








STUDY PROTOCOL

REVISED

# Effectiveness of link workers providing social prescribing on health outcomes and costs for adult patients in primary care and community settings. A protocol for a systematic review of the literature. [version 2; peer review: 2 approved]

Bridget Kiely <sup>1</sup>, Aisling Croke <sup>1</sup>, Eamon O'Shea <sup>2</sup>, Deirdre Connolly <sup>3</sup>, Susan M. Smith <sup>1</sup>

<sup>1</sup>Department of General Practice, Royal College of Surgeons in Ireland, Dublin, Ireland

<sup>2</sup>Centre for Economic and Social Research on Dementia, National University of Ireland, Galway, Galway, Ireland

<sup>3</sup>Discipline of Occupational Therapy, Trinity College, Dublin, Ireland

**V2** First published: 02 Sep 2019, 2:21  
<https://doi.org/10.12688/hrbopenres.12936.1>

Latest published: 17 Nov 2020, 2:21  
<https://doi.org/10.12688/hrbopenres.12936.2>

## Abstract


**Introduction:** The use of link workers for social prescribing and health and social care coordination is increasing, but there is insufficient data to demonstrate their effectiveness or for whom they work best. Multimorbidity is increasing in prevalence and affects those living in deprived areas ten years earlier than affluent areas. This systematic review aims to examine the evidence for the effectiveness and costs of link workers in improving health outcomes. We will also look for evidence for the use of link workers specifically for people living with multimorbidity and in deprived areas.

**Methods:** Databases of published and grey literature will be searched for randomised and non-randomised controlled trials examining use of link workers based in primary care for community dwelling adults compared to usual care. Primary outcomes will be health related quality of life and mental health. Data on costs will be extracted. Studies will be selected for inclusion by title and abstract review by two reviewers. A Preferred Reporting Items for Systematic Reviews (PRISMA) flow diagram will document the selection process. A standardised form will be used to extract data. Data quality will be assessed using the Cochrane Risk of Bias tool for randomised controlled trials, a narrative synthesis will be completed and the GRADE assessment tool used to comment on evidence quality. A meta-analysis of effect size of primary outcomes and subgroup analysis for multimorbidity and social deprivation will be performed if

## Open Peer Review

Reviewer Status  

	Invited Reviewers	
	1	2
<b>version 2</b>		
(revision)		
17 Nov 2020	<a href="#">report</a>	<a href="#">report</a>
		
<b>version 1</b>		
02 Sep 2019		
	<a href="#">report</a>	<a href="#">report</a>

1. **Mark Petticrew**, London School of Hygiene and Tropical Medicine (LSHTM), London, UK
2. **Mark Fort Harris** , University of New South Wales, Sydney, Australia

Any reports and responses or comments on the article can be found at the end of the article.

there are sufficient comparable data.

**Conclusion:** This systematic review will give an important overview of the evidence for the use of link workers providing social prescribing and health and social care coordination in primary care. This will help inform intervention development and guide policy makers on whether these interventions are cost effective and which groups stand to benefit most. **Prospero registration:** CRD42019134737 (04/07/2019)

### Keywords

Link worker, Community navigator, Community health worker, Social prescribing, Primary care, Multimorbidity, Social deprivation, Systematic Review

**Corresponding author:** Bridget Kiely ([bridgetkiely@rcsi.com](mailto:bridgetkiely@rcsi.com))

**Author roles:** **Kiely B:** Methodology, Writing – Original Draft Preparation, Writing – Review & Editing; **Croke A:** Writing – Review & Editing; **O'Shea E:** Methodology, Supervision, Writing – Review & Editing; **Connolly D:** Supervision, Writing – Review & Editing; **Smith SM:** Conceptualization, Methodology, Supervision, Writing – Review & Editing

**Competing interests:** No competing interests were disclosed.

**Grant information:** Health Research Board Ireland [CDA-2018-003].

*The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.*

**Copyright:** © 2020 Kiely B *et al.* This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**How to cite this article:** Kiely B, Croke A, O'Shea E *et al.* **Effectiveness of link workers providing social prescribing on health outcomes and costs for adult patients in primary care and community settings. A protocol for a systematic review of the literature. [version 2; peer review: 2 approved]** HRB Open Research 2020, 2:21 <https://doi.org/10.12688/hrbopenres.12936.2>

**First published:** 02 Sep 2019, 2:21 <https://doi.org/10.12688/hrbopenres.12936.1>

**REVISED Amendments from Version 1**

This version has been revised in response to reviewer's comments. The definition of link worker has been moved to the introduction for clarity. In the intervention inclusion section additional detail has been provided about the link worker role and function to clarify what interventions will be included. The outcomes section has been edited to provide more clarity on the reason for chosen outcomes. There have been no changes to the methods overall, but the changes should provide greater clarity, in particular around the types of intervention and outcomes that will be included.

**Any further responses from the reviewers can be found at the end of the article**

## Introduction

Social prescribing is a way of linking people with complex needs to non-medical supports in the community<sup>1</sup>. Social prescribing aims to improve quality of life by addressing some of the social determinants of health in particular reducing social isolation<sup>1</sup>. There are different models of social prescribing, which can range from online signposting services to individual support from a link worker to identify and access community resources. The link worker model is most frequently used in the UK<sup>2</sup>. A link worker is a non-health or social care professional based in primary care practices or community and/or voluntary organisations, who support access to a range of community-based resources and supports for health and social care. They usually, but not always, have some training in behaviour change and an in depth knowledge of local community based resources. They meet with people referred to them, usually through primary care, and work with them to achieve a set of personalised goals. These may be purely psychosocial or may involve support to attend services such as diabetic eye screening or access social welfare benefits. In this way, the link worker role extends beyond social prescribing.

Multimorbidity is defined as two or more chronic health conditions. Multimorbidity is increasing in prevalence<sup>3</sup>. People experiencing multimorbidity have worse health outcomes, more service utilisation, experience fragmented care and poorer quality of life than those without. There is a known link between the social determinants of health and multimorbidity. People who live in socially deprived areas experience multimorbidity at least ten years before those in the least deprived areas and are more likely to have mental health comorbidities<sup>3,4</sup>. This translates into increased consultation rates and more complex psychosocial needs that pose a challenge for primary care in deprived areas.

There is potential that link workers providing social prescribing and supporting health and social care coordination can have an impact on health outcomes and costs for people experiencing multimorbidity, particularly in areas of social deprivation. Despite this potential, the evidence for link workers providing social prescribing and health and social care coordination remains weak, with a recent systematic review of UK interventions identifying very few randomised control trials

and concluding that there was a lack of evidence for how, for whom and when social prescribing was effective<sup>2</sup>. Since then there has been an evaluation of the Glasgow Deep End Link workers intervention, which showed improvements in mental health scores, but not health related quality of life and concluded that further evidence was needed<sup>5</sup>. There are similar interventions being implemented outside the UK such as the IMPaCT intervention using community health workers to support people with complex needs in areas of deprivation<sup>6</sup>. A randomised controlled trial showed reduced hospital admissions, but no improvement in the primary outcome, self rated health<sup>7</sup>. To date there has not been a systematic review that we are aware of that examined link worker interventions internationally, effectiveness in areas of deprivation or for people experiencing multimorbidity.

In this systematic review we aim to examine the evidence of effectiveness of link worker social prescribing interventions internationally and to establish the evidence, if any, for its effectiveness in people experiencing multimorbidity and social deprivation. The evidence on the cost effectiveness of social prescribing is weak, making it difficult to say with any certainty for whom and how well existing schemes work. Studies that have considered economic issues both cost and outcomes, including long-term resource use, will, therefore, be considered in the review. This involves the summary and synthesis of data from relevant health economics studies and the extraction of any data on costs reported in relevant studies. The review will also consider studies that have calculated the social return on investment (SROI) associated with social prescribing.

The review questions are

1. What is the effectiveness of link workers providing social prescribing on improving health outcomes for community dwelling adults?
2. What is the effectiveness of link workers providing social prescribing on improving health outcomes for community dwelling adults with multimorbidity?
3. What is the effectiveness of link workers providing social prescribing on improving health outcomes for adults living in areas of social deprivation?
4. What are the costs and cost effectiveness of link workers providing social prescribing in primary care and community settings?

## Methods

### Eligibility criteria

We will search for randomised controlled trials and non-randomised controlled trials that meet the criteria outlined in the Cochrane Effective Practice and Organisation of Care (EPOC) guidance on study design<sup>8</sup> from inception of databases to present, with no language restrictions.

### Participants/population

Inclusion: Community dwelling adults, who are not residing in residential or supported care and are attending primary care.

Primary care will be generally defined as “care provided by clinicians that are available to treat all common conditions in all age groups and have an ongoing relationship with their patients”<sup>9</sup>. Participants do not need to have any specific index condition.

Exclusion: Under 18s, those in residential or supported care

### **Intervention**

Inclusion: Link workers providing health and social care coordination including social prescribing with a focus on accessing non-medical interventions but also supporting individuals with multimorbidity based on their priorities. Link workers are non-health or social care professionals based in primary care practices or community and/or voluntary organisations, who support access to a range of community-based resources and supports for health and social care. They usually, but not always, have some training in behaviour change and an in depth knowledge of local community based resources. Social prescribing is a mechanism for linking people with non-medical sources of support within the community to improve physical, emotional and mental wellbeing. The model of social prescribing can vary, but for the purposes of this review we are specifically interested in models that include the use of link workers. Link workers may be known by other terms such as community health workers, patient navigators or health facilitators. While all of these work in the area of health, they are generally considered “lay workers” as they have not completed a professional health or social work qualification. Inclusion is based on the function of the role, i.e. supporting people to improve their health and wellbeing through social prescribing and health and social care coordination, recognising that there is a wide range of terms used to describe such roles. For simplicity, the term “link worker” is used in this protocol.

The intervention must involve

- A referral (including self referrals) to a link worker who is based either in a primary care practice or a community or voluntary organisation
- Participants meeting with a link worker face to face at least once
- Determining an individual range of health and social care supports and community activities and resources that the person would be willing to engage with and being offered support and follow up to engage with their chosen supports and activities
- The intervention is designed to be tailored to the individual therefore there are no restrictions on the supports and activities that can be recommended, other than the restrictions based on local availability

Exclusions: Interventions that do not involve a link worker, use volunteers as link workers (as these would not be deemed professionals) or only involve signposting to services will be excluded. Interventions where additional support is being provided by health care professionals such as doctors, nurses, occupational therapists or by social workers will be excluded.

Interventions where personal care is provided alongside health and social care coordination such as disability support workers will be excluded as it is not possible to separate the effects of the different components of care.

While a particular index condition such as diabetes or depression may have been the reason for referral, the intervention should be holistic and not condition specific. Interventions focused on improving outcomes for a specific condition only will be excluded. Interventions, which mainly comprise of education and goal setting around disease control, even if they have a small element of social prescribing, will be excluded, as it would not be possible to separate the impact of the different components of the intervention.

The interventions of interest should take place in a primary care or community based setting. Interventions that are secondary care or emergency department based will be excluded.

### **Comparator(s)**

Inclusion: All studies will include a comparator group. This comparator group will be no referral to a link worker or (in the case of before-after studies) before referral to a link worker.

Exclusion: No comparator

### **Types of study**

Inclusion: Randomised controlled trials (RCTs) or non-randomised controlled trials (nRCTs) will be included based on the Cochrane EPOC guidance on study eligibility for these designs<sup>8</sup>.

Economic analysis will include cost studies, cost effectiveness analysis (CES), cost benefit analysis (CBA), cost utility analysis (CUA), willingness to pay (WTP), social return on investment (SROI).

Exclusion: Qualitative and uncontrolled descriptive studies will not be included.

**Setting.** Primary care will be generally defined as “care provided by clinicians that are available to treat all common conditions in all age groups and have an ongoing relationship with their patients”<sup>9</sup>. This definition allows for a more flexible interpretation in countries that have different models of healthcare. The intervention should be based in primary care and/or the community. While there may be referrals that originate from secondary care or emergency departments, this should not be the main setting for the intervention.

The definition of social deprivation is debated. It varies from country to country and is usually based on relative socioeconomic capacity<sup>7</sup>. For this review, we will accept and describe the study authors’ definition of deprivation.

### **Outcomes**

#### **Main outcome(s)**

The outcomes will be based on the core outcome set for multimorbidity<sup>10</sup> that recommends primary outcomes of quality

of life, mental health and mortality for interventions focused on multimorbidity.

The primary outcomes for the review will be:

- Health related quality of life (HRQoL) from baseline to last available follow up, as measured by a validated instrument, such as EQ5D5L, SF-12, SF-36 or The World Health Organization Quality of Life (WHOQOL).
- Mental health outcomes from baseline to last available follow up, as measured by a validated instrument such as the Warwick Edinburgh mental wellbeing scale or the Hospital Anxiety and Depression score.

**Additional outcome(s).** Secondary outcomes measured will also focus on the core outcome set for multimorbidity<sup>10</sup>. While this is a wide range of outcomes it is in keeping with the MRC frameworks' guide on using multiple outcome measures for complex interventions<sup>11</sup>. These include:

- Patient-reported impacts and behaviours will include measures of social-connectedness or isolation, self-rated health, patient experience of care, treatment burden, self-management behaviour and self-efficacy.
- Physical activity and function will include measures of physical activity (self-reported or objectively measured), physical function, activities of daily living.
- Health service utilisation will be defined as number of GP visits, ED attendances or hospital admissions as measured via primary care or hospital records or self reported.
- Any physical health data reported will also be included.

Lack of this data will not exclude studies from the review.

Economic issues will also be considered in the review. This involves the assembly, selection, critical appraisal, summary and synthesis of data from relevant health economics studies. Evidence on marginal resource use and costs associated with an intervention, versus relevant comparators, is important in any decision-making regarding investing in social prescribing. Economic studies linking costs to health and social outcomes will also be reviewed.

### Search strategy

The following bibliographic and trials databases will be searched from inception up to May 2019, with no language limits:

Cochrane database, Cochrane Central register of Controlled trials, ClinicalTrials.gov and EU Clinical Trials Register, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Embase, PubMed/MEDLINE, Psycinfo, LILACS (Latin American and Caribbean Health Sciences Information database), PAHO (Pan American Health Organization database), and Scopus.

To identify economic evaluations that may be of relevance the NHS EED (NHS Economic Evaluation Database), Health Technology Assessment Database (both available via the Centre for Reviews and Dissemination (CRD), University of York) and CEA (Cost-Effectiveness Analysis Registry) will be searched.

Search terms for PubMed will include keywords and phrases in the title and abstract; “link worker”, “social prescri\*”, “community health worker\*”, “patient navigators”, “health facilitator” and variations of these terms. The terms will be informed by previous reviews and scoping reviews. The strategy will be adapted for specific databases. A key word search will be more specific, as some studies may not be MESH term, or equivalent, indexed. A manual review of titles will exclude obviously irrelevant studies.

A forward and backward citation search of retrieved articles will be conducted for additional relevant literature.

### Grey literature searches

The following databases will be searched: Irish Health Service Executive (HSE) Lenus, RIAN, Open Grey, DART EUROPE, Google and Google Scholar and WHOLIS (World Health Organization Library Information System).

In addition, social prescribing networks will be contacted for grey literature reports and authors of relevant literature directly regarding additional unpublished reports.

### Search strategy example (PubMed)

Please see Extended data for sample search<sup>12</sup>.

### Data management

Rayyan will be used to sort abstracts for inclusion and exclusion. Revman 5 will be used to store and manage selected articles and manage extracted data. References will be managed with Endnote 8 reference manager.

### Data extraction

The lead author (BK) will do an initial screen to remove clearly ineligible titles. Two independent reviewers will then review all potentially eligible titles and abstracts of the results of the search strategy and select those meeting the review criteria (BK and AC). Any discrepancies will be discussed with a third reviewer (SMS). In cases where it is unclear from the title or abstract whether a study should be included, the full text will be obtained.

After initial selection, the full text of each eligible study will be retrieved and reviewed for final inclusion by two reviewers (BK and AC). Any discrepancies will be resolved through discussion with a third reviewer (SMS). Reasons for exclusion will be documented using the Cochrane Data Extraction and Assessment form (study eligibility) and a Preferred Reporting Items for Systematic Reviews (PRISMA) flow diagram will document the selection process<sup>13</sup>.

A standardised, pre-piloted form will be used to extract data from the included studies for evidence synthesis (Extended data<sup>12</sup>). Extracted information will include: study setting; study population and participant demographics and baseline characteristics, in particular if any participants were identified as experiencing multimorbidity or social deprivation, details of the intervention to include link worker definition, training, setting and duration of link worker support, details of control conditions; study methodology; recruitment and study completion rates; outcomes and times of measurement; any costs and marginal resource use reported.

### Quality assessment

The included studies will be assessed for bias using the Cochrane Risk of Bias tools for RCTs and nRCTs<sup>14</sup>. Performance bias will be inherent in all studies as blinding of participants is not possible due to the nature of the intervention. Publication bias will be assessed using a funnel plot if greater than 10 studies are identified. The GRADE assessment tool will be used to rate the quality of scientific evidence and present the evidence summary for each outcome including relative and absolute effects, patient numbers, quality of evidence and why this rating was applied<sup>15</sup>.

The health economist (E O'S) will advise on the relevant use of proxy outcomes for economic comparisons, whether validated tools have been used and if so have they been used as intended; the necessary and appropriate use of assumptions and their validity (e.g. whether inferences in SROI models are clearly stated and justified); whether steps have been taken to mitigate the effects of potential confounding factors.

### Strategy for data synthesis

A narrative synthesis will be performed and presented in tabular form to include the following headings: study method, nature of intervention, number of participants, outcome measures used, effects, costs and cost effectiveness implications. Studies that have calculated the social return on investment (SROI) will also be examined.

A statistician will advise on whether there is sufficient comparable data to conduct a meta-analysis of the effect size of the HRQOL and mental health and wellbeing measures. RevMan<sup>16</sup> or [Stata](#) version 15<sup>17</sup> will be used.

For continuous variables, standardised mean differences (SMD) will be estimated, with adjustment for the direction of the scale. Conventionally, SMD values of 0.2, 0.5 and 0.8 are taken as small, medium and large effect sizes, respectively<sup>18</sup>. Dichotomous outcomes, if any, will be presented as risk ratios (RR) or odds ratios (OR) with 95% confidence intervals. Studies will be pooled together and analysed using a random-effects (RE) model to obtain the summary effect estimate, 95% confidence interval and p-value. Studies using binary and continuous outcomes will be analysed separately. Heterogeneity between studies will be explored through visual inspection of the forest plots and using the  $I^2$  statistic. We will interpret an  $I^2$

value of 0% as an indication of no observed inconsistency/heterogeneity, 30%–60% as may represent moderate heterogeneity, 50%–90% as may represent substantial heterogeneity and 75% to 100% considerable heterogeneity<sup>19</sup>.

Where required study data is incomplete or clarifications are needed, authors will be contacted. Following contacting authors, if data is still missing, estimation of standard deviations (SDs) will be done by borrowing SDs from other studies included in this meta-analysis.

If ten or more trials are included in the meta-analysis, a funnel plot and Egger's test will be used to assess publication bias.

The following sensitivity analyses will be conducted: excluding high risk of bias studies, as classified under 'risk of bias' assessment, and excluding outcomes with imputed values.

### Analysis of subgroups

If sufficient data are available from studies with comparable interventions and outcomes, sub-group analyses of participants with multimorbidity, living in areas of social deprivation and both will be completed. This will be a narrative synthesis and will include a meta-analysis if sufficient data are available. Similarly, studies with link workers based in primary care practices vs those with a link worker based in the community will be compared if sufficient studies are identified.

### Dissemination of information

The review will be published in a peer-reviewed journal, reported using the PRISMA guidelines<sup>13</sup>. The review will also be presented at a relevant conference and disseminated to policy-makers, patients, and the public

### Study status

Database searches have been completed and title and abstract review is underway.

### Data availability

#### Underlying data

No data is associated with this article.

#### Extended data

Open Science Framework: Effectiveness of link workers providing social prescribing on health outcomes and costs for adult patients in primary care and community settings. A protocol for a systematic review of the literature. Extended Data. <https://doi.org/10.17605/OSF.IO/X6V2K><sup>12</sup>

This project contains the following extended data:

- Pubmed Search Strategy for Effectiveness of link workers systematic review.docx (PubMed search strategy)
- Data extraction pilot template.xlsx (Spreadsheet containing the study data extraction form)

## Reporting guidelines

PRISMA-P checklist for “Effectiveness of link workers providing social prescribing on health outcomes and costs for adult patients in primary care and community settings. A protocol for a systematic review of the literature” <https://doi.org/10.17605/OSF.IO/X6V2K><sup>12</sup>

Data are available under the terms of the [Creative Commons Zero “No rights reserved” data waiver](https://creativecommons.org/licenses/by/4.0/) (CC0 1.0 Public domain dedication).

## Acknowledgments

Paul J Murphy MLIS, Information Specialist, Royal College of Surgeons Ireland Library, 26 York Street, D02 YN77. Advised on search strategies.

Dr Fiona Boland, Statistician, Department of General Practice, Royal College of Surgeons Ireland, 123 St Stephens Green, D02 YN77. Advised on data synthesis and statistical methods for meta-analysis.

## References

- University of Westminster: **Making sense of Social Prescribing**. 2017. [Reference Source](#)
- Bickerdike L, Booth A, Wilson PM, *et al.*: **Social prescribing: less rhetoric and more reality. A systematic review of the evidence**. *BMJ Open*. 2017; **7**(4): e013384. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Barnett K, Mercer SW, Norbury M, *et al.*: **Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study**. *Lancet*. 2012; **380**(9836): 37–43. [PubMed Abstract](#) | [Publisher Full Text](#)
- Wallace E, Salisbury C, Guthrie B, *et al.*: **Managing patients with multimorbidity in primary care**. *BMJ*. 2015; **350**: h176. [PubMed Abstract](#) | [Publisher Full Text](#)
- Mercer SW, Fitzpatrick B, Grant L, *et al.*: **The Glasgow ‘Deep End’ Links Worker Study Protocol: a quasi-experimental evaluation of a social prescribing intervention for patients with complex needs in areas of high socioeconomic deprivation**. *J Comorb*. 2017; **7**(1): 1–10. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Kangovi S, Mitra N, Turr L, *et al.*: **A randomized controlled trial of a community health worker intervention in a population of patients with multiple chronic diseases: Study design and protocol**. *Contemp Clin Trials*. 2017; **53**: 115–21. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Kangovi S, Mitra N, Norton L, *et al.*: **Effect of Community Health Worker Support on Clinical Outcomes of Low-Income Patients Across Primary Care Facilities: A Randomized Clinical Trial**. *JAMA Intern Med*. 2018; **178**(12): 1635–43. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Cochrane: **Cochrane Effective Practice and Organisation of Care (EPOC)**: Cochrane. 2017. [Reference Source](#)
- Smith SM, Wallace E, O’Dowd T, *et al.*: **Interventions for improving outcomes in patients with multimorbidity in primary care and community settings**. *Cochrane Database Syst Rev*. 2016; **3**: CD006560. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Smith SM, Wallace E, Salisbury C, *et al.*: **A Core Outcome Set for Multimorbidity Research (COSmm)**. *Ann Fam Med*. 2018; **16**(2): 132–8. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Craig P, Dieppe P, Macintyre S, *et al.*: **Developing and evaluating complex interventions: the new Medical Research Council guidance**. *BMJ*. 2008; **337**: a1655. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Kiely B: **Effectiveness of link workers providing social prescribing on health outcomes and costs for adult patients in primary care and community settings. A protocol for a systematic review of the literature**. Extended Data. 2019. <http://www.doi.org/10.17605/OSF.IO/X6V2K>
- Moher D, Liberata A, Tetzlaff J, *et al.*: **Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement**. *PLoS Med*. 2009; **6**(7): e1000097. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Higgins JP, Altman DG, Gøtzsche PC, *et al.*: **The Cochrane Collaboration’s tool for assessing risk of bias in randomised trials**. *BMJ*. 2011; **343**: d5928. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- GRADE: **Grade Working Group**. 2019. [Reference Source](#)
- The Cochrane Collaboration: **Review Manager (RevMan)**. 5 ed. Copenhagen: The Nordic Cochrane Centre; 2014. [Reference Source](#)
- StataCorp: **Stata Statistical Software: 15 ed**. College Station, TX: StataCorp LLC, 2017. [Reference Source](#)
- Faraone SV: **Interpreting estimates of treatment effects: implications for managed care**. *P T*. 2008; **33**(12): 700–11. [PubMed Abstract](#) | [Free Full Text](#)
- Ryan R: **Heterogeneity and subgroup analyses in Cochrane Consumers and Communication Review Group reviews: Planning the analysis at protocol stage Heterogeneity**. 2014. [Reference Source](#)

## Open Peer Review

Current Peer Review Status:  

---

### Version 2

Reviewer Report 08 December 2020

<https://doi.org/10.21956/hrbopenres.14321.r28386>

© 2020 Harris M. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



**Mark Fort Harris** 

Centre for Primary Health Care and Equity, University of New South Wales, Sydney, Australia

No new comments. The authors have adequately addressed my previous points.

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Primary Health Care, Health Equity.

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

Reviewer Report 17 November 2020

<https://doi.org/10.21956/hrbopenres.14321.r28385>

© 2020 Petticrew M. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



**Mark Petticrew**

Department of Public Health, Environments and Society, London School of Hygiene and Tropical Medicine (LSHTM), London, UK

No further comments. This will be an important and valuable review.

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Public Health.



**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

---

**Version 1**

Reviewer Report 06 July 2020

<https://doi.org/10.21956/hrbopenres.14016.r27556>

© 2020 Harris M. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Mark Fort Harris**

Centre for Primary Health Care and Equity, University of New South Wales, Sydney, Australia

This is a generally well described protocol for a systematic review on link workers social prescribing in primary care and community settings.

There are a few areas that need clarification:

1. The definition of LW is under intervention - this could be more clearly positioned in the paper.
2. The definition says that "link workers are non-health or social care professions based in primary care practices or community and/or voluntary organisations..". However use of volunteers as link workers is excluded. Also the search terms include "community health workers", "patient navigators" and "health facilitator" - aren't these are health professionals?
3. Disability support workers are not included in the search terms.
4. Interventions for specific conditions will be excluded. Does this mean that interventions for specific groups of patients (e.g. supporting diabetes patients to apply for financial support for that condition)?
5. Why are mental health outcomes the only specific conditions for which outcomes will be assessed?

**Is the rationale for, and objectives of, the study clearly described?**

Yes

**Is the study design appropriate for the research question?**

No

**Are sufficient details of the methods provided to allow replication by others?**

Partly

**Are the datasets clearly presented in a useable and accessible format?**

Partly

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Primary Health Care, Health Equity.

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.**

Author Response 13 Nov 2020

**Bridget Kiely**, Royal College of Surgeons in Ireland, Dublin, Ireland

Many thanks for this helpful and detailed review. Apologies for the delay in response. The lead author has just returned from maternity leave. We have submitted a revised version of the manuscript, which we hope will address the points you have raised and provide greater clarity for readers. Please also see individual response below.

1. The definition of LW is under intervention - this could be more clearly positioned in the paper.

**Author Response**

We have now repositioned the full definition of link workers to the beginning of the paper, within the Introduction in paragraph 1.

2. The definition says that "link workers are non-health or social care professions based in primary care practices or community and/or voluntary organisations..". However use of volunteers as link workers is excluded. Also the search terms include "community health workers", "patient navigators" and "health facilitator" - aren't these are health professionals?

**Author Response**

We have expanded the inclusion and exclusion section to make this clearer. For the purpose of this review we are not considering volunteers as professionals. We are making a distinction between interventions where support is provided by a health and social care professional (someone with a recognised health or social work professional qualification) versus a "lay worker" who may be working in the area of health, potentially have a related qualification, but is not a member of a recognised health or social work professional body.

3. Disability support workers are not included in the search terms.

**Author Response**

While disability support workers also engage in elements of social prescribing and health and social care coordination, as they also provide personal care services it would be difficult to disentangle the impact of this on outcomes and so this was not included in the search terms. We have added a clarification to the exclusion criteria.

4. Interventions for specific conditions will be excluded. Does this mean that interventions

for specific groups of patients (e.g. supporting diabetes patients to apply for financial support for that condition)?

#### **Author Response**

The inclusion and exclusions section has been adjusted to make this clearer, within the Methods under Types of Interventions. There are a lot of interventions that use lay workers to support people with specific diseases. Many such interventions may include some elements of social prescribing, but the majority of the intervention focuses on disease education and support around disease control such as medication adherence. As such it is hard to disentangle the impact of the different components on outcomes and so such disease specific interventions have been excluded.

5. Why are mental health outcomes the only specific conditions for which outcomes will be assessed?

#### **Author Response**

Mental health outcomes are one of the primary outcomes recommended by the Core Outcome Set for Multimorbidity, which provides our outcomes framework. A recent literature review of the aims of social prescribing programmes found that improved mental health was the most common, although the programmes were not specifically aimed at people with mental health problems (Rempel ES, Wilson EN, Durrant H, et al Preparing the prescription: a review of the aim and measurement of social referral programmes BMJ Open 2017;7:e017734. doi: 10.1136/bmjopen-2017-017734) Mental health outcomes such as anxiety or depression are often reported for all individuals in a study regardless of a diagnosis of a mental health condition. To clarify, we are not specifically including mental health conditions and all outcomes reported using a validated measure will be considered.

**Competing Interests:** No competing interests to declare

Reviewer Report 25 October 2019

<https://doi.org/10.21956/hrbopenres.14016.r26866>

© 2019 Petticrew M. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



#### **Mark Petticrew**

Department of Public Health, Environments and Society, London School of Hygiene and Tropical Medicine (LSHTM), London, UK

This is generally very clear and likely to be a well-conducted review. A few minor comments:

The selection of outcomes could be clearer. Much of the Introduction section (appropriately) discusses a potentially wide range of outcomes from the use of link workers. However not all of these appear in the list of primary or additional outcomes. Some of the omissions seem to be important - e.g. link workers may facilitate health and social care co-ordination but this does not appear in the additional outcomes. Also, the primary outcomes are QoL and mental health, but surely (going by the introduction) physical health outcomes are also relevant primary outcomes.

Another potentially important outcome relates to inequalities - i.e the differential effects of link workers in different groups - (e.g. this could be analysed by stratifying the findings by SES, gender etc if possible, or some other form of subgroup analysis) it would be useful to explore this in the review.

**Is the rationale for, and objectives of, the study clearly described?**

Yes

**Is the study design appropriate for the research question?**

Yes

**Are sufficient details of the methods provided to allow replication by others?**

Yes

**Are the datasets clearly presented in a useable and accessible format?**

Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Public Health.

**I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.**

Author Response 13 Nov 2020

**Bridget Kiely**, Royal College of Surgeons in Ireland, Dublin, Ireland

Thank you for the helpful and positive review and suggestions for clarifications. Apologies for the delay in responding. There was a delay in obtaining a second review and the lead author has just returned from maternity leave.

1. The selection of outcomes could be clearer. Much of the Introduction section (appropriately) discusses a potentially wide range of outcomes from the use of link workers. However not all of these appear in the list of primary or additional outcomes. Some of the omissions seem to be important - e.g. link workers may facilitate health and social care co-ordination but this does not appear in the additional outcomes. Also, the primary outcomes are QoL and mental health, but surely (going by the introduction) physical health outcomes are also relevant primary outcomes.

**Author Response**

The selection of outcomes is based on the Core Outcome Set for Multimorbidity as multimorbidity is a specific focus of this review. The COSmm recommends quality of life, mental health and mortality as primary outcomes. Secondary outcomes are grouped into patient reported impacts and behaviour, physical activity and function, consultation related and health service utilisation. We do not anticipate that link workers connecting people to community resources will have significant consultation related outcomes and so have not listed this specifically. The COSmm is broadly in line with the outcome measures suggested in the NHS draft Core Outcomes Framework for Social Prescribing, that mentions mental health and wellbeing scales, physical activity measures, patient activation measures, social isolation measures as well as health care utilisation measures. While link workers can indeed provide health and social care coordination this is one of the range of ways in which they can support clients in order to improve outcomes such as quality of life and mental health. We have not therefore included this as a separate outcome but it would be captured by a patient experience of care measure if reported in included studies and we have specifically added this as a secondary outcome.

The listed outcomes are not finite and we intend to include all reported outcomes, including physical health measures, that are reported using a validated measure. The text has been adjusted to make the selection of outcomes clearer.

2. Another potentially important outcome relates to inequalities - i.e the differential effects of link workers in different groups - (e.g. this could be analysed by stratifying the findings by SES, gender etc if possible, or some other form of subgroup analysis) it would be useful to explore this in the review.

**Author Response**

We agree that link workers have the potential to reduce health inequalities. People in areas of social deprivation experience more multimorbidity at a younger age and have worse outcomes than those in less deprived areas. We intend to do sub group analysis of participants with multimorbidity and those living in areas of social deprivation if there are sufficient studies with data and comparable outcomes. This will provide more evidence on the effectiveness of link workers in areas of deprivation and for people with multimorbidity.

**Competing Interests:** No competing interests to disclose