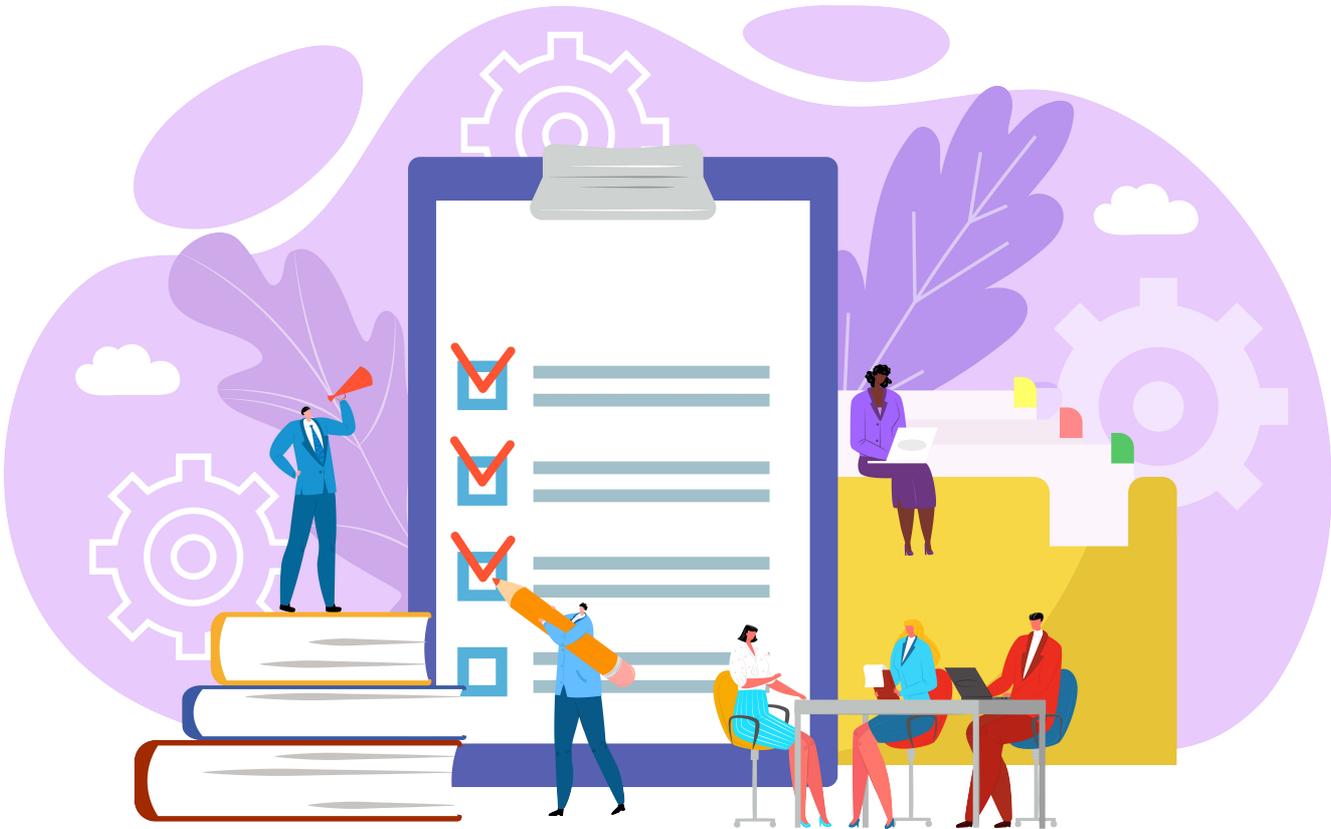


# Rapid Evidence Assessment of Wellbeing Impact Evaluations using ONS4 Personal Wellbeing Measures

October 2020



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## 1 Introduction

The purpose of this Rapid Evidence Assessment (REA) is to identify, collate and appraise wellbeing impact evaluations that have used the Office for National Statistics (ONS) Personal Wellbeing Measures<sup>1</sup>. Solutions for Public Health (SPH) was commissioned by the What Works Centre for Wellbeing (WWCW) to produce this REA.

In 2011, a National Wellbeing Measurement programme was established for the UK which aimed to monitor and report on “how the UK as a whole is doing” using key measures of national wellbeing [1]. Since then, the ONS Measuring National Wellbeing Programme (MNW) has asked people across the UK what matters most to them organising the results into a live dashboard of 10 broad dimensions and 41 indicators<sup>2</sup>.

Since its establishment, the WWCW has recommended the ONS<sup>4</sup> as accepted and trusted subjective measures from the National Wellbeing Programme that capture distinct aspects of personal wellbeing: evaluative, eudemonic and affective experience. The measures gained National Statistics status in September 2014 and have been subjected to a range of quantitative testing and qualitative testing [2-4].

The ONS4 are supported by a growing evidence base which can be used to test and compare different determinants of wellbeing<sup>3</sup>. Data from these measures have been collected systematically since April 2011 when they were added to the Annual Population Survey (APS) and provide a means benchmarking against the national picture<sup>4</sup>.

While the ONS4 measures are increasingly used across government departments as well as the private sector and third sector organisations, relatively little is known about how they feature and perform in wellbeing impact evaluations in the UK. As part of its work to increase the quality, visibility and use of wellbeing evaluation findings, the WWCW is keen to map the quantity and quality of studies that use

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<sup>1</sup> The ONS use 4 survey questions to measure personal wellbeing, with each scored from 0 ‘not at all’ to 10 ‘completely’. These questions are on life satisfaction (‘overall, how satisfied are you with your life nowadays?’), worthwhile (‘overall, to what extent do you feel that the things you do in life are worthwhile?’), happiness (‘overall, how happy did you feel yesterday?’), and anxiety (‘overall, how anxious did you feel yesterday?’)

<sup>2</sup> The dimensions are: the natural environment, our relationships, health, what we do, where we live, personal finance, the economy, education and skills, governance and personal wellbeing.  
<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuresofnationalwellbeingdashboard/2018-04-25>

<sup>3</sup> ONS, ‘Personal and economic wellbeing: what matters most to our life satisfaction?’ <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/personalandeconomicwellbeingintheuk/whatmattersmosttoourlifesatisfaction>

<sup>4</sup> For an updated list of UK surveys that use the ONS4, visit: <https://gss.civilservice.gov.uk/policy-store/personal-well-being/>

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these measures as part of a longer-term project to summarise and synthesise findings on the effectiveness of wellbeing interventions.

This REA represents an initial mapping exercise to explore the use of the ONS4 measures by government, academics, funders, and the public, Voluntary, Community and Social Enterprise (VCSE) sectors when evaluating pilots and programmes to improve wellbeing. It will identify, map, and summarise the characteristics and findings of included studies and will not seek to make conclusions on the overall effectiveness of a particular thematic area or intervention type as a means of improving personal wellbeing.

However, recommendations will be made on how to further our understanding of the wellbeing evaluation evidence base and support the comparison of wellbeing evidence across different thematic areas and intervention types.

Specifically, the aim of the REA is to answer the following questions:

1. What impact evaluation research has been carried out to assess the impact of wellbeing interventions that use at least one of the ONS4 Personal Wellbeing Measures?
2. What is the strength and quality of the impact evaluation research?
3. What are the key findings from the impact evaluation research?

To meet the aims of this ambitious project a broad search strategy was applied, looking for peer-reviewed and grey literature<sup>5</sup> impact evaluations from a wide range of wellbeing domains and thematic areas that form part of the ONS National Wellbeing framework [5] and wellbeing determinants collated by the WWCW [6].

This report summarises the approach used for the identification and selection of relevant impact evaluations and discusses the key findings and limitations.

## **2 Methodology**

### **2.1 Search strategy**

This REA was designed to quickly identify, summarise and appraise the available evidence in a tightly focused area, in this case around a specific outcome measure. Whilst REAs are conducted more rapidly than systematic reviews with narrower questions and less extensive review methods<sup>6</sup>, they employ the same systematic rigour in the identification and selection of evidence and transparency in the reporting of the methodology and decisions made.

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<sup>5</sup> The term grey literature is used here to describe any report not published in a peer-reviewed journal

<sup>6</sup> For example, by using 1 reviewer to screen search results rather than this being done independently by 2 reviewers

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Our approach to the search strategy reflected the requirement to identify both peer-reviewed and grey literature across thematic areas from a range of providers including academic researchers, government, the VCSE sector and funders. In addition, we were searching for studies using a particular outcome measure. As specific outcome measures are not always mentioned in a study's title, abstract or keywords, broad searches were required to maximise the number of relevant studies identified. We therefore chose a multifaceted approach to identifying relevant studies including searches for peer-reviewed and grey literature and a call for evidence<sup>7</sup>.

Initial scoping searches were run in April 2020 to test the potential evidence available from different databases/ sources and to inform a discussion about refinements to the search strategies with the WWCW Evidence Team and Advisory Panel. Final searches for peer-reviewed studies were conducted on 7th May 2020 on the electronic databases CINAHL, Embase, Medline, PsycINFO and Social Science Premium Collection.

We used several approaches to identify relevant grey literature reports. Database searches on Social Care Institute for Excellence Social Care Online and NHS Evidence were conducted in May 2020. A call for evidence, via the WWCW, was open for 4 weeks from mid-May to mid-June. Google searches and a review of key websites were conducted in June 2020. For the NHS Evidence and Google grey literature searches we applied a pre-specified cut-off for the first 100 results returned for each of the individual searches (see Appendix 2 for further details).

For both peer-reviewed and grey literature, we searched for UK studies published since 1st January 2011. We also reviewed the reference lists of selected eligible studies to check for additional potential studies. The full inclusion and exclusion criteria and detailed search strategies are provided in Appendices 1 and 2 respectively. Briefly, we searched for impact evaluations assessing interventions that sought to improve the wellbeing of adults in the UK and reported quantitative wellbeing outcomes using at least one of the ONS4 measures.

## **2.2 Study selection**

Titles and abstracts were reviewed by one reviewer and those clearly ineligible were excluded. Full papers for studies that met the inclusion criteria, or where there was any uncertainty, were reviewed by one reviewer. A second senior reviewer, the quality assurance lead, independently reviewed 10% of the title/ abstracts retrieved and full studies selected. Any disagreements or uncertainty about exclusion were discussed and a consensus reached.

Reasons for exclusion at the title, abstract or full text stage included: studies not conducted in the UK; the majority of the study population were children; studies that did not assess an intervention or where the intervention was not about improving wellbeing (as the main or one of several key objectives); studies reporting only qualitative outcomes; reviews; studies not reporting at least one ONS4 measure; and duplicates of studies already considered.

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<sup>7</sup> The inclusion of a call for evidence is a method endorsed in the WWCW Methods Guide

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### 2.3 Data extraction and quality assessment

Data extraction and critical appraisal of the selected studies was conducted by one reviewer. The quality assurance lead independently checked 20% of the extracted study results and critical appraisal.

The fields to be used in the REA database were agreed with the WWCW Evidence Team and Advisory Panel. These included details of the study design, population, thematic area, intervention type, comparator type, ONS4 measure outcomes and results (including any indicators of statistical significance and effect size), and other reported outcomes.

Quality assessment was conducted using an amended version of the Early Intervention Foundation (EIF) quality checklist which can be applied across different study designs and allows comparisons between programmes on the basis of their evaluation evidence. The EIF assessment process was developed specifically to inform judgements about whether programmes have been found effective in at least one rigorously conducted evaluation study. The EIF checklist was previously adapted for use by the WWCW Evidence Team and further developed by us to include a scoring system in order to provide an overview of the level of confidence in the study's results. For further details of the quality checklist used see Appendix 3.

## 3 The search results

The searches returned 7,056 unique studies (5,390 identified through the peer-reviewed literature searches and 1,666 through the grey literature searches), with a further 26 studies identified through the call for evidence<sup>8</sup>. In total, 926 studies were reviewed at full text and a list of 37 UK impact evaluations that were found to have used at least one of the ONS4 measures was collated for further discussion with the WWCW Evidence Team and Advisory Panel. Further details on why peer-reviewed and grey literature studies were excluded is provided in Appendix 4.

In total, 28 studies were found to be relevant and were selected for inclusion in the REA [7-34]. These studies covered a wide range of populations, interventions and study designs, whilst using a common approach to assessing wellbeing through the use of the ONS4 measures.

Figure 1 summarises the peer-reviewed and grey literature publications included and excluded at each stage of the REA.

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<sup>8</sup> Multiple reports submitted about the same intervention have only been counted once

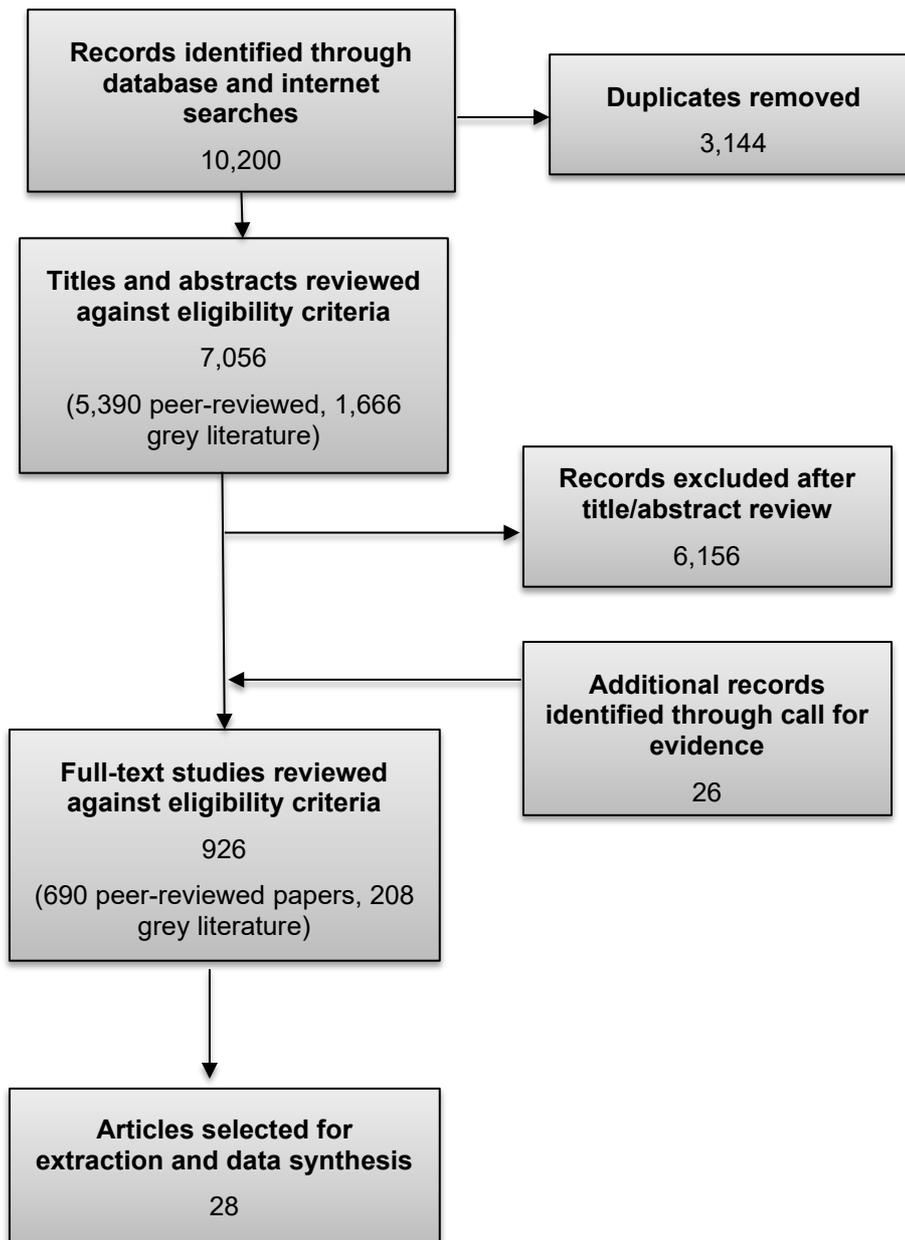


Figure 1. Summary of publications included and excluded at each stage of the REA

## 4 The key findings

### 4.1 What impact evaluations have used the ONS4 Personal Wellbeing Measures

Characteristics of the included studies, including a description of the population and intervention, study design, sample size, length of follow-up (f/up), ONS4 measures reported, wellbeing impact for each measure reported and level of confidence in the results, are described in Appendix 5.

Each study was assigned to one or more broad intervention theme categories<sup>9</sup> and to more specific intervention type categories<sup>10</sup>. These categories were developed with the WWCW Evidence Team and Advisory Panel prior to commencing data extraction with some additional categories added during the process. The majority of the identified studies assessed more than one intervention type, but for the purposes of this summary report, each study has been assigned to one main type. The studies identified covered the following main intervention types: community centred approaches (4 studies), volunteering (3 studies), physical activity (4 studies), social prescribing (3 studies), psychological interventions (2 studies), social care support (2 studies), skills training (2 studies), advice and support (3 studies), arts and culture (2 studies), and housing improvement and neighbourhood design (3 studies). Table 1 lists the studies included within each of these types.

**Table 1: Included studies**

<b>Main intervention type</b>	<b>Studies (report title)</b>
<b>Community centred approaches<sup>11</sup></b>	<ul style="list-style-type: none"> <li>- North and South London Cares: evaluation and development through the Centre for Social Action Innovation Fund [7]</li> <li>- Evaluation of the community organisers programme [8]</li> <li>- Community Capital: the value of connected communities [9]</li> <li>- Wellbeing 2 programme evaluation: a final report to the Big Lottery [10]</li> </ul>
<b>Volunteering</b>	<ul style="list-style-type: none"> <li>- Sport England volunteering fund evaluation: interim report [11]</li> <li>- Residents as volunteers. Final evaluation report [12]</li> <li>- "I feel fitter and better being outside": green gym evaluation report [13]</li> </ul>
<b>Physical activity</b>	<ul style="list-style-type: none"> <li>- Feasibility trial evaluation of a peer volunteering active aging intervention: ACE (Active, Connected, Engaged) [14]</li> <li>- Moving at scale - from inactive to active (Beat the Street) [15]</li> <li>- Evaluation of walking for health: final report to Macmillan and the Ramblers [16]</li> <li>- Spirit of 2012 evaluation final report [17]</li> </ul>
<b>Social prescribing<sup>12</sup></b>	<ul style="list-style-type: none"> <li>- Measuring the economic impact of Wellspring Healthy Living Centre's social prescribing wellbeing programme for low level mental health issues encountered by GP services [18]</li> <li>- An evaluation of Wolverhampton's social prescribing service: a new route to wellbeing [19]</li> <li>- Macmillan social prescribing service: summary evaluation report [20]</li> </ul>
<b>Psychological interventions</b>	<ul style="list-style-type: none"> <li>- Navigating later life transitions: an evaluation of emotional and psychological interventions [21]</li> <li>- A brief psychological intervention to protect subjective well-being in a community sample [22]</li> </ul>

<sup>9</sup> Community, cultural/heritage/arts, education/skills, environmental, health, social care, social relationship, workplace

<sup>10</sup> Advice and support services, arts activity, community centred approach, food/diet, history/culture, housing/neighbourhood improvements, music/singing, nature/outdoors, physical activity, physical health, policy change, programme of various interventions, psychological interventions, social prescribing, skills training, social care support, social needs, volunteering, workforce

<sup>11</sup> A focus on promoting wellbeing in community settings, community engagement and strengthening community networks

<sup>12</sup> Referral by GPs, nurses and other primary care professionals to a range of local, non-clinical services to address people's needs in a holistic way and support individuals to take greater control of their own health

<b>Social care support</b>	<ul style="list-style-type: none"> <li>- Making homes more dementia-friendly through the use of aids and adaptation [23]</li> <li>- Living digitally - an evaluation of the CleverCogs™ digital care and support system [24]</li> </ul>
<b>Skills training</b>	<ul style="list-style-type: none"> <li>- A randomised controlled trial of a goal-setting and planning intervention to improve working adults' well-being [25]</li> <li>- Early support for military-connected families: evaluation of services at NSPCC military sites [26]</li> </ul>
<b>Advice &amp; support services</b>	<ul style="list-style-type: none"> <li>- Quantifying our impact 2018: a journey to impact reporting. Applicant Help 2018 [27]</li> <li>- Delivering person-centred holistic care for older people [28]</li> <li>- Health begins at home: final report [29]</li> </ul>
<b>Arts &amp; culture</b>	<ul style="list-style-type: none"> <li>- Cultural transformations: The impacts of Hull UK City of Culture 2017. Preliminary outcomes evaluation [30]</li> <li>- Evaluation of the RADIQL intervention in Reminiscence Arts in Day Care [31]</li> </ul>
<b>Housing improvement &amp; neighbourhood design</b>	<ul style="list-style-type: none"> <li>- Evaluating the effect of change in the built environment on mental health and subjective well-being: a natural experiment [32]</li> <li>- Evaluation of the economic impact and public value of the superfast broadband programme. Final report [33]</li> <li>- The short-term health and psychosocial impacts of domestic energy efficiency investments in low-income areas: a controlled before and after study [34]</li> </ul>

Note – Each study has been listed under its main intervention type, but in some cases more than one intervention type may apply.

Many of the interventions were aimed at one or more specific populations which included older people (11 studies), working age adults (4 studies), women (1 study), Black, Asian and minority ethnic (BAME) groups (2 studies), people living in deprived areas (6 studies) and people with underlying health conditions (6 studies).

Of the 28 included studies, 20 were uncontrolled and used a before and after design to compare wellbeing before and after the participants had received the intervention. The remaining 8 studies were controlled studies comparing an intervention to no intervention at an individual or area level. Of these, 3 were randomised controlled trials (RCTs), 2 were non-randomised controlled trials, 1 was a comparative cohort study and 2 were comparative surveys<sup>13</sup>. Where reported, the sample sizes of the included studies ranged from 25 to 2,381 individuals and follow-up periods ranged from 1 month to 2 years. Questionnaires were the most commonly used method of data collection (21 studies; 75%).

A benefit of studies using the ONS4 measures is that it allows comparisons to be made to national and local wellbeing averages as the measures are included in the ONS

<sup>13</sup> Non-randomised controlled trial: an experimental trial with a control group assigned using non-random methods e.g. matching, cut-offs; comparative cohort study: an experiment with natural allocation to a control group, usually with multiple follow-up points; comparative survey: a study where measurement is taken at one point in time for a population (survey) compared to a survey of a comparator population at the same point in time

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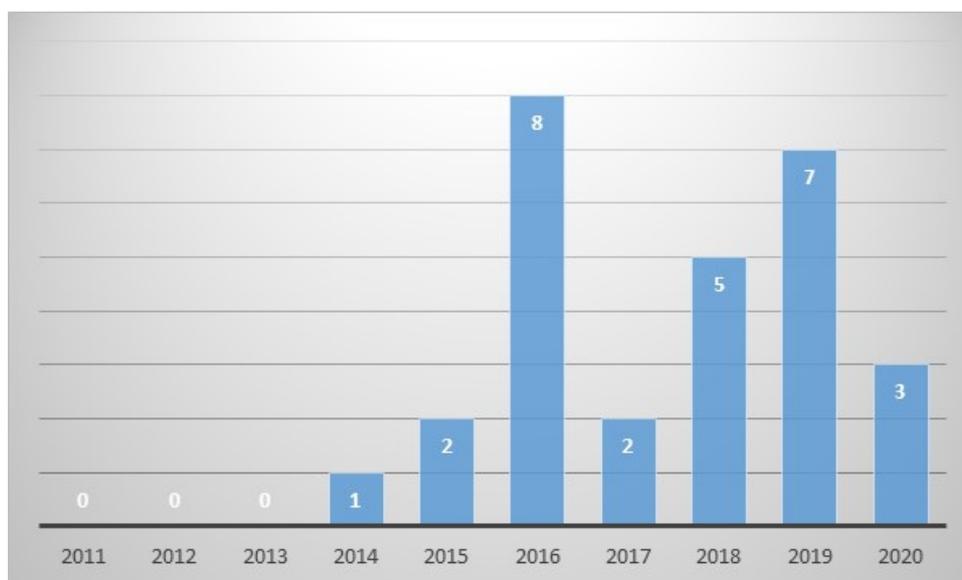
Annual Population Survey (APS). Twelve of the 28 included studies included this data. However, for most it was not possible to make comparisons to a change in national/local average scores due to study follow-up periods of less than a year, meaning that only the study endpoint result could be compared to one APS result rather than a change from baseline.

The ONS4 measures most commonly included in the studies were life satisfaction and happiness (24 and 21 studies respectively), whilst worthwhile and anxiety were reported less often (18 and 17 studies respectively). Six studies reported a combined score for the 4 measures, of which 2 also reported the results separately for each ONS4 measure.

Twenty of the 28 included studies collected data for all 4 of the ONS4 measures (reported separately or as a combined average score). Two studies reported 3 ONS4 measures (in both cases life satisfaction, worthwhile and anxiety) and 4 studies reported 2 ONS4 measures (3 life satisfaction and happiness; 1 life satisfaction and worthwhile). The 2 studies that only reported 1 ONS4 measure both reported life satisfaction.

Although the focus of the REA was on wellbeing impact measured by the ONS4 Personal Wellbeing Measures, we also noted other measures of wellbeing and wellbeing related outcomes reported by the included studies. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was the most frequently used additional measure of wellbeing included by 8 of the studies. Four studies reported on quality of life, 4 studies on social capital and 9 studies on loneliness. In addition to these quantitative measures, 19 studies also collected qualitative data on wellbeing e.g. through interviews or focus groups with participants.

Six of the 28 studies were published in peer-reviewed journals, the remaining 22 were grey literature. Although we searched for evidence from 2011 when the measures were introduced, more than half of the eligible studies were published in the last 3 years and the first eligible study identified was from 2014, 3 years after the ONS4 measures were first added to the APS (see Figure 2). The earlier studies were primarily grey literature, with the first study from a peer-reviewed journal identified from 2016. Half of the studies from peer-reviewed journals were published in the last 2 years.



**Figure 2: Included studies by year of publication**

The reports identified were produced by a range of universities and consultancies. All 6 of the studies published in peer reviewed journals had one or more universities involved in the production of the work. Six of the grey literature reports also included one or more universities, however most of the grey literature reports were produced by various consultancies. The most commonly mentioned funder was the Big Lottery, however many different funding and commissioning organisations were involved in the projects including national and local government organisations and national and local VCSE organisations. Three of the 6 studies published in peer-reviewed journals had received funding from the National Institute for Health Research (2 studies) or the Medical Research Council (1 study).

#### **4.2 The strength and quality of the evidence base**

We assessed the quality of the included studies and assigned each a quality score summarising our level of confidence in their results. The majority of the studies had quality summary scores indicating a moderate (14 studies) to low (10 studies) level of confidence in their results. Only 4 studies were of sufficiently high quality for us to have a high level of confidence in their results. The quality summary scores for each included study are given in Appendix 5.

The level of detail provided in the evaluation reports varied considerably. Therefore, some of the low scores, particularly for the grey literature, may reflect the fact that the reports did not include sufficient information to judge their quality. Although this means that we cannot have a high level of confidence in their results it does not necessarily reflect an underlying methodological issue with the conduct of the study. The main areas with poor reporting were the proportion of the target population included in a study and/or baseline characteristics of study population meaning that the representativeness of the study population could not be assessed (16 studies; 57%); no reference to sample size calculations meaning that it was not possible to determine whether the study was adequately powered to detect meaningful differences in wellbeing (24 studies; 86%); and

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the number of participants included at each measurement timepoint meaning that it was not possible to assess the extent of any bias introduced as a result of loss to follow-up (attrition bias, 17 studies; 61%).

The main methodological issue affecting the quality scores was a lack of a control group or appropriate counterfactual (22 studies; 79%). This results in a lower level of confidence that any changes in wellbeing observed are due to the intervention rather than other factors. The majority of studies had short follow-up periods of a year or less (23 studies; 82%) and many only included a single follow-up measurement (16 studies; 57%). Studies were therefore generally assessing the short-term impact of the intervention on wellbeing.

In some studies, there was an issue with the timing of the baseline measurement (5 studies; 18%), with this occurring after the intervention had started. This may cause studies to underestimate any improvement in wellbeing as any beneficial effect of the intervention may have already begun before the baseline measurement was taken.

The number of participants included in studies was also a common issue affecting the quality scores. Few of the included studies (4 studies; 14%) reported a sample size calculation so it is uncertain whether studies had included a sufficient number of participants to demonstrate an improvement in wellbeing. Generally, the number of participants completing follow-up assessments was considerably lower than the number of participants completing baseline measures. However, many studies chose to only include individuals who had completed both baseline and follow-up measurements in reporting their results. This is reflected in the relatively small sample sizes of many of the studies and is a potential risk of bias as the participants who completed both baseline and follow-up measures may not reflect the population as a whole (attrition bias). The reporting of results was limited in many of the included studies, with details of statistical tests performed, p-values and/or confidence intervals often not provided (20 studies; 71%).

Finally, as measures whose psychometric properties have not been fully established, it was not possible for any of the included studies to achieve the full score of the quality assessment.

### **4.3 The key findings regarding changes in wellbeing**

This REA sought to identify a sub-group of impact evaluations that have used the ONS4 Personal Wellbeing Measures to report effectiveness. While we cannot draw conclusions about the effectiveness of a particular intervention or type of intervention as a means of improving personal wellbeing we can summarise the characteristics and findings of the following impact evaluations as a means of profiling studies that have used the ONS4 measures.

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Ten of the 28 included studies reported a statistically significant<sup>14</sup> improvement in at least one of the ONS4 measures [10,11,15,18,19,20,22,26,27,34]. Four of the 10 studies [18,19,22,34] showed statistically significant improvement in wellbeing across all 4 of the ONS4 measures (demonstrated through reporting separate results for each measure or a combined ONS4 score) and all of these achieved a quality score indicating a moderate to high level of confidence in their results. One study observed a worsening in the worthwhile ONS4 measure and non-statistically significant changes in the other 3 ONS4 measures [12]. All other reported results were inconclusive as they were either statistically non-significant (21 out of 86 reported outcomes; 25%) or did not report results of a significance test (42 out of 86 reported outcomes; 49%). See Appendix 5 for the wellbeing impact results for each reported ONS4 measure.

Four studies reported results separately for population sub-groups, including older people, disabled people, ethnic groups, education level and those with low wellbeing levels at baseline [11,22,31,32]. All population sub-group results were either statistically non-significant or significance tests were not carried out.

Of the 8 studies that also measured wellbeing using the WEWBMS it was only possible to compare ONS4 and WEMWBS results for 2 of the studies as the remaining studies either reported statistically non-significant results for all relevant results or did not report results of a significance test. One study evaluating the impact of a civil servants' help application reported both ONS4 and WEMWBS, but improvements were only statistically significant for life satisfaction, worthwhile and happiness, not for anxiety and WEMWBS. Another study which evaluated the National Walking for Health Programme measured life satisfaction, WEMWBS, social capital and loneliness. Improvements were statistically significant for all except for life satisfaction.

Brief findings for each intervention type, including the level of confidence in each study's results (low, moderate or high) are reported below. Further details of the individual studies are provided in Appendix 5.

### *Community centred approaches*

Four studies evaluated community centred approaches. A before and after study (n=166; f/up=6 months; moderate [10]) evaluating the Wellbeing 2 programme reported statistically significant improvements in life satisfaction and worthwhile measures but had non-significant results for happiness and anxiety. The remaining 3 studies did not report results for statistical significance. These studies evaluated a connected communities programme of various interventions (before and after study; n<sup>15</sup>=12 to 22; f/up=6 to 7 months; moderate [9]), a programme to improve community networks of young professionals and older neighbours (before and after study; n=25; f/up=12 months; low [7]) and a national training programme in community organising

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<sup>14</sup> It should be noted that a statistically significant improvement does not necessarily imply a meaningful change in wellbeing. Effect sizes, where reported, are provided in the accompanying REA database.

<sup>15</sup> In this report, n is the number of study participants who reported baseline data for the ONS4 measures or where this is not reported the number of study participants with both baseline and follow-up ONS4 data

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and a grass-roots movement for social action (comparative survey; n=2,381; f/up=n/a; moderate [8]).

### *Volunteering*

Three studies evaluated volunteering interventions. These were a £6 million Sport England volunteering fund to increase the diversity of volunteers in sport (before and after study; n=2,132; f/up=not reported; low [11]), which showed statistically significant improvements across all ONS4 measures, a volunteering project for older people living in a residential home (before and after study; n=40; f/up=6 months; moderate [12]), which showed a worsening in the ONS4 worthwhile measure and non-statistically significant results for the other ONS4 measures, and a volunteering in outdoor activities green gym (before and after study; n=92; f/up=2 months; low [13]), which did not report results for statistical significance.

### *Physical activity*

Four studies evaluated interventions with a key aim of improving physical activity. One before and after study (n=not reported; f/up=6 months; low) evaluating a community physical activity game (Beat the Street [15]) reported a statistically significant improvement in anxiety. Results for the other 3 interventions either reported non-statistically significant results or did not report results for statistical significance (peer volunteering active aging intervention [14], National Walking for Health Programme [16] and the Spirit of 2012 Fund [17]).

### *Social prescribing*

Three studies evaluated social prescribing services and improvements in wellbeing were observed by all. Statistically significant improvements were reported for all 4 ONS4 measures for the Wolverhampton social prescribing service (before and after study; n=193; f/up=1 to 7 months; moderate [19]) and the Wellspring Healthy Living Centre's Social Prescribing Service (before and after study; n=87; f/up=3 months; moderate [18]). A Macmillan's social prescribing service for people living with and beyond cancer (before and after study; n=40; f/up=not reported; moderate [20]) found statistically significant improvements in anxiety, but non-statistically significant results for the other ONS4 measures.

### *Social care support*

Two studies evaluated social care support interventions. These were subsidised small scale aids and home adaptations for people living with dementia in their own homes (before and after study; n=101; f/up=9 months; moderate [23]) and a digital care and support system (CleverCogs™) delivered by a handheld tablet to increase digital participation in adults in receipt of care and support packages (before and after study; n=56; f/up=3 months; low [24]). Neither study reported results for statistical significance.

### *Advice & support*

Three studies evaluated interventions offering advice and support. The Charity for Civil Servants' financial, wellbeing and caring help application (before and after study; n=660; f/up=12 months; moderate [27]) demonstrated statistically significant improvements in the life satisfaction, worthwhile and happiness measures, but non-

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statistically significant results for the anxiety measure. One study reported non-significant results of the provision of a health and wellbeing support worker by a social housing provider for their tenants [28]. The final study did not report a statistical comparison of the results before and after the provision of a wellbeing advice and support service for older people [29].

### *Psychological interventions*

Two studies evaluated psychological interventions. One randomised controlled trial (n=140; f/up=1 month; high [22]) assessing a brief psychological intervention based on self-affirmation theory in women aged over 45 years reported a statistically significant improvement demonstrated by a combined ONS4 score. No statistical comparisons were reported for a before and after study (n=157; f/up=6 months; low [21]) assessing emotional and psychological group based interventions for later life transitions for health service employees.

### *Skills training*

Two studies evaluated skills training interventions. One before and after study (n=114; f/up=9 to 12 weeks; low [26]) assessed early support services for military-connected families and found statistically significant improvements in anxiety, but non-statistically significant results for the other ONS4 measures. A study reporting before and after results from participants recruited to take part in an RCT of a goal-setting and planning intervention to improve working adults' well-being [25] did not report any statistical comparisons.

### *Arts and culture*

Two studies evaluated arts and culture interventions. These were the Hull UK City of Culture 2017 Programme (before and after study; n=not reported; f/up=2 years; low [30]) and a creative arts intervention (RADIQL) for people with dementia attending an Age Exchange Centre (non-RCT; n=147; f/up=12 months; moderate [31]). The City of Culture study did not report statistical comparisons and the RADIQL study reported non-significant results.

### *Housing and neighbourhood*

Three studies evaluated housing improvement and neighbourhood design interventions. One non-randomised controlled trial (n=782; f/up=1 to 10 months; high [34]) assessing domestic energy efficiency investments in low-income areas found an improvement in wellbeing demonstrated by a statistically significant improvement in the combined ONS4 score. Results were statistically non-significant for a residential neighbourhood designed to encourage healthy active living (cohort study; n=873; f/up= 2 years; high [32]) and a subsidised superfast broadband programme (comparative survey; n=1,314; f/up=n/a; moderate [33]).

## **5 Discussion**

The purpose of this project was to identify and summarise impact evaluations that have used the ONS4 Personal Wellbeing Measures since 2011 when the measures were first introduced in the UK. Searches for peer-reviewed and grey literature were conducted across a broad range of topic areas, populations, intervention types and

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study designs, in order to capture the varied evidence base that could potentially use the ONS4 measures to assess wellbeing impact.

Out of 7,083 unique studies retrieved from the searches, 28 studies were found to be eligible for inclusion, having used at least one of the ONS4 measures to assess the effectiveness of an intervention with a key aim to improve wellbeing in adults living in the UK. This small number of eligible studies indicates that the ONS4 measures have not been widely used in wellbeing impact evaluations over the last 10 years. However, it is worth noting that while the search period covered the 10 years from when the ONS measures were first introduced, half of the included studies were only published in the last 3 years suggesting that the use of the ONS4 measures is increasing. There is a possibility that relevant studies may have been missed, particularly due to the difficulty in searching for studies that have used a specific outcome measure which are less likely to be referred to in titles and abstracts as opposed to the more usual practice in evidence reviews of searching for a particular type of intervention and/or population. However, the number of missing studies is likely to be small given the broad searches and multiple search approaches undertaken (published and grey literature databases, google searches and a call for evidence) and the large number of potentially relevant studies retrieved (10,200 studies) and full papers assessed for eligibility (926 full papers).

The studies identified include a range of populations, wellbeing intervention types and research designs demonstrating that the ONS4 measures are used in many settings. Interventions were centred around community engagement, volunteering, physical activity, social prescribing, psychological interventions, social care support, skills training, advice and support, arts and culture, and housing improvement and neighbourhood design. In addition, the ONS4 measures were applied to both healthy populations and those with diagnosed conditions, older and working age adults, and specific population groups including women, BAME groups and people living in deprived areas.

Comparative studies, including randomised controlled trials, were identified, however, the majority of the included studies used a before and after design mostly collecting data via questionnaires and were grey literature. Before and after studies were included in the REA despite not having a control group or counterfactual, in order to ensure that we captured the range of ways that the ONS4 measures have been used in impact evaluations. This is particularly important, as a potential advantage to using the ONS4 measures in circumstances where it is not possible or practical to have a control group, is that existing national surveys that include the ONS4 measures can be used to provide some comparative information. Many of the studies identified did provide such comparisons. However, these mostly used national survey data at a single timepoint to benchmark wellbeing levels of study participants to annual national/local averages. A better approach would be to contrast national trends in wellbeing with changes observed in a study population in order to more reliably assess the impact of the intervention by controlling for confounding factors. However, this is only possible for evaluations conducted over several years. Another approach used in 2 of the studies identified was to use existing surveys, either routinely collected or specifically run for the project, to compare wellbeing in areas that had or had not received an intervention (comparative surveys).

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The majority of studies (20 studies; 71%) reported results for all 4 ONS measures, with 4 of these studies reporting a combined score only and 2 studies reporting a combined score in addition to the separate scores. The ONS4 measures most commonly used by the studies were life satisfaction and happiness, used in 86% and 75% of the included studies respectively. This is in contrast to a recent paper which recommends choosing life satisfaction and worthwhile when all 4 measures cannot be included [35].

A variety of methods were used to report findings often with insufficient information to determine the impact of the intervention. Some studies reported means for baseline, follow-ups and/or change scores (with or without a standard deviation or range), some reported percentage of individuals with low/high scores, and some reported numbers or percentages that had improved. Although not unique to the ONS4 measures, this variable reporting is an issue that would need consideration when comparing results of studies or pooling results in a meta-analysis.

A further issue is that many studies did not conduct formal statistical comparisons meaning that it was not possible to determine the robustness of the findings. Where study authors described their results as being statistically significant or not, we have accepted this as an indication of change, despite the fact that the authors may not have provided any detail on the statistical tests used or specific details on the results of the statistical analysis (such as p-values and confidence intervals). However, 12 of the 28 studies did not report the results of any statistical tests on their ONS4 measures. Therefore, although some information or commentary may have been provided indicating that wellbeing increased or decreased after an intervention, without accompanying statistical analysis we cannot say whether the change observed was significant.

The majority of studies had quality summary scores indicating a moderate (14 studies) to low (10 studies) level of confidence in their results. Only 4 studies were of sufficiently high quality for us to have a high level of confidence in their results. The main methodological issues found were inappropriate or no counterfactual, unknown or limited representativeness of the sample, inappropriate baseline measurement, short follow-up period, small sample size or no sample size calculation reported, lack of reporting of the number of participants at each measurement timepoint or high loss to follow-up rates, and limited analysis and reporting of results. Furthermore, no study could achieve the highest score as the ONS4 Personal Wellbeing Measures are not fully validated measures (shown to have test-retest, inter-rated and internal consistency reliability), as required by the EIF Quality Checklist<sup>16</sup>. Half of the studies included additional wellbeing measures, the most commonly used being the WEMWBS. Further investigation is required to explore the reasons for the use of this measure alongside the ONS4.

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<sup>16</sup> The measure is required to be standardised and validated independently of the study and the methods for standardisation published.

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Applying a common critical appraisal framework across all studies selected was beneficial in terms of providing a comparative overview of the different contexts in which the ONS4 measures have been used. However, the level of detail provided in the different reports included varied considerably, potentially reflecting differences in the intended audiences of the peer-reviewed studies versus the grey literature. The low score received by some of the grey literature reports may reflect the absence of the information necessary to make a judgement rather than an underlying issue with the conduct of the study. For example, many of the studies did not report sample size calculations so no judgement on statistical power could be made. Baseline study population characteristics were also often not available to assess representativeness of the study sample, nor numbers of participants at each measurement timepoint to assess attrition bias. Organisations performing wellbeing impact evaluations would benefit from published guidance on the conduct and reporting of wellbeing impact evaluations in order to help ensure they provide reliable and reproducible results enhancing the level of confidence in their results and maximising the evaluation returns.

This REA provides a useful directory of wellbeing impact evaluations that have used the ONS4 measures since they were first introduced in 2011. It is important to ensure this directory is kept up to date by repeating the search approach employed at regular intervals. It would also be useful to include protocol searches for studies that intend to use the ONS4 measures and to develop a system to track these studies for publication.

Finally, while this REA was designed to explore the use of the ONS4 measures in wellbeing impact evaluations and to summarise findings of these evaluations in an online evidence platform, rather than to assess the effectiveness of individual interventions to improve wellbeing, it has highlighted several promising interventions which may warrant further review. In particular, social prescribing appears promising as 3 of the included studies showed improvements in wellbeing. Other promising interventions include domestic energy efficiency investments and a brief self-affirmation psychological intervention. These interventions demonstrated improvement in wellbeing across all 4 of the ONS4 measures in 1 study, each with a moderate to high level of confidence in the results. Rapid evidence assessments or systematic reviews of single promising intervention types which include studies using any measure of wellbeing could also serve to further investigate the ONS4 measures by comparing results of the different wellbeing measures.

## **5.1 Limitations**

We chose to use an REA methodology, conducted over a condensed period of time as we were searching for impact evaluations that have used a specific outcome measure rather than conducting a systematic review assessing all studies that have been published in these thematic areas. The purpose was to understand how widely the ONS4 Personal Wellbeing Measures have been used to assess the impact of interventions to improve wellbeing and to profile and critically appraise the type of evaluations that have used them. The searches were conducted systematically and included peer-reviewed and grey literature. However, we cannot guarantee that all impact evaluations using the ONS4 measures have been identified. The breadth of the different types of interventions

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and populations that were in scope, combined with using an outcome measure as the key inclusion criteria led to a large volume of studies being identified with no guarantee that the key information would be available in the abstract. Although a large number of studies were checked at full text, it was not possible to check them all in this detail. Judgements therefore had to be made based on the information provided in the abstract regarding the likelihood that the ONS4 measures had been used and only studies where it was clear from the abstract that improved wellbeing was a key objective were checked at full text.

Review of the search results, data extraction and critical appraisal were undertaken by a single reviewer with quality assurance of a proportion of the studies identified and selected. Studies not available in the English Language, conference abstracts and poster presentations were not included.

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## Appendix 1: Inclusion and exclusion criteria (PICOS)

Question	Inclusion/exclusion criteria
Population	Adults living in the UK
Intervention	<p>Interventions that feature improved 'wellbeing' as the main or one of several key objectives</p> <ul style="list-style-type: none"> <li>• Community interventions (e.g. social cohesion, social isolation)</li> <li>• Health interventions (e.g. diet, sports)</li> <li>• Social care/services interventions</li> <li>• Education/skills-based interventions</li> <li>• Environmental interventions (e.g. safety, urban planning)</li> <li>• Workplace interventions</li> <li>• Social relationship interventions (e.g. loneliness, social integration)]</li> </ul>
Comparator	Any comparator
Outcomes	<p>Studies reporting quantitative outcomes for at least 1 of the ONS personal subjective wellbeing measures (i.e. life satisfaction, worthwhile, happiness, anxiety)</p> <p>[Additional outcomes reported in studies selected for inclusion, including outcomes relating to costs, will be listed]</p>
Study designs	<p>Formative or summative impact evaluations using one of the following study designs:</p> <ul style="list-style-type: none"> <li>• Controlled trials (randomised, cluster randomised, quasi-randomised or non-randomised)</li> <li>• Comparative observational studies including cohort studies, before and after studies and surveys</li> </ul> <p>[Written publications in the public domain that are readily retrievable through formal searches for peer-reviewed or grey literature (e.g. evaluation reports) will only be included]</p> <p>[Publications on individual studies will only be included as these are more likely to provide the level of detail required for the REA]</p> <p>Exclusions: narrative reviews, uncontrolled observational studies, case series, case reports, commentaries, letters, conference abstracts, publications only available as an abstract or summary and posters</p>
Date and language	<p>Studies published in English since 2011</p> <p>[The 4 ONS questions were first added to the Annual Population Survey in April 2011. Therefore, searches will be conducted from 2011]</p>

## Appendix 2: Search strategies

### Searches for peer-reviewed evidence

Database: CINAHL

Search date: 7<sup>th</sup> May 2020

Search strategy:

#	Query
S38	S36 NOT S37
S37	(MH "Child+") OR (MH "Adolescence+")
S36	S34 NOT S35
S35	S27 and S32 Limiters - Publication Type: Abstract, Bibliography, Biography, Book, Book Chapter, Book Review, Commentary, Computer Program, Consumer/Patient Teaching Materials, Doctoral Dissertation, Editorial, Historical Material, Letter, Masters Thesis, Meta Analysis, Meta Synthesis, Obituary, Proceedings, Review, Systematic Review, Teaching Materials
S34	S27 AND S32 Limiters - Published Date: 20110101-20201231; English Language
S33	S27 AND S32
S32	S28 OR S29 OR S30 OR S31
S31	TI intervention OR AB ( preintervention* or postintervention or pre-intervention or post-intervention ) OR TI ( ((program* or impact) N3 (evaluat* or implement* or assess*)) ) OR AB ( ((program* or impact) N3 (evaluat* or implement* or assess*)) ) OR TI ( ("time series" or "time point?" or "before and after") ) OR AB ( ("time series" or "time point?" or "before and after") ) OR TI ( ((wellbeing or well-being or happiness or satisfaction) adj5 (scor* or scale* or question* or rating* or measure* or index or indices or estimat* or domain*)) ) OR AB ( ((wellbeing or well-being or happiness or satisfaction) adj5 (scor* or scale* or question* or rating* or measure* or index or indices or estimat* or domain*)) )
S30	(MH "Program Evaluation")
S29	TI ( (random or ((singl* or doubl*) N1 (blind* or mask*)) or crossover or cross over or factorial* or latin square or assign* or allocat* or volunteer* ) OR AB ( (random or ((singl* or doubl*) N1 (blind* or mask*)) or crossover or cross over or factorial* or latin square or assign* or allocat* or volunteer* ) )
S28	(MH "Clinical Trials+") OR (MH "Crossover Design") OR (MH "Controlled Before-After Studies") OR (MH "Factorial Design") OR (MH "Interrupted Time Series Analysis") OR (MH "Pretest-Posttest Design+")
S27	S25 OR S26
S26	S7 AND S19 AND S24
S25	S3 AND S24
S24	S20 OR S21 OR S22 OR S23
S23	TI ( (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's") ) OR AB ( (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's") ) OR AF ( (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's") ) OR TI ( (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's") ) OR AB ( (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's") ) OR AF ( (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's") ) OR TI ( (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's") ) OR AB ( (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or

londonderry or "londonderry's" or derry or "derry's" or newry or "newry's" ) OR AF (
 (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or
 "londonderry's" or derry or "derry's" or newry or "newry's") ) OR TI ( (bath or "bath's" or
 ((Birmingham not alabama\*) or ("birmingham's" not alabama\*) or bradford or "bradford's"
 or brighton or "brighton's" or bristol or "bristol's" or carlisle\* or "carlisle's" or (cambridge
 not (massachusetts\* or boston\* or harvard\*)) or ("cambridge's" not (massachusetts\* or
 boston\* or harvard\*)) or (canterbury not zealand\*) or ("canterbury's" not zealand\*) or
 chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or
 coventry or "coventry's" or derby or "derby's" or (durham not (carolina\* or nc)) or
 ("durham's" not (carolina\* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or
 "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or
 leeds\* or leicester or "leicester's" or (lincoln not nebraska\*) or ("lincoln's" not nebraska\*)
 or (liverpool not (new south wales\* or nsw)) or ("liverpool's" not (new south wales\* or
 nsw)) or ((london not (ontario\* or ont or toronto\*)) or ("london's" not (ontario\* or ont or
 toronto\*)) or manchester or "manchester's" or (newcastle not (new south wales\* or nsw))
 or ("newcastle's" not (new south wales\* or nsw)) or norwich or "norwich's" or nottingham
 or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth
 or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or
 "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or
 southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or
 "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or
 "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or
 (worcester not (massachusetts\* or boston\* or harvard\*)) or ("worcester's" not
 (massachusetts\* or boston\* or harvard\*)) or (york not ("new york\*" or ny or ontario\* or ont
 or toronto\*)) or ("york's" not ("new york\*" or ny or ontario\* or ont or toronto\*)))) ) OR AB (
 (bath or "bath's" or ((Birmingham not alabama\*) or ("birmingham's" not alabama\*) or
 bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle\* or
 "carlisle's" or (cambridge not (massachusetts\* or boston\* or harvard\*)) or ("cambridge's"
 not (massachusetts\* or boston\* or harvard\*)) or (canterbury not zealand\*) or
 ("canterbury's" not zealand\*) or chelmsford or "chelmsford's" or chester or "chester's" or
 chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham
 not (carolina\* or nc)) or ("durham's" not (carolina\* or nc)) or ely or "ely's" or exeter or
 "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or
 lancaster or "lancaster's" or leeds\* or leicester or "leicester's" or (lincoln not nebraska\*)
 or ("lincoln's" not nebraska\*) or (liverpool not (new south wales\* or nsw)) or ("liverpool's"
 not (new south wales\* or nsw)) or ((london not (ontario\* or ont or toronto\*)) or ("london's"
 not (ontario\* or ont or toronto\*)) or manchester or "manchester's" or (newcastle not (new
 south wales\* or nsw)) or ("newcastle's" not (new south wales\* or nsw)) or norwich or
 "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or
 "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston
 or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or
 sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or
 "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's"
 or wells or westminster or "westminster's" or winchester or "winchester's" or
 wolverhampton or "wolverhampton's" or (worcester not (massachusetts\* or boston\* or
 harvard\*)) or ("worcester's" not (massachusetts\* or boston\* or harvard\*)) or (york not
 ("new york\*" or ny or ontario\* or ont or toronto\*)) or ("york's" not ("new york\*" or ny or
 ontario\* or ont or toronto\*)))) ) OR AF ( (bath or "bath's" or ((Birmingham not alabama\*)
 or ("birmingham's" not alabama\*) or bradford or "bradford's" or brighton or "brighton's" or
 bristol or "bristol's" or carlisle\* or "carlisle's" or (cambridge not (massachusetts\* or
 boston\* or harvard\*)) or ("cambridge's" not (massachusetts\* or boston\* or harvard\*)) or
 (canterbury not zealand\*) or ("canterbury's" not zealand\*) or chelmsford or "chelmsford's"
 or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or
 derby or "derby's" or (durham not (carolina\* or nc)) or ("durham's" not (carolina\* or nc))
 or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or
 "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds\* or leicester or
 "leicester's" or (lincoln not nebraska\*) or ("lincoln's" not nebraska\*) or (liverpool not
 (new south wales\* or nsw)) or ("liverpool's" not (new south wales\* or nsw)) or ((london
 not (ontario\* or ont or toronto\*)) or ("london's" not (ontario\* or ont or toronto\*)) or
 manchester or "manchester's" or (newcastle not (new south wales\* or nsw)) or ("newcastle's"
 not (new south wales\* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or

	oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachuse tts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*)))) )
S22	TI ( (english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) N5 english)) ) OR AB ( (english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) N5 english)) ) OR TI ( (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh* ) ) OR AB ( (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh* ) ) OR AF ( (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh* ) ) OR SO ( (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh* ) )
S21	TI ( ("national health service*" or nhs*) ) OR AB ( ("national health service*" or nhs*) ) OR AF ( ("national health service*" or nhs*) )
S20	(MH "United Kingdom+")
S19	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18
S18	TI ( (((safety or security or crime) N3 (fear? or concern*)) and (intervention? or program*)) ) OR AB ( (((safety or security or crime) N3 (fear? or concern*)) and (intervention? or program*)) ) OR TI ( ((safe* N3 (neighbo?rhood? or communit* or street? or environment?)) and (intervention? or program*)) ) OR AB ( ((safe* N3 (neighbo?rhood? or communit* or street? or environment?)) and (intervention? or program*)) ) OR TI ( ((crime or murder or robber* or burglar* or stalking or mugging) N3 (rate? or reduc*)) ) OR AB ( ((crime or murder or robber* or burglar* or stalking or mugging) N3 (rate? or reduc*)) ) OR TI ( (((city or town or urban or hous* or environment*) N3 plan*) or parks or greenspace* or green space* or bluespace* or blue space* or nature or natural world or natural environment or countryside or outdoors) ) OR AB ( (((city or town or urban or hous* or environment*) N3 plan*) or parks or greenspace* or green space* or bluespace* or blue space* or nature or natural world or natural environment or countryside or outdoors) ) OR TI ( ((social or community or neighbo?rhood* or environment*) N3 (intervention? or program* or development)) ) OR AB ( ((social or community or neighbo?rhood* or environment*) N3 (intervention? or program* or development)) )
S17	TI ( ((work* or job or occupational) N3 (intervention? or program*)) ) OR AB ( ((work* or job or occupational) N3 (intervention? or program*)) ) OR TI ( ("worklife balance" or "work life balance" or "free time" or "leisure time") ) OR AB ( ("worklife balance" or "work life balance" or "free time" or "leisure time") ) OR TI ( (commuting or "travel to work" or "travelling to work" or "travel time") ) OR AB ( (commuting or "travel to work" or "travelling to work" or "travel time") ) OR TI ( ((social or socioeconomic or economic or housing or deprivation or poverty or inequalit* or inequit* or homeless*) N3 (intervention? or program*)) ) OR AB ( ((social or socioeconomic or economic or housing or deprivation or poverty or inequalit* or inequit* or homeless*) N3 (intervention? or program*)) ) OR TI ( ((housing or living condition* or deprivation or poverty or inequalit* or inequit*) N3 improv*) ) OR AB ( ((housing or living condition* or deprivation or poverty or inequalit* or inequit*) N3 improv*) )

S16	TI ( ((physical* N2 (activ* or inactiv*)) or exercise or diet or nutrition*) ) OR AB ( ((physical activity or exercise or diet or nutrition*) N3 (intervention? or program*)) ) OR TI ( ((healthy or healthful) N2 (eating or diet or living or lifestyle)) ) OR AB ( (((healthy or healthful) N2 (eating or diet or living or lifestyle)) and (intervention? or program*)) ) OR TI ( (health N1 (promot* or educat*)) ) OR AB ( (health N1 (promot* or educat*)) )
S15	TI ( (((social* or personal*) N3 (isolat* or alienat* or cohesion)) or loneliness or lonely) and (intervention? or program*)) ) OR AB ( (((social* or personal*) N3 (isolat* or alienat* or cohesion)) or loneliness or lonely) and (intervention? or program*)) ) OR TI ( (((patient or care) N3 navigat*) or (social N2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities) ) OR AB ( (((patient or care) N3 navigat*) or (social N2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities) and (intervention? or program*)) ) OR TI ( (psychotherap* or counsel?ing or ((cognitive or behavi* or psychol*) N3 (therap* or intervention?))) ) OR AB ( (psychotherap* or counsel?ing or ((cognitive or behavi* or psychol*) N3 (therap* or intervention?))) ) OR TI ( (((social or communit* or neighbourhood*) N3 (participat* or engage*)) or volunteering) and (intervention? or program*)) ) OR AB ( (((social or communit* or neighbourhood*) N3 (participat* or engage*)) or volunteering) and (intervention? or program*)) )
S14	(MM "Physical Activity")
S13	(MH "Community Health Workers") OR (MH "Health Promotion") OR (MH "Health Education")
S12	(MM "Psychotherapy+") OR (MM "Counseling+") OR (MH "Meditation")
S11	(MH "Housing")
S10	(MH "Marriage") OR (MH "Divorce") OR (MH "Domestic Violence") OR (MH "Intimate Partner Violence")
S9	(MH "Work-Life Balance") OR (MH "Life Style Changes")
S8	(MH "Psychosocial Deprivation") OR (MH "Social Inclusion") OR (MH "Social Isolation+") OR (MH "Social Participation")
S7	S4 OR S5 OR S6
S6	TI ( ("quality of life" or qol or anxiety or ((psycholog* or mental*) N2 (health or stress))) and (wellbeing or well-being or wellness)) ) OR AB ( ("quality of life" or qol or anxiety or ((psycholog* or mental*) N2 (health or stress))) and (wellbeing or well-being or wellness)) ) OR TI ( ((satisf* or belonging* or neighbo?rhood? or community* or love or affection or autonomy or resilience or "self control" or "self concept" or "self respect" or "self esteem" or "self attitude" or happy or happiness) N5 (wellbeing or well-being)) ) OR AB ( ((satisf* or belonging* or neighbo?rhood? or community* or love or affection or autonomy or resilience or "self control" or "self concept" or "self respect" or "self esteem" or "self attitude" or happy or happiness) N5 (wellbeing or well-being)) )
S5	(MH "Self Concept") OR (MH "Self-Efficacy")
S4	(MH "Psychological Well-Being") OR (MH "Wellness") OR (MH "Personal Satisfaction") OR (MH "Job Satisfaction") OR (MH "Happiness") OR (MH "Love") OR (MH "Optimism") OR (MH "Pessimism") OR (MH "Respect")
S3	S1 OR S2
S2	TI ( wellbeing or well-being ) OR TI ( ((life or personal or job) N2 satisf*) ) OR TI ( (belonging* or neighbo?rliness or ((neighbo?rhood? or community) N1 (inclusion or engagement))) ) OR TI ( (love or affection) ) OR TI ( (autonomy or "self control" or "self concept" or "self respect" or "self esteem" or "self attitude") ) OR TI ( happy OR happiness )
S1	(MM "Psychological Well-Being")

**Database: EMBASE****Search date: 7<sup>th</sup> May 2020****Search strategy:**

#	Searches
1	*psychological wellbeing/
2	(wellbeing or well-being).ti.
3	((life or personal or job) adj2 satisf*).ti.
4	(belonging* or neighbo?rliness or ((neighbo?rhood? or community) adj (inclusion or engagement))).ti.
5	(love or affection).ti.
6	(autonomy or self control or self concept or self respect or self esteem or self attitude).ti.
7	(happy or happiness).ti.
8	1 or 2 or 3 or 4 or 5 or 6 or 7
9	wellbeing/ or psychological wellbeing/ or life satisfaction/ or job satisfaction/
10	demoralization/ or happiness/ or unhappiness/ or love/ or disrespect/ or optimism/ or pessimism/ or respect/
11	personal autonomy/ or self concept/ or self actualization/ or self control/ or self esteem/ or self transcendence/ or "sense of coherence"/
12	((("quality of life" or qol or anxiety or ((psycholog* or mental*) adj2 (health or stress))) and (wellbeing or well-being or wellness)).mp.
13	((satisf* or belonging* or neighbo?rhood? or community* or love or affection or autonomy or resilience or self control or self concept or refl respect or self esteem or self attitude or happy or happiness) adj5 (wellbeing or well-being)).ti,ab.
14	9 or 10 or 11 or 12 or 13
15	emotional deprivation/ or alienation/ or loneliness/ or exp social isolation/
16	emotional attachment/ or social participation/
17	lifestyle modification/ or work-life balance/
18	domestic partnership/ or exp marriage/ or domestic violence/ or family violence/ or exp partner violence/
19	housing/ or exp household income/
20	prescription/ and social care/
21	prescription/ and exp "arts and illustration"/
22	prescription/ and exp "Photography and film"/
23	exp *psychotherapy/ or exp *counselling/ or *meditation/
24	lay health worker/
25	exp *physical activity/
26	healthy diet/
27	exp health promotion/ or health education/
28	city planning/ or exp environmental planning/ or "traffic and transport"/
29	((((social* or personal*) adj3 (isolat* or alienat* or cohesion)) or loneliness or lonely) and (intervention? or program*)).mp.
30	((((patient or care) adj3 navigat*) or (social adj2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities).ti.

31	(((((patient or care) adj3 navigat*) or (social adj2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities) and (intervention? or program*))).mp.
32	(psychotherap* or counsel?ing or ((cognitive or behavi* or psychol*) adj3 (therap* or intervention?))).mp.
33	(((((social or communit* or neighbourhood*) adj3 (participat* or engage*)) or volunteering) and (intervention? or program*))).mp.
34	((physical* adj2 (activ* or inactiv*)) or exercise or diet or nutrition*).ti.
35	((physical activity or exercise or diet or nutrition*) adj3 (intervention? or program*)).ti,ab.
36	((healthy or healthful) adj2 (eating or diet or living or lifestyle)).ti.
37	((((healthy or healthful) adj2 (eating or diet or living or lifestyle)) and (intervention? or program*))).mp.
38	(health adj (promot* or educat*)).mp.
39	((work* or job or occupational) adj3 (intervention? or program*)).mp.
40	(worklife balance or work life balance or free time or leisure time).mp.
41	(commuting or "travel to work" or "travelling to work" or travel time).mp.
42	((social or socioeconomic or economic or housing or deprivation or poverty or inequalit* or inequit* or homeless*) adj3 (intervention? or program*)).mp.
43	((housing or living condition* or deprivation or poverty or inequalit* or inequit*) adj3 improv*).mp.
44	((safety or security or crime) adj3 (fear? or concern*)) and (intervention? or program*)).mp.
45	((safe* adj3 (neighbo?rhood? or communit* or street? or environment?)) and (intervention? or program*)).mp.
46	((crime or murder or robber* or burglar* or stalking or mugging) adj3 (rate? or reduc*)).mp.
47	((city or town or urban or hous* or environment*) adj3 plan*) or parks or greenspace* or green space* or bluespace* or blue space* or nature or natural world or natural environment or countryside or outdoors).mp.
48	((social or community or neighbo?rhood* or environment*) adj3 (intervention? or program* or development)).mp.
49	or/15-48
50	exp United Kingdom/
51	(national health service* or nhs*).ti,ab,in.
52	(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.
53	(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in.
54	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.
55	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.
56	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.

57	(bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ti,ab,in.
58	50 or 51 or 52 or 53 or 54 or 55 or 56 or 57
59	(exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)
60	58 not 59
61	8 and 60
62	14 and 49 and 60
63	61 or 62
64	randomized controlled trial/ or single blind procedure/ or double blind procedure/ or crossover procedure/
65	(random or ((singl* or doubl*) adj (blind* or mask*)) or crossover or cross over or factorial* or latin square or assign* or allocat* or volunteer*).ti,ab.
66	intervention study/ or controlled study/ or major clinical study/
67	time series analysis/
68	exp program evaluation/ or evaluation study/
69	intervention*.ti. or (preintervention* or postintervention or pre-intervention or post-intervention).mp.
70	((program* or impact) adj3 (evaluat* or implement* or assess*)).mp.
71	(time series or time point? or "before and after").mp.
72	((wellbeing or well-being or happiness or satisfaction) adj5 (scor* or scale* or question* or rating* or measure* or index or indices or estimat* or domain*)).ti,ab,kw.
73	64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72
74	(exp animals/ or nonhuman/) not human/
75	73 not 74
76	63 and 75
77	(note or editorial or letter or review or conference*).pt. or case report/ or (protocol or case report or case series).ti.
78	(exp child/ or adolescent/) not ((exp child/ or adolescent/) and adult/)
79	76 not (77 or 78)
80	limit 79 to (english language and yr="2011 -Current")

**Database: Medline****Search date: 7<sup>th</sup> May 2020****Search strategy:**

#	Searches
1	(wellbeing or well-being).ti.
2	((life or personal or job) adj2 satisf*).ti.
3	(belonging* or neighbo?rliness or ((neighbo?rhood? or community) adj (inclusion or engagement))).ti.
4	(love or affection).ti.
5	(autonomy or self control or self concept or self respect or self esteem or self attitude).ti.
6	(happy or happiness).ti.
7	1 or 2 or 3 or 4 or 5 or 6
8	personal satisfaction/ or job satisfaction/
9	happiness/ or love/ or optimism/ or pessimism/ or respect/
10	personal autonomy/ or self concept/ or "sense of coherence"/
11	((("quality of life" or qol or anxiety or ((psycholog* or mental*) adj2 (health or stress))) and (wellbeing or well-being or wellness)).mp.
12	((satisf* or belonging* or neighbo?rhood? or community* or love or affection or autonomy or resilience or self control or self concept or refl respect or self esteem or self attitude or happy or happiness) adj5 (wellbeing or well-being)).ti,ab.
13	8 or 9 or 10 or 11 or 12
14	loneliness/ or social isolation/ or social participation/
15	marriage/ or domestic violence/ or spouse abuse/ or intimate partner violence/
16	housing/
17	Patient Navigation/
18	exp *psychotherapy/
19	community health workers/
20	exp *exercise/
21	Diet, Healthy/
22	exp health promotion/ or health education/
23	exp Social Planning/ or Transportation/
24	((((social* or personal*) adj3 (isolat* or alienat* or cohesion)) or loneliness or lonely) and (intervention? or program*)).mp.
25	((((patient or care) adj3 navigat*) or (social adj2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities).ti.
26	((((patient or care) adj3 navigat*) or (social adj2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities) and (intervention? or program*)).mp.
27	(psychotherap* or counsel?ing or ((cognitive or behavi* or psychol*) adj3 (therap* or intervention?))).mp.
28	((((social or communit* or neighbourhood*) adj3 (participat* or engage*)) or volunteering) and (intervention? or program*)).mp.
29	((physical* adj2 (activ* or inactiv*)) or exercise or diet or nutrition*).ti.
30	((physical activity or exercise or diet or nutrition*) adj3 (intervention? or program*)).ti,ab.

31	((healthy or healthful) adj2 (eating or diet or living or lifestyle)).ti.
32	((((healthy or healthful) adj2 (eating or diet or living or lifestyle)) and (intervention? or program*))).mp.
33	(health adj (promot* or educat*)).mp.
34	((work* or job or occupational) adj3 (intervention? or program*)).mp.
35	(worklife balance or work life balance or free time or leisure time).mp.
36	(commuting or "travel to work" or "travelling to work" or travel time).mp.
37	((social or socioeconomic or economic or housing or deprivation or poverty or inequalit* or inequit* or homeless*) adj3 (intervention? or program*)).mp.
38	((housing or living condition* or deprivation or poverty or inequalit* or inequit*) adj3 improv*).mp.
39	((((safety or security or crime) adj3 (fear? or concern*)) and (intervention? or program*))).mp.
40	((safe* adj3 (neighbo?rhood? or communit* or street? or environment?)) and (intervention? or program*)).mp.
41	((crime or murder or robber* or burglar* or stalking or mugging) adj3 (rate? or reduc*)).mp.
42	((city or town or urban or hous* or environment*) adj3 plan*) or parks or greenspace* or green space* or bluespace* or blue space* or nature or natural world or natural environment or countryside or outdoors).mp.
43	((social or community or neighbo?rhood* or environment*) adj3 (intervention? or program* or development)).mp.
44	or/14-43
45	exp United Kingdom/
46	(national health service* or nhs*).ti,ab,in.
47	(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.
48	(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in.
49	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.
50	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.
51	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.

52	(bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ti,ab,in.
53	45 or 46 or 47 or 48 or 49 or 50 or 51 or 52
54	(exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)
55	53 not 54
56	7 and 55
57	13 and 44 and 55
58	56 or 57
59	(randomized controlled trial or controlled clinical trial).pt. or clinical trials as topic.sh.
60	(randomized or randomly or placebo).ab. or trial.ti.
61	comparative study.pt.
62	evaluation study/
63	exp program evaluation/
64	intervention*.ti. or (preintervention* or postintervention or pre-intervention or post-intervention).mp.
65	((program* or impact) adj3 (evaluat* or implement* or assess*)).mp.
66	(time series or time point? or "before and after").mp.
67	((wellbeing or well-being or happiness or satisfaction) adj5 (scor* or scale* or question* or rating* or measure* or index or indices or estimat* or domain*)).ti,ab,kw.
68	59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67
69	(exp animals/ or nonhuman/) not human/
70	68 not 69
71	58 and 70
72	(comment or editorial or letter or meta analysis or news or "review" or "systematic review").pt. or case reports/ or (protocol or case report or case series).ti.
73	(adolescent/ or exp child/ or exp infant/) not ((adolescent/ or exp child/ or exp infant/) and adult/)
74	71 not (72 or 73)
75	limit 74 to (english language and yr="2011 -Current")

**Database: PsycINFO****Search date: 7<sup>th</sup> May 2020****Search strategy:**

#	Searches
1	well being/
2	(wellbeing or well-being).ti.
3	((life or personal or job) adj2 satisf*).ti.
4	(belonging* or neighbo?rliness or ((neighbo?rhood? or community) adj (inclusion or engagement))).ti.
5	(love or affection).ti.
6	(autonomy or self control or self concept or self respect or self esteem or self attitude).ti.
7	(happy or happiness).ti.
8	1 or 2 or 3 or 4 or 5 or 6 or 7
9	life satisfaction/ or role satisfaction/
10	contentment/ or dissatisfaction/ or happiness/ or love/ or optimism/ or pessimism/ or sadness/
11	autonomy/ or exp self concept/
12	((("quality of life" or qol or anxiety or ((psycholog* or mental*) adj2 (health or stress))) and (wellbeing or well-being or wellness)).mp.
13	((satisf* or belonging* or neighbo?rhood? or community* or love or affection or autonomy or resilience or self control or self concept or refl respect or self esteem or self attitude or happy or happiness) adj5 (wellbeing or well-being)).ti,ab.
14	9 or 10 or 11 or 12 or 13
15	exp social isolation/ or social deprivation/ or Social Interaction/ or Community Involvement/
16	marriage/ or domestic violence/ or family conflict/ or intimate partner violence/ or marital conflict/
17	work-life balance/ or lifestyle changes/
18	libraries/ or museums/ or exp Art/
19	exp psychotherapy/ or exp cognitive therapy/
20	exp *physical activity/
21	exp *exercise/
22	health promotion/ or health education/
23	exp environmental planning/
24	community development/
25	(((((social* or personal*) adj3 (isolat* or alienat* or cohesion)) or loneliness or lonely) and (intervention? or program*)).mp.
26	((((patient or care) adj3 navigat*) or (social adj2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities).ti.
27	(((((patient or care) adj3 navigat*) or (social adj2 prescri*) or culture or cultural or garden* or museum* or galler* or libraries or theatre* or cinema* or film or arts or painting or drawing or photography or reading or literature or books or bibliotherap* or sewing or knitting or crocheting or quilting or tapestry or crafts or activities) and (intervention? or program*)).mp.
28	(psychotherap* or counsel?ing or ((cognitive or behavi* or psychol*) adj3 (therap* or intervention?))).mp.

29	(((((social or communit* or neighbour* or neighbourhood*) adj3 (participat* or engage*)) or volunteering) and (intervention? or program*))).mp.
30	((physical* adj2 (activ* or inactiv*)) or exercise or diet or nutrition*).ti.
31	((physical activity or exercise or diet or nutrition*) adj3 (intervention? or program*)).ti,ab.
32	((healthy or healthful) adj2 (eating or diet or living or lifestyle)).ti.
33	((((healthy or healthful) adj2 (eating or diet or living or lifestyle)) and (intervention? or program*))).mp.
34	(health adj (promot* or educat*)).mp.
35	((work* or job or occupational) adj3 (intervention? or program*)).mp.
36	(worklife balance or work life balance or free time or leisure time).mp.
37	(commuting or "travel to work" or "travelling to work" or travel time).mp.
38	((social or socioeconomic or economic or housing or deprivation or poverty or inequalit* or inequit* or homeless*) adj3 (intervention? or program*)).mp.
39	((housing or living condition* or deprivation or poverty or inequalit* or inequit*) adj3 improv*).mp.
40	(((((safety or security or crime) adj3 (fear? or concern*)) and (intervention? or program*))).mp.
41	((safe* adj3 (neighbo?rhood? or communit* or street? or environment?)) and (intervention? or program*)).mp.
42	((crime or murder or robber* or burglar* or stalking or mugging) adj3 (rate? or reduc*)).mp.
43	(((((city or town or urban or hous* or environment*) adj3 plan*) or parks or greenspace* or green space* or bluespace* or blue space* or nature or natural world or natural environment or countryside or outdoors).mp.
44	((social or community or neighbo?rhood* or environment*) adj3 (intervention? or program* or development)).mp.
45	or/15-44
46	(britain or england or scotland or wales).lo.
47	(national health service* or nhs*).ti,ab,in.
48	(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab.
49	(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jx,in.
50	(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's " or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.
51	(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.
52	(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.

53	(bath or "bath's" or ((Birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or Carlisle* or "Carlisle's" or (Cambridge not (massachusetts* or boston* or harvard*)) or ("Cambridge's" not (massachusetts* or boston* or harvard*)) or (Canterbury not Zealand*) or ("Canterbury's" not Zealand*) or Chelmsford or "Chelmsford's" or Chester or "Chester's" or Chichester or "Chichester's" or Coventry or "Coventry's" or Derby or "Derby's" or Durham not (Carolina* or nc) or ("Durham's" not (Carolina* or nc)) or Ely or "Ely's" or Exeter or "Exeter's" or Gloucester or "Gloucester's" or Hereford or "Hereford's" or Hull or "Hull's" or Lancaster or "Lancaster's" or Leeds* or Leicester or "Leicester's" or (Lincoln not Nebraska*) or ("Lincoln's" not Nebraska*) or (Liverpool not (New South Wales* or nsw)) or ("Liverpool's" not (New South Wales* or nsw)) or ((London not (Ontario* or ont or Toronto*)) or ("London's" not (Ontario* or ont or Toronto*)) or Manchester or "Manchester's" or (Newcastle not (New South Wales* or nsw)) or ("Newcastle's" not (New South Wales* or nsw)) or Norwich or "Norwich's" or Nottingham or "Nottingham's" or Oxford or "Oxford's" or Peterborough or "Peterborough's" or Plymouth or "Plymouth's" or Portsmouth or "Portsmouth's" or Preston or "Preston's" or Ripon or "Ripon's" or Salford or "Salford's" or Salisbury or "Salisbury's" or Sheffield or "Sheffield's" or Southampton or "Southampton's" or St Albans or Stoke or "Stoke's" or Sunderland or "Sunderland's" or Truro or "Truro's" or Wakefield or "Wakefield's" or Wells or Westminster or "Westminster's" or Winchester or "Winchester's" or Wolverhampton or "Wolverhampton's" or (Worcester not (massachusetts* or boston* or harvard*)) or ("Worcester's" not (massachusetts* or boston* or harvard*)) or (York not ("New York*" or ny or Ontario* or ont or Toronto*)) or ("York's" not ("New York*" or ny or Ontario* or ont or Toronto*))))).ti,ab,in.
54	46 or 47 or 48 or 49 or 50 or 51 or 52 or 53
55	8 and 54
56	14 and 45 and 54
57	55 or 56
58	treatment effectiveness evaluation/ or mental health program evaluation/ or experimental design/ or clinical trial.md.
59	(random* or trial* or controlled stud* or placebo or ((singl* or doubl* or trebl* or tripl*) adj3 (blind* or mask*)) or cross over or crossover or factorial or latin square or assign* or allocat* or volunteer*).ti,ab,hw,id.
60	intervention/
61	evaluation/
62	exp program evaluation/
63	intervention*.ti. or (preintervention* or postintervention or pre-intervention or post-intervention).mp.
64	((program* or impact) adj3 (evaluat* or implement* or assess*)).mp.
65	(time series or time point? or "before and after").mp.
66	((wellbeing or well-being or happiness or satisfaction) adj5 (scor* or scale* or question* or rating* or measure* or index or indices or estimat* or domain*)).ti,ab,hw.
67	58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66
68	57 and 67
69	(bibliography or chapter or column opinion or comment reply or dissertation or editorial or interview or letter or review*).dt.
70	(book or dissertation abstract or edited book).pt.
71	("literature review" or meta analysis or metasynthesis or "systematic review").md.
72	((adolescence 13 17 yrs or childhood birth 12 yrs or infancy 2 23 mo or neonatal birth 1 mo or preschool age 2 5 yrs or school age 6 12 yrs) not ((adolescence 13 17 yrs or childhood birth 12 yrs or infancy 2 23 mo or neonatal birth 1 mo or preschool age 2 5 yrs or school age 6 12 yrs) and (adulthood 18 yrs older or aged 65 yrs older or middle age 40 64 yrs or thirties 30 39 yrs or very old 85 yrs older or young adulthood 18 29 yrs))).ag.
73	68 not (69 or 70 or 71 or 72)
74	limit 73 to (english language and yr="2011 -Current")

**Database: Social Science Premium Collection****Search date: 7<sup>th</sup> May 2020****Search strategy:**

Set	Search
<b>S12</b>	S8 AND S9Limits applied
<b>S11</b>	S8 AND S9Limits applied
<b>S10</b>	S8 AND S9
<b>S9</b>	noft(intervention* preintervention* OR postintervention OR trial OR random* OR ((program* OR impact) N3 (assess* OR evaluat* OR implement)) OR "time series" OR ("time point" OR "time pointed" OR "time pointing" OR "time points") OR "before and after")
<b>S8</b>	S1 AND S7
<b>S7</b>	S2 OR S3 OR S4 OR S5 OR S6
<b>S6</b>	noft(commuting OR "travel to work" OR "travelling to work" OR "travel time")
<b>S5</b>	noft((work* OR job OR occupational) N3 (intervention* OR program*)) OR noft("worklife balance" OR work-life balance" OR "free time" OR "leisure time") OR noft((housing OR ("living condition" OR "living conditions") OR deprivation OR poverty OR inequalit* OR inequit*) N3 (intervention* OR program* OR improv*)) OR noft((safe* N3 (neighborhood* OR neighbourhoood* OR communit* OR street* OR environment*)) AND (program* OR intervention*)) OR noft((crime OR murder OR robber* OR burglar* OR stalking OR mugging) N3 (rate* OR reduc*))
<b>S4</b>	noft((((city or town or urban or hous* or environment*) N3 plan*) or parks or greenspace* or green space* or bluespace* or blue space*)) OR noft(((physical activity or exercise or diet* or nutrition* or social or community or neighbourhoood*) N3 (intervention? or program*)))
<b>S3</b>	ti(((physical* adj2 (activ* or inactiv*)) or exercise or diet)) OR noft(((healthy or healthful) N2 (eating or diet or living or lifestyle))) OR noft((health N1 (promot* or educat*)))
<b>S2</b>	noft(((social* or personal*) N3 (isolat* or alienat* or cohesion)) or loneliness or lonely) OR noft(((patient N3 navigat*) or social prescri* or garden* or museum* or libraries or theatre* or cinema* or arts or crafts)) OR noft(((social or communit* or neighbourhoood*) N3 (participat* or engage* or intervention*)))
<b>S1</b>	ti(wellbeing OR well-being OR wellness OR "life satisfaction" OR "job satisfaction" OR belonging* OR love OR affection* OR happy OR happiness OR autonomy OR "self-control" OR "self-concept" OR "self-respect" OR "self-esteem" OR "self-attitude" OR neighbourliness OR neighborliness) OR ab((wellbeing OR well-being OR wellness) AND ("mental health" OR "quality of life" OR QoL OR anxiety OR stress))

**Searches for grey literature**

For the database and Google searches for grey literature we adjusted/ built on the terms used in each search due to high levels of duplication in the studies that were being returned.

The first search for grey literature was conducted on Social Care Institute for Excellence Social Care Online.

**Database: Social Care Online****Search date: 7<sup>th</sup> May 2020****Search strategy:**

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Abstract=wellbeing OR well-being OR wellness OR "life satisfaction" OR "job satisfaction" OR belonging\* OR love OR affection\* OR happy OR happiness OR autonomy OR "self-control" OR "self-concept" OR "self-respect" OR "self-esteem" OR "self-attitude" OR neighbourliness OR neighborliness AND Title=trial\* OR random\* OR intervention OR program\* OR evaluation OR assessment OR implementation OR impact AND All Fields=UK OR "united kingdom" OR gb OR britain OR england OR wales OR scotland OR "northern ireland" AND Publication Year=2011-2020

Title=wellbeing OR well-being OR wellness OR "life satisfaction" OR "job satisfaction" OR belonging\* OR love OR affection\* OR happy OR happiness OR autonomy OR "self-control" OR "self-concept" OR "self-respect" OR "self-esteem" OR "self-attitude" OR neighbourliness OR neighborliness AND Abstract=intervention\* OR program\* OR evaluation OR assessment OR impact OR implementation AND All Fields=UK OR "united kingdom" OR gb OR britain OR england OR wales OR scotland OR "northern ireland" AND Publication Year=2011-2020

Title=wellbeing OR well-being OR wellness OR "life satisfaction" OR "job satisfaction" OR belonging\* OR love OR affection\* OR happy OR happiness OR autonomy OR "self-control" OR "self-concept" OR "self-respect" OR "self-esteem" OR "self-attitude" OR neighbourliness OR neighborliness AND Abstract=intervention\* OR program\* OR evaluation OR assessment OR impact OR implementation AND Location="United Kingdom" AND Publication Year=2011-2020

Abstract=wellbeing OR well-being OR wellness OR "life satisfaction" OR "job satisfaction" OR belonging\* OR love OR affection\* OR happy OR happiness OR autonomy OR "self-control" OR "self-concept" OR "self-respect" OR "self-esteem" OR "self-attitude" OR neighbourliness OR neighborliness AND Title=trial\* OR random\* OR intervention OR program\* OR evaluation OR assessment OR implementation OR impact AND Location="United Kingdom" AND Publication Year=2011-2020

## **Database: NHS Evidence**

**Search date: 27<sup>th</sup> and 29<sup>th</sup> May 2020**

### **Search strategy:**

We conducted 12 searches on NHS Evidence using combinations of terms relating to the wellbeing questions and generic terms for evaluation and intervention. For example, life satisfaction, worthwhile, happy and anxious combined with programme and evaluation or implementation; ONS4 wellbeing terms (ONS wellbeing, personal wellbeing, subjective wellbeing, wellbeing measure) combined with evaluation or implementation; and searches for the specific ONS4 Personal Wellbeing Measures (using the wording of the questions).

We used the filters for date of publication (January 2011 to May 2020), primary research, practice-based information, case studies and implementation support. We applied a pre-specified cut-off was used to screen the results of each of the 12 individual searches, namely the first 100 results returned with the results ordered by relevance.

## **Google searches, 15<sup>th</sup> and 17<sup>th</sup> June 2020**

We conducted 9 Google searches using combinations of terms relating to the wellbeing measures and generic terms for evaluation and intervention. For example, ONS4 wellbeing terms (subjective wellbeing, personal wellbeing questions, wellbeing questions, wellbeing measure, personal wellbeing) combined with intervention or programme and evaluation. We also conducted searches combining the wellbeing measure terms (life satisfaction, worthwhile, happiness, anxiety) with intervention or programme or evaluation.

We used filters for date of publication (January 2011 to June 2020) and for studies published on UK websites (.org.uk). We applied a pre-specified cut-off was used to screen the results of each of the 9 Google searches, namely the first 100 results returned with the results ordered by relevance.

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Google searches were also conducted as part of the test searches in April 2020. These tested a combination of search terms including wellbeing, intervention, evaluation, personal wellbeing measures, ONS4 and intervention to improve wellbeing.

**Website review**

As a supplement to the call for evidence, we conducted a targeted website review of the Richmond Group of charities. This was because we had identified a report suggesting that some members of this group had switched to using the ONS Subjective Wellbeing tool after trialling another tool. However, a review of the websites of the 14 charities in this group did not lead to the identification of any new reports, i.e. any additional to those that had already been identified by other searches.

### Appendix 3: Critical appraisal framework

The checklist used was the quality checklist for quantitative evidence of intervention effectiveness, taken from the What Works Centre guide to evidence review methods (2019). This checklist is based on the Early Intervention Foundation Quality Checklist.

For this project we added a scoring system to provide an indication of overall level of confidence in the design, conduct and reporting of the study. The 10 elements of the checklist was scored either 1 (yes) or 0 (no, can't tell or N/A). The total score was used to assign each study an overall level of confidence of low (0-2), moderate (3-6) or high (7-10).

Question	Element	Response options
Was the evidence well-designed?	<b>Fidelity:</b> <ul style="list-style-type: none"> <li>The extent to which the intervention was delivered with fidelity is clear – i.e. if there is a specific intervention which is being evaluated, this has been well reproduced</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
	<b>Measurement:</b> <ul style="list-style-type: none"> <li>The measures are appropriate for the intervention's anticipated outcomes and population.</li> <li>Participants completed the same set of measures once shortly before participating in the intervention and once again immediately afterwards</li> <li>An 'intent-to-treat' design was used, meaning that all participants recruited to the intervention participated in the pre/post measurement, regardless of whether or how much of the intervention they received, even if they dropped out of the intervention (this does not include dropping out of the study - which may then be regarded as missing data)</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
	<b>Counterfactual:</b> <ul style="list-style-type: none"> <li>Assignment to the treatment and comparison group was at the appropriate level (e.g. individual, family, school, community)</li> <li>The comparison condition provides an appropriate counterfactual to the treatment group. Consider:               <ul style="list-style-type: none"> <li>Participants were randomly assigned to the treatment and control group through the use of methods appropriate for the circumstances and target population OR sufficiently rigorous quasi-experimental methods (regression discontinuity, propensity score matching) were used to generate an appropriately comparable sample through non-random methods</li> <li>The treatment and comparison conditions are thoroughly described</li> </ul> </li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
Was the study carried out appropriately? Including appropriate sample	<b>Representative:</b> <ul style="list-style-type: none"> <li>The sample is representative of the intervention's target population in terms of age, demographics and level of need. The sample characteristics are clearly stated.</li> <li>There is baseline equivalence between the treatment and comparison group participants on key demographic variables of interest to the study and baseline measures of outcomes (when feasible)</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
	<b>Sample size:</b> <ul style="list-style-type: none"> <li>The sample size is sufficiently large to test for the desired impact. <u>This depends most importantly on the effect size</u>, however a suggestion could be e.g. a minimum of 20</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)

	participants have completed the measures at both time points within each study group	
	<p><b>Attrition:</b></p> <ul style="list-style-type: none"> <li>• A minimum of 35% of the participants completed pre/ post measures. Overall study attrition is not higher than 65%</li> <li>• The study had clear processes for determining and reporting drop-out and dose. Differences between study drop-outs and completers were reported if attrition was greater than 10%</li> <li>• The study assessed and reported on overall and differential attrition</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
	<p><b>Equivalence:</b></p> <ul style="list-style-type: none"> <li>• Risks for contamination of the comparison group and other confounding factors have been taken into account controlled for in the analysis if possible <ul style="list-style-type: none"> <li>• Participants were blind to their assignment to the treatment and comparison group</li> </ul> </li> <li>• There was consistent and equivalent measurement of the treatment and control groups at all points when measurement took place</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
	<p><b>Measures:</b></p> <ul style="list-style-type: none"> <li>• The measures used were valid and reliable. This means that the measure was standardised and validated independently of the study and the methods for standardisation were published. Administrative data and observational measures may also have been used to measure programme impact, but sufficient information was given to determine their validity for doing this</li> <li>• Measurement was independent of any measures used as part of the treatment</li> <li>• In addition to any self-reported data (collected through the use of validated instruments), the study also included assessment information independent of the study participants (e.g. an independent observer, administrative data etc)</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
Was analysis appropriate?	<ul style="list-style-type: none"> <li>• The methods used to analyse results are appropriate given the data being analysed (categorical, ordinal, ratio/ parametric or non-parametric, etc) and the purpose of the analysis</li> <li>• Appropriate methods have been used and reported for the treatment of missing data</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)
Is the evidence consistent?	<ul style="list-style-type: none"> <li>• Are the findings made explicit?</li> <li>• Is there adequate discussion of the evidence both for and against the researcher's arguments?</li> <li>• Has the researcher discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)?</li> <li>• Are the findings discussed in relation to the original research question?</li> </ul>	Yes (1) No (0) Can't tell (0) N/A (0)

## Appendix 4: Study exclusions

The table below summarises the reasons why studies were excluded after review of the title, abstract or full paper. The same reason categories for exclusion were applied to the screening of studies identified by any means. As this was a rapid evidence appraisal, only one exclusion reason was given, however, more may apply.

All grey literature studies identified by the searches and considered potentially eligible for inclusion, and all studies submitted in response to the call for evidence, were reviewed at full text. Reasons for exclusion for grey literature search returns excluded on title/summary screening were not recorded for all individual studies.

Exclusion tag	Reason for exclusion	Peer-reviewed studies excluded on title/ abstract	Peer-reviewed studies excluded on full text	Grey literature studies excluded on full text
Non-UK	The study was not conducted in the UK	648	360	1
Children	The majority of the study population were children aged 18 and under	21	3	11
No intervention assessed	For example, studies assessing associations of risk factors/ outcomes, surveys measuring prevalence, studies to develop an intervention/ measurement tool with no results, analysis looking at mediators /moderators of wellbeing	1,946	9	22
Intervention not relevant	It was clear that the main aim of the intervention was not to improve wellbeing e.g. - wellbeing or related outcomes were listed as secondary outcomes and wellbeing was not listed as an objective of the study/intervention, or wellbeing was not mentioned in the abstract	988	9	17
Qualitative	Only qualitative data was collected via interviews/ focus groups with no reference to the collection of quantitative data	258	25	17
Systematic/ general review	Systematic or rapid evidence review	256	0	1
No ONS4	It was clear from the abstract/ full text that another wellbeing measure was used and there was no reason to suspect any of the ONS4 measures were also used. Details of the stated wellbeing measure used were noted for information	526	268	59
Other	For example, protocols, conferences abstracts, corrections, guidance, policy/ briefing documents, modified ONS4	51	16	80

## Appendix 5: Summary of included studies

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Evaluating the effect of change in the built environment on mental health and subjective well-being: a natural experiment  Ram et al, 2020 [32]	Published	Moving to East Village (the former London 2012 Olympics Athletes' Village), a repurposed new-built residential neighborhood designed to encourage healthy active living with social, intermediate/affordable and market-rent housing.	Comparative prospective cohort study comparing those who moved to East Village with those who were seeking to move but did not make the move  Sample size = 873  Follow-up = 2 years	N O N  S I G	N O N  S I G	N O N  S I G	x	x	High
Sport England volunteering fund evaluation: interim report  Sport England, CFE research, 2020 [11]	Grey	Volunteering fund (£6 million) to increase the diversity of people volunteering in sport with the most common volunteering activities being coaching, refereeing, supporting volunteers, organising an activity or event, renovating spaces or equipment and fundraising.	Before and after study  Sample size = 2,132  Follow-up = Not reported	P O S I T I V E	P O S I T I V E	P O S I T I V E	N O N  S I G	x	Low

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Feasibility trial evaluation of a peer volunteering active aging intervention: ACE (Active, Connected, Engaged)  Stathi et al, 2020 [14]	Published	6-month peer volunteering active ageing programme (ACE) to promote active ageing in socially disengaged, inactive older adults (aged > 64) living in Bristol. Includes 2 one-to-one initial meetings with their activators, at least 3 joint visits to local initiatives of the ACE's choice, and further support to continue attending local activities.	Randomised controlled trial (feasibility trial) comparing current ACE participants to those on a waiting list for ACE  Sample size = 27  Follow-up = 6 month	N O  T E S T	x	x	x	x	High
Navigating later life transitions: an evaluation of emotional and psychological interventions  Centre for Ageing Better, Calouste Gulbenkian Foundation. No publication date stated (the evaluation took place in 2019) [21]	Grey	Two group-based courses (Working Longer and Living Life to the Full & Changing Gears courses) providing psychological and emotional support for later life transitions for people aged over 50, employed at the Cheshire and Wirral Partnership NHS Foundation Trust or the Irish Health Service Executive.	Before and after study  Sample size = 157  Follow-up = 6 months	x	x	x	x	N O  T E S T	Low
Making homes more dementia-friendly through the use of aids and adaptations  Evans et al, 2019 [23]	Published	Small scale aids and home adaptations (eg key locators and clocks, touch bedside lights and bathmats) provided by the Dementia Dwelling Grant for people living with dementia in their own homes in Worcestershire.	Before and after study  Sample size = 101  Follow-up = 9 months	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	x	Moderate

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
An evaluation of Wolverhampton's social prescribing service: a new route to wellbeing  University of Wolverhampton, 2019 [19]	Grey	Social prescribing pilot service, which includes 3 link workers located across Wolverhampton, with an aim to help people access a wide variety of voluntary and community services and activities to support health and wellbeing. For example, exercise programmes, social activities, healthy eating, self-management of long-term conditions and support with welfare benefits and financial issues.	Before and after study  Sample size = 193  Follow-up = 1 to 7 months	P O S I T I V E	P O S I T I V E	P O S I T I V E	P O S I T I V E	P O S I T I V E	Moderate
Moving at scale - from inactive to active  Intelligent Health, Jump, 2019 [15]	Grey	A 12-month community-wide programme which aims to improve the health and wellbeing of entire towns and cities by getting people of all ages moving via a game (Beat the Street).	Before and after study  Sample size = Not reported  Follow-up = 6 months	N O  T E S T	N O  T E S T	N O  T E S T	P O S I T I V E	x	Low
Macmillans social prescribing service: summary evaluation report  Macmillan Cancer Support, Bromley by Bow Centre, Bromley by Bow Insights, 2019 [20]	Grey	Social prescribing service providing people living with and beyond cancer in 4 East London boroughs (Tower Hamlets, City and Hackney, Newham and Waltham Forest) with telephone and up to six face-to-face coaching sessions to connect to non-clinical community-based activities.	Before and after study  Sample size = 40  Follow-up = Not reported	N O N  S I G	N O N  S I G	N O N  S I G	P O S I T I V E	x	Moderate

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Early support for military-connected families: evaluation of services at NSPCC military sites  NSPCC, 2019 [26]	Grey	Three early help services for military connected families providing drop-in services for parents and children under five years, school lunch clubs and a group intervention for children with anxiety and emotional problems. The service aims to build five protective factors: parental resilience, social connections, knowledge of parenting and child development, support in times of need and the social and emotional competence of children.	Before and after study  Sample size = 114 (for adults)  Follow-up = 9 to 12 weeks	N O  T E S T	x	N O  T E S T	P O S I T I V E	x	Low
Quantifying our impact 2018: a journey to impact reporting. Applicant Help 2018  The Charity for Civil Servants with the help of Simetrica, 2019 [27]	Grey	Help delivered via the Charity for Civil Servants help application. Help is delivered via a team of case workers and includes financial assistance, wellbeing support and caring support.	Before and after study  Sample size = 660  Follow-up = 12 months	P O S I T I V E	P O S I T I V E	P O S I T I V E	N O N S I G	x	Moderate
Cultural transformations: The impacts of Hull UK City of Culture 2017. Preliminary outcomes evaluation  Culture, Place and Policy Institute, University of Hull, 2018 [30]	Grey	Hull UK City of Culture 2017 programme. (£32.8 million funding) including over 2,800 events, exhibitions, installations, and cultural activities delivered across Hull and the East Riding of Yorkshire.	Before and after study  Sample size = Not reported  Follow-up = 2 years (evaluation is ongoing)	N O  T E S T	x	N O  T E S T	x	x	Low

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Evaluation of the economic impact and public value of the superfast broadband programme. Final report  Department of Digital, Culture, Media & Sport, Ipsos MORI, Simetrica, 2018 [33]	Grey	The Superfast Broadband programme (£780m public funding) to increase the coverage of superfast broadband (download speeds of 24 Mbit/s) to 95% of premises by the end of 2017.	Comparative survey comparing households with and without subsidised superfast broadband  Sample size = 1,314  Follow-up = N/A	N O N  S I G	N O N  S I G	N O N  S I G	N O N  S I G	x	Moderate
Living digitally - an evaluation of the CleverCogs™ digital care and support system  Just Economics, Carnegie UK Trust. No publication date stated (references to 2018 data in the report) [24]	Grey	A bespoke digital care and support system (CleverCog) delivered by a handheld tablet to increase digital participation in adults in receipt of care and support packages and to enable increased use of technology enabled care in service delivery.	Before and after study  Sample size = 56  Follow-up = 3 months	N O  T E S T	x	N O  T E S T	x	x	Low
Residents as volunteers. Final evaluation report  NCVO, Abbeyfield, Big Lottery Fund, 2018 [12]	Grey	The Residents as Volunteers project enabling over 75's living in a residential home to volunteer with the aim of improving their wellbeing. Roles included setting the table, gardening, leading social groups, organising social trips, visiting people or helping out at local churches or schools.	Before and after study  Sample size = 40  Follow-up = 6 months	N O N  S I G	N E G A T I V E	N O N  S I G	N O N  S I G	x	Moderate

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Evaluation of the RADIQL intervention in Reminiscence Arts in Day Care  Simetrica, 2018 [31]	Grey	A creative arts intervention (RADIQL) that promotes communication and wellbeing by encouraging social inclusion, increased pleasure and cognitive stimulation for people with dementia (and their carers) living outside of care homes and attending an Age Exchange Centre	Non-randomised controlled trial comparing those participating in RADIQL to a comparable population  Sample size with BL ONS4 data = 147 (77 people with dementia and 70 carers)  Follow-up = 12 months	N O N  S I G	x	N O N  S I G	x	x	Moderate
Delivering person-centred holistic care for older people  Beech et al, 2017 [28]	Published	Wellbeing coordinator service offering advice and support to older people attending a specialist community centre for ageing or a GP practice in Cheshire with long-term conditions and unmet social needs.	Before and after study  Sample size = 26  Follow-up = 3 to 16 weeks	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	x	Moderate

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
<p>The short-term health and psychosocial impacts of domestic energy efficiency investments in low-income areas: a controlled before and after study</p> <p>Grey et al, 2017 [34]</p>	Published	<p>Government led free programme to improve the energy performance of hard-to-heat, hard-to-treat homes in low-income areas across Wales. Energy efficiency measures included external wall insulation, central heating system upgrades and the connection of off-gas communities to the mains gas network.</p>	<p>Non-randomised controlled trial comparing communities eligible for programme compared to matched control areas</p> <p>Sample size = 782 from 47 areas</p> <p>Follow-up = 1 to 10 months</p>	x	x	x	x	P O S I T I V E	High
<p>A brief psychological intervention to protect subjective well-being in a community sample</p> <p>Armitage 2016 [22]</p>	Published	<p>A brief psychological intervention based on self-affirmation theory delivered to older women (aged &gt; 45 years).</p>	<p>Randomised controlled trial comparing brief psychological intervention to no intervention</p> <p>Sample size = 140</p> <p>Follow-up = 1 month</p>	x	x	x	x	P O S I T I V E	High

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Evaluation of walking for health: final report to Macmillan and the Ramblers  Ecorys, University of East Anglia, 2016 [16]	Grey	An England-wide network of health walk schemes (National Walking for Health Programme) delivering free, regular, short group-walks that are open to all. The programme aims to engage people affected by cancer and other long-term health conditions, as well as people from specific health inequality groups who are currently inactive, or who need support to remain active, to improve their health and wellbeing.	Before and after study  Sample size = 520  Follow-up = 8 months	N O N  S I G	x	x	x	x	Moderate
Health begins at home: final report  Family Mosaic, 2016 [29]	Grey	Health and wellbeing services (Health Begins at Home) provided by Family Mosaic (a social housing provider) to tenants aged over 50. Interventions assessed included (1) signposting to health and wellbeing services by a neighbourhood manager, and (2) intensive personalised support from a dedicated health and wellbeing support worker, including being accompanied to relevant local services.	Randomised controlled trial comparing Health Begins at Home to no intervention  Sample size = 532  Follow-up = 18 months	x	x	x	x	N O N  S I G	Moderate

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
North and South London Cares: evaluation and development through the Centre for Social Action Innovation Fund  Ranaisi, 2016 [7]	Grey	Programmes to improve community networks of young professionals and older neighbours in North and South London with core objectives to reduce isolation and loneliness amongst older people, improve the wellbeing, skills, resilience and connection of all participants and bridge social and generational divides. Projects evaluated included creating 'Love Your Neighbour' one-to-one friendships, social clubs, 'Winter Wellbeing' outreach and community fundraising.	Before and after study  Sample size = 25  Follow-up = 12 months	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	x	Low
Spirit of 2012 Evaluation Final Report  inFocus Enterprises Ltd. Big Lottery Fund. No publication date stated (the evaluation ran until 2016) [17]	Grey	The Spirit Fund, a charity with a £47 million endowment from the Big Lottery Fund, set up to provide opportunities in sports, physical activity, arts and culture, volunteering and social action. 8 out of 36 projects funded were included in the quantitative wellbeing evaluation.	Before and after study  Sample size = 8 out of the 36 funded projects were included. Number of individuals not defined.  Follow-up = Not reported	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	Low

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
A randomised controlled trial of a goal-setting and planning intervention to improve working adults' well-being  Oliver 2016 [25]	Grey	A goal-setting and planning intervention delivered as a 5-week online self-help programme with minimal support to working adults recruited from two government departments. The focus was on setting meaningful goals, making realistic plans to achieve the goals and overcoming obstacles to progress.	Before and after study (part of a cross-over randomised controlled trial)  Sample size = 163  Follow-up = 3 months	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	x	Moderate
"I feel fitter and better being outside": green gym evaluation report  The Conservation Volunteers, Green Gym, NEF Consulting, 2016 [13]	Grey	Weekly volunteering in outdoor activities (eg food growing, conservation, park management, gardening) to improve physical activity levels, social networks and the local area.	Before and after study  Sample size = 92  Follow-up = 2 months	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	x	Low
Wellbeing 2 programme evaluation: a final report to the Big Lottery  Ecorys, Big Lottery Fund. 2016 [10]	Grey	Wellbeing 2 programme which includes multiple projects with an aim to support communities (adults and children) to create healthier lifestyles and improve their wellbeing in three key areas, physical activity, healthy eating & mental wellbeing.	Before and after study  Sample size = 166 (for adults)  Follow-up = 3 months	P O S I T I V E	P O S I T I V E	N O N S I G	N O N S I G	x	Moderate

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Evaluation of the community organisers programme  Ipsos MORI Social Research Institute, 2015 [8]	Grey	A national training programme in community organising and a grass-roots movement for social action (Community Organisers) involving building relationships in communities, mobilising people to take action and supporting projects which make a difference to people's lives. The programme particularly sought to support people in deprived communities.	Comparative survey comparing areas with and without Community Organisers  Sample size = 2,381  Follow-up = N/a	N O  T E S T	N O  T E S T	N O  T E S T	N O  T E S T	x	Moderate
Community Capital: the value of connected communities  RSA Action and Research Centre, 2015 [9]	Grey	Connected Communities for Mental Wellbeing and Social Inclusion Programme, a project working with seven communities in England to research and strengthen relationships within communities. Interventions that evaluated impact on wellbeing were a social group for single parents, a digital social prescribing tool and mental health counseling training.	Before and after study  Sample size = 3 case study interventions. Where reported number of individuals ranged from 12 to 22  Follow-up = 6 to 7 months	N O  T E S T	N O  T E S T	x      	x      	x	Low

Reference	Published/ grey literature	Intervention & population	Study design	Wellbeing impact (ONS4)					Level of confidence in results (Quality)
				Life Sat	Worth	Happ	Anx	Comb	
Measuring the economic impact of Wellspring Healthy Living Centre's social prescribing wellbeing programme for low level mental health issues encountered by GP services  University of the West of England, 2014 [18]	Grey	Holistic social prescribing wellbeing programme (12 weeks of one-to-one support followed by 12 months of group support around a particular activity) delivered by the Wellspring Healthy Living Centre to GP-referred patients living in one of the most deprived wards in Bristol. Examples of activities included arts and crafts, relaxation techniques, healthy eating and cooking, gift making, physical activity and bingo.	Before and after study	P	P	P	P	x	Moderate
			Sample size = 87	O	O	O	O		
			Follow-up = 3 months	S	S	S	S		
				I	I	I	I		
				T	T	T	T		
				I	I	I	I		
				V	V	V	V		
	E	E	E	E					

Sample size relates to the number of individuals with baseline ONS4 data or where this is not reported the number of individuals with both baseline and follow-up ONS4 data; POSITIVE = statistically significant<sup>17</sup> improvement in outcome; NEGATIVE = statistically significant worsening in outcome; NON SIG = statistically non-significant result; NO TEST = Statistical significance test results not reported; X = not reported or not assessed; Level in confidence in the results was assessed via the WWCW Quality Checklist for Quantitative Evidence of Intervention Effectiveness based on the Early Intervention Foundation Quality Checklist; Low=0-2, Moderate=3-6 and High=7-10 out of a maximum of 10 points

<sup>17</sup> It should be noted that a statistically significant improvement does not necessarily imply a meaningful change in wellbeing. Effect sizes, where reported, are provided in the accompanying REA database.



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