Overall, the results from this review indicate a positive effect of a range of non-pharmaceutical primary care interventions on CMDs and related symptoms, albeit that most of studies were rated as being 'low' overall quality and effectiveness of the interventions is therefore likely to have been over-estimated. With any intervention, there is a risk that less advantaged patients will struggle with access. One study indicated that people from the least deprived areas benefited most from an intervention, which may result in increased health inequalities. A qualitative review conducted alongside this quantitative review also found

socioeconomic factors (e.g., low income) presented as key barriers to accessing and engaging with interventions.(32) There is a need for higher-quality research which examines the differential effects of interventions on more and less socioeconomically advantaged patients and according to the other PROGRESS-Plus criteria and the interrelationships therein. By targeting interventions specifically at areas and individuals from socioeconomically disadvantaged areas and backgrounds, inequalities in CMD-related health outcomes could be reduced.

References

1. Puschner B, Kösters M, Bouché L. The epidemiology, burden and treatment of mental disorders in primary care. *Mental Disorders in Primary Care: A Guide to Their Evaluation and Management*. 2017; 19:1-20.
2. Fichtenberg CM, Alley DE, Mistry KB. Improving social needs intervention research: key questions for advancing the field. *Am J Prev Med*. 2019;57(6):S47-54.
3. The King's Fund. Mental health and new models of care: Lessons from the vanguards. [Internet]. 2017. Available from: <https://www.kingsfund.org.uk/publications/mental-health-new-care-models> [accessed 17th June 2022].
4. Shaw I, Woodward L. The medicalisation of unhappiness? The management of mental distress in primary care. In: *Constructions of Health and Illness*. 2017; 30 (pp. 124-136). Routledge.
5. Olivera JN, Ford J, Sowden S, Bambra C. Conceptualisation of health inequalities by local healthcare systems: A document analysis. *Health & Social Care in the Community*. 2022.
6. Wakefield S, Kellett S, Simmonds-Buckley M, et al. Improving Access to Psychological Therapies (IAPT) in the United Kingdom: A systematic review and meta-analysis of 10-years of practice-based evidence. *Br J Health Psychol*. 2021;60(1):1-37.
7. Jonker L, Thwaites R, Fisher SJ. Patient referral from primary care to psychological therapy services: a cohort study. *Fam Pract*. 2020;37(3):395-400.
8. British Association for Counselling and Psychotherapy. Long waiting times for IAPT 'unacceptable'. [Internet]. 2019. Available from: <https://www.bacp.co.uk/news/news-from-bacp/2019/5-december-long-waiting-times-for-iapt-unacceptable> [accessed 17th June 2022].
9. Marshall D, Quinn C, Child S, et al. What IAPT services can learn from those who do not attend. *J Ment Health*. 2016;25(5):410-5.
10. Tanner L, Sowden S, Still M, et al. Which Non-Pharmaceutical Primary Care Interventions Reduce Inequalities in Common Mental Health Disorders? A Protocol for a Systematic Review of Quantitative and Qualitative Studies. *Int J Environ Res Public Health*. 2021;18(24):12978.
11. Welch V, Petticrew M, Petkovic J, et al. Extending the PRISMA statement to equity-focused systematic reviews (PRISMA-E 2012): explanation and elaboration. *J Clin Epidemiol*. 2016;70:68-89.
12. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan—a web and mobile app for systematic reviews. *Syst Rev*. 2016;5(1):1-0.

13. Effective Public Healthcare Panacea Project (EPHPP). *Quality Assessment Tool for Quantitative Studies*. 2022. Available from: <https://www.ehpp.ca/quality-assessment-tool-for-quantitative-studies> [accessed 17th June 2022].
14. Boon MH, Thomson H. The effect direction plot revisited: Application of the 2019 Cochrane Handbook guidance on alternative synthesis methods. *Res Synth Methods*. 2021;12(1):29-33.
15. Aggar C, Thomas T, Gordon C, et al. Social prescribing for individuals living with mental illness in an Australian community setting: A pilot study. *Community Ment Health J*. 2021;57(1):189-95.
16. Coventry P, Lovell K, Dickens C, et al. Integrated primary care for patients with mental and physical multimorbidity: cluster randomised controlled trial of collaborative care for patients with depression comorbid with diabetes or cardiovascular disease. *BMJ*. 2015;350.
17. Crone DM, O'Connell EE, Tyson PJ, et al. 'Art Lift' intervention to improve mental well-being: An observational study from UK general practice. *Int J Ment Health Nurs*. 2013;22(3):279-86.
18. Centre for Regional Economic and Social Research; Sheffield Hallam University. Evaluation of HALE Community Connectors Social Prescribing Service. 2018. [Internet]. Available from: <http://shura.shu.ac.uk/25768/1/eval-HALE-comm-connectors-social-prescribing-service-2018-19.pdf> [accessed 17th June 2022].
19. Grayer J, Cape J, Orpwood L, et al. Facilitating access to voluntary and community services for patients with psychosocial problems: a before-after evaluation. *BMC Fam Pract*.;9(1):1-8.
20. Kimberlee R, Ward R, Jones M, Powell J. Measuring the economic impact of the wellspring healthy living centre's social prescribing wellbeing programme for low level mental health issues encountered by GP services. 2014. [Internet]. Available from: <https://www.stokeccg.nhs.uk/your-ccg-stoke/sot-publications/generic-publications-2/primary-care/social-prescribing/1320-pov-final-report-march-2014/file> [accessed 17th June 2022].
21. Lowrie R, Stock K, Lucey S, et al. Pharmacist led homeless outreach engagement and non-medical independent prescribing (Rx)(PHOENIx) intervention for people experiencing homelessness: a non-randomised feasibility study. *Int J Equity Health*. 2021;20(1):1-3.
22. Mercer SW, Fitzpatrick B, Grant L, et al. Effectiveness of community-links practitioners in areas of high socioeconomic deprivation. *Ann Fam Med*. 2019;17(6):518-25.
23. Pescheny JV, Gunn LH, Pappas Y, Randhawa G. The impact of the Luton social prescribing programme on mental well-being: a quantitative before-and-after study. *J Public Health*. 2021;43(1):e69-76.
24. Richards DA, Hill JJ, Gask L, et al. Clinical effectiveness of collaborative care for depression in UK primary care (CADET): cluster randomised controlled trial. *BMJ*. 2013;347.
25. Sumner RC, Crone DM, Baker C, et al. Factors associated with attendance, engagement and wellbeing change in an arts on prescription intervention. *J Public Health*. 2020;42(1):e88-95.
26. Swift M. People powered primary care: learning from Halton. *J Integr Care*. 2017;25(3):162-73.

27. Hsiung SB, MacDonald C, Mulligan K, et al. Social prescribing in Ontario. 2019. [Internet]. Available from: <https://www.allianceon.org/sites/default/files/documents/Rx-Community-Progress-Report-EN-June2019-web.pdf> [accessed 17th June 2022].
28. Pescheny JV, Randhawa G, Pappas Y. The impact of social prescribing services on service users: a systematic review of the evidence. Eur J Public Health. 2020;30(4):664-73.
29. Cochrane Methods Equity. PROGRESS-Plus. 2022. Available from: <https://methods.cochrane.org/equity/projects/evidence-equity/progress-plus> [accessed 17th June 2022]
30. Thomson K, Hillier-Brown F, Todd A, et al. The effects of public health policies on health inequalities in high-income countries: an umbrella review. BMC Public Health. 2018;18(1):1-21.
31. Marmot M, Boyce T, Goldblatt P, Morrison J. Health Equity in England: The Marmot Review 10 Years On. 2020. [Internet]. Available from: <https://www.health.org.uk/publications/reports/the-marmot-review-10-years-on> [accessed 17th June 2022].
32. Bernard K, Wildman J, Tanner LM, et al. Experiences of non-pharmaceutical primary care interventions for common mental health disorders in socioeconomically disadvantaged groups: a systematic review of qualitative studies. J Ment Health. 2022;In Review.

Author contributions: Conceptualization: J.W., K.T. S.S.; Methodology: A.S., C.E., J.W., K.T., L.T., M.S., R.G., S.S.; Writing (Original Draft Preparation): AS., J.W., K.T., L.T., S.S. Writing (Review and Editing): A.S., C.E., J.W., K.B. K.T., L.T., M.S., R.G., S.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research is funded by NIHR Research Capability Funding (RCF) from NHS North of England Care System Support (NECS). S.S. is supported by Health Education England (HEE) and the National Institute for Health Research (NIHR) through an Integrated Clinical Academic Lecturer Fellowship (Ref CA-CL-2018-04-ST2-010) and RCF funding, NHS North of England Care System Support (NECS). This project is supported by the National Institute of Health and Care Research (NIHR) Applied Research Collaboration (ARC) North-East and North Cumbria (NIHR200173). K.H.T. and J.M.W. are members of the NIHR ARC NENC. The views expressed are those of the authors and not necessarily those of the funders

Ethical approval: not required.

Conflicts of interest: none declared.