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# **Effectiveness of community-links practitioners in areas of high socioeconomic deprivation**

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## **Abstract**

**Purpose:** To assess the effect of a primary care-based community links practitioner (CLP) intervention on patients' quality of life and wellbeing.

**Methods:** Quasi-experimental cluster randomised controlled trial in socioeconomically deprived areas of Glasgow, Scotland. Adult patients (>18 years) referred to CLPs in seven intervention practices were compared with a random sample of adult patients from eight comparison practices at baseline and 9 months. Primary outcome; health-related quality of life (EQ-5D-5L). Secondary outcomes; well-being (ICE-CAP A), depression (HADS-D) anxiety (HADS-A), and self-reported exercise. Multilevel, multi-regression analyses adjusted for baseline differences. Patients were not blind to the intervention, but outcome analysis was masked.

**Results:** Data were collected on 288 and 214 (72.4%) patients in the intervention practices at baseline and follow-up, and on 612 and 561 (92%) patients in the comparison practices. Intention to treat analysis found no differences between the two groups for any outcome. In sub-group analysis, patients who saw the CLP on three or more occasions (45% of those referred) had significant improvements in EQ-5D-5L, HADS-D, HADS-A and exercise levels. There was a high positive correlation between CLP consultation rates and patient uptake of suggested community resources.

**Conclusions:** We were unable to prove the effectiveness of referral to CLPs based in primary care in deprived areas on improving patient outcomes. Future efforts to boost uptake and engagement could improve overall outcomes, although the apparent improvements in those who regularly saw the CLPs may be due to reverse causality. Further research is required before wide-scale deployment of this approach.

Word count 249

**Keywords:** general practice, primary care, multimorbidity, complex interventions, health inequalities, social prescribing, community link workers

## **Introduction**

Health inequalities are a global problem, resulting from a fundamental inequity in the distribution of income, power and wealth. This impacts on opportunities across the life-course including, access to education, housing, good quality work and healthcare.<sup>1,2</sup> In addition, people of low socioeconomic status experience multiple health problems and a concentration of risk factors<sup>3</sup>, exacerbated by poor access to resources to manage them.<sup>4</sup>

A common policy response to health inequalities in recent years has been the introduction of a variety of different social prescribing programmes. Social prescribing aims to link patients to non-medical sources of support within a community, thus expanding options and resources beyond those traditionally provided in primary healthcare.<sup>5</sup> In principal, social prescribing interventions should enable a more holistic response to patients' needs. By providing access to community-based services and support they can, for example, help reduce social isolation, provide access to initiatives supporting behaviour change (such as walking groups) and mitigate some of the effects of poverty by access to welfare advice or employment opportunities.<sup>6</sup> However, the evidence-base for the effectiveness of social prescribing is extremely limited.<sup>7-9</sup>

The Scottish Government have recently supported social prescribing in areas of high socioeconomic deprivation. The Glasgow 'Deep End' Links Worker Programme aims to support people in areas of deprivation to 'live well' in their communities through the provision of an attached Community Links Practitioner' (CLP) to general practices<sup>10</sup>. Here, we report the quantitative findings on patient outcomes of this programme. Our aim was to test the hypothesis that the intervention would lead to improvements in patients' quality of life and other aspects of wellbeing.

## **Methods**

### **Design and Setting**

We conducted a quasi-experimental cluster randomized controlled trial (RCT) of the Deep End Links Worker Project in Glasgow, UK.<sup>11</sup> Practices were eligible if they were located in Glasgow and in the 100 practices in Scotland (which has approximately 1000 practices) serving the most deprived patients (based on the percentage of registered patients in practices living in the 15 % most deprived postcodes in Scotland). Fifteen general practices serving patients living in very deprived areas (out of 76 eligible practices in Glasgow) took part. Funding from the Scottish Government financed seven practices to implement the intervention. The remaining eight practices acted as a comparison group. Patients who participated in the evaluation provided written informed consent. The study was approved by the University of Glasgow College of Medical Veterinary and Life Sciences Ethics Committee (200140077), registered prospectively with International Standard Randomised Controlled Trials (ISRCT): ISRCTN80842457 and the protocol published.<sup>11</sup>

### ***Practice recruitment and randomisation***

Fourteen practices expressed an interest in joining the LWP, in addition to the practice of the programme's clinical lead. Of these, six were randomly selected to join the intervention arm of the trial, along with the clinical lead's practice. The remaining eight were designated comparator practices.<sup>11</sup>

### ***Recruitment of patients to the study***

#### ***Intervention patient cohort***

Adult patients (aged 18 years or over) who were registered with an intervention practice and were referred to a CLP during the study recruitment period were eligible. Full details of the recruitment procedure are already published.<sup>11</sup> In brief, the healthcare providers – general

practitioners (GPs) and practice nurses (PNs) - were briefed by the research team to give patients the study information and to seek permission to pass on their contact details at the time of referral to a CLP. When this permission was received, a member of the research team contacted patients to explain the study, and if patients were willing to take part, mailed them the study consent form and baseline questionnaire to complete and return to the study office. If there was no response within 10 days, patients were telephoned and given additional options for completing the questionnaire, either during a face-to-face meeting or over the telephone with the study researcher. We aimed to collect baseline data prior to the start of the CLP intervention whenever possible, though the researchers had no control over when the CLP would arrange to see the patient.

#### *Comparator practice patient cohort*

Because the characteristics of patients seen by a CLP were unknown in advance (any patient deemed suitable for referral to the CLP by the practice was eligible), it was not possible to select matched 'control' patients from the comparator practices at the time of recruitment and baseline data collection. Thus a random sample of 1000 adult patients (aged 18 years or over) registered with a comparator practice were selected for invitation to participate in the evaluation. A senior GP in each practice reviewed the list in order to remove patients they considered inappropriate for health or social reasons (such as terminal illness or a major family/other social crisis).<sup>11</sup> The practice then mailed the study invitation pack to the patients included.

#### ***Intervention***

The practice-level intervention had two key components, a funded whole-time CLP in each practice and a practice development fund. Box 1 describes the key features of the programme. Its core functions were:

a) CLPs established links between the practice and local community organisations, helped by the practice development fund used to ‘buy out’ practice staff time to spend improving systems and building relationships;

b) General practices developed bespoke referral systems through which GPs and PNs referred patients likely to benefit from seeing a CLP.

CLPs met patients as many times as they both thought appropriate, identified their most pressing problems and supported referral to, and on-going contact with, local community resources. The ‘theory of change’ that underpinned the evaluation is shown in the supplementary file (Table S1).

Comparison practices were not allocated a CLP nor a practice development fund.

### ***Primary patient outcome***

The primary patient outcome was health-related quality of life, measured at baseline and at 9-months’ follow-up by the EQ-5D-5L.<sup>12</sup>

### ***Secondary patient outcomes***

Secondary patient outcome measures at baseline and follow-up at 9 months included a measure of well-being, the ICECAP-A,<sup>13</sup> the Hospital Anxiety and Depression Scale,<sup>14</sup> the Work and Social Adjustment Scale,<sup>15</sup> burden of multimorbidity,<sup>16</sup> and self-reported lifestyle activities (smoking, alcohol, exercise). At baseline, data were collected on socio-demographic measures (age, gender, education, ethnicity, and work status) and deprivation status based on postcode using the Scottish Index of Multiple Deprivation (the Scottish Government’s small area index which integrates seven domains of deprivation to give an overall score).<sup>17</sup>

### ***Blinding***

It was not possible to mask participants or healthcare professionals to the group allocation of their practice. It was also not feasible to blind members of the core study team collecting the data (BF, LG), but the statisticians carrying out the primary analyses (AM, AB,GJR) and all other co-authors were blinded to the allocation. The statistical analysis plan was written prior to un-blinded data analysis.

### ***Sample size***

The minimum target sample sizes of 286 patients for intervention and 484 patients for comparator practices was calculated to have 80% power to detect a minimally important effect size of 0.274 standard deviation (SD) units in the EQ-5D-5L with a 95% degree of confidence, assuming an intra-class correlation of 0.01 and a 50% follow-up rate. This sample size would provide 90% power to detect an effect size of 0.316 SD units under the same assumptions.

### ***Analysis***

Primary analysis was on an intention-to-treat basis (all patients referred to a CLP) using all available data. Sub-group analysis were conducted on patients who actually attended a CLP face-to-face consultation. Differences between groups were tested using appropriate mixed-effects linear or generalized linear regression models, allowing for clustering by practice. Since the comparator patients were respondents from a randomly selected sample, it was expected that there would be differences in patient characteristics and outcome measures at baseline compared with the intervention patients. The statistical model used retained the standard adjustments (baseline outcome value, age, gender, deprivation, and multimorbidity) plus any other variables that differed at baseline and were significant predictors of outcome in the regression model.

## **Results**

### ***Study sample achieved***

Of 980 adult patients referred to a CLP during the study period (March-December 2015), 559 (57%) were referred to the research team for potential recruitment to the study. Of these, 288 (52%) were recruited (see Figure S1, supplementary file). Patients recruited into the study were representative of all CLP patient referrals in terms of gender, number and type of referral problems, and deprivation level, but were slightly older (mean 46.4 years versus 48.3 years for all CLP referrals versus CLP study recruits, respectively,  $p = 0.018$ ) (see Table S1, supplementary file) . In comparison practices, a random sample of 7,942 yielded 612 (8%) returned completed baseline questionnaires (Figure S2, supplementary file).

Of the 288 patients recruited to the study in the intervention group, 214 (72.4%) completed the follow-up questionnaire 9 months later. Of the 612 patients recruited into the study in the comparison group, 561(92%) completed the follow-up questionnaire.

### ***Baseline characteristics of study sample***

In both the intervention and comparison groups, English was the predominant first language (98%) and 60% of participants were female (Table 1). Patients in the intervention group were younger, of lower socioeconomic status, and more likely to be living alone than patients in the comparison group. They also had more medical and social problems, poorer quality of life and poorer mental health (Table 1). The prevalence of individual medical conditions and social problems are shown in the supplementary file (Tables S2 and S3). Almost half (45%) of the intervention group smoked and 58% reported that they never took regular exercise.

Although we endeavoured to collect baseline patient questionnaires before the patient first consulted with the CLP, this was only possible in 159/288 (55%). However, the baseline outcome and demographic measures of patients who completed before or after seeing the first CLP appointment did not differ significantly (Tables S4, S5, supplementary file). This suggests that seeing the CLP once before completing the baseline questionnaire did not affect the baseline outcome scores (further supported by our findings below).

### ***Patient engagement***

Of the 288 patients in the study who were referred to the CLP, 26 (9.1%) did not engage at all. Of the 262 who engaged, 41.4% had one face-to face consultation with the CLP, 13.4% had two, 12.1% had three, and 33.5% had four or more, with the mean number being 3.1 (SD 4.59). Uptake of community resources by patients increased with increasing number of CLP contacts (Spearman's rho 0.684,  $p < 0.001$ ), although declined somewhat above four consultations (figure 2).

### ***Outcome analysis***

In the intention to treat analysis, referral to a CLP had no significant benefit on the primary outcome (health-related quality of life) at 9 months compared with the comparison group, in the adjusted analyses (Table 2). This was also the case for all secondary outcomes (Table 2). Sub-group analyses of the patients who actually consulted face-to-face with a CLP showed significant improvements in health-related quality of life in those who consulted three or more times (Table 3). Similar significant improvements were also observed for anxiety, depression, and self-reported exercise levels (Table 3). There were no effects seen on work and social adjustment (Table 3), nor on smoking rates nor self-reported alcohol intake (results

not shown). The standardized effect sizes of these significant changes in quality of life, anxiety, depression, and exercise levels were generally small (Figure 3).

Because of the high correlation between the number of times that patients consulted a CLP and the uptake of suggested community resources (Figure 2), it was not possible in the regression analysis to isolate the effects of consulting a CLP from the effects of attending a community resource.

## **Discussion**

This quasi-experimental cluster RCT evaluated the effects of a social prescribing initiative, the Deep End Links Worker Project, in 15 general practices located in areas of high socio-economic deprivation in Scotland. We were unable to prove that intervention was effective overall (intention to treat analysis). Sub-group analysis found significant improvements in the primary outcome and some secondary outcomes in patients who saw the CLP several times. However, this amounted to less than half of the patients referred. Caution is also warranted in the interpretation of such sub-group analysis due to the possibility of reverse causality.<sup>18</sup>

### ***Relationship with published literature***

Despite the increasing popularity of social prescribing approaches, there is a very limited evidence-base on its effectiveness.<sup>5,7-9</sup> Recent reviews have found very few studies that have included a control group, or used a randomised design. The RCT by Grant et al<sup>19</sup> was the most similar to the current study in that it targeted patients with psychosocial problems (as identified by GPs) but the sample size was small, patients were generally not of low socio-economic status (only 10% were in lowest two social classes) and follow-up was shorter (4

months) than in our study (9 months). They reported significant improvements in anxiety and depression, and overall general health. A more recent study of a link-worker intervention (with a matched control group), also conducted in a high deprivation inner city setting, found no effects of the intervention on anxiety, depression, or general health at 8 months follow-up.<sup>20</sup> Similarly, another RCT in an older age group, with a 3-year follow-up, found no effects of a link worker approach.<sup>21</sup> Our results, based on the ITT analysis, are thus in line with these other studies and add to the growing caution about the widely assumed benefits of such approaches.<sup>9</sup>

Qualitative studies have found that patients who engage with social prescribing initiatives generally find it a positive experience<sup>20,22</sup>, but also report that these services are often not utilized to their full extent.<sup>20</sup> Other barriers can include ‘buy in’ from some GPs and funding for the third sector in a context of social care cuts.<sup>23</sup> Our group recently published a qualitative evaluation of the views of the community organisations and the CLPs in the present study, which also concluded that such approaches may not achieve their potential because of ongoing economic austerity and lack of funding for the third sector.<sup>24</sup>

### ***Strengths and weaknesses***

This is the largest study to date on the effects of social prescribing in deprived areas, and one of few with a comparison group and cluster randomisation. The study had adequate statistical power, with the achieved sample size being larger than the power calculation. The choice of quality of life as the primary outcome was appropriate, given that the intervention was generic rather than aimed at a particular problem or condition. We also included a wide-range of validated secondary outcome measures relating to wellbeing.

Weaknesses of the study included its quasi-experimental design, and the fact that it was not possible to have a matched comparison group at baseline. The fact that the research team

were not involved in the design of the intervention (which was a service development) was unfortunate, as we could have contributed in terms of underpinning theory and evidence-based development. A longer duration of follow-up (beyond 9 months) would have been desirable, but this was not possible due to the funding limit. It was also not possible to include a cost-effective analysis nor access routine data on prescribing and healthcare utilisation as the estimated costs for these were not accepted by the funder. In addition, we did not have the information to link individual patients with the number and type of community resource used, and thus cannot say whether some resources were more useful than others. With regards self-reported exercise level, we used a short simple measure rather than a better validated questionnaire (such as the International Physical Activity Questionnaire; <https://sites.google.com/site/theipaq/>) in order to limit the questionnaire length in the deprived population under study.

### ***Implication for policy, practice and future research***

The management of patients with multiple complex health and social problems is a major global challenge with a very limited evidence-base.<sup>25</sup> This type of complex multimorbidity is much more common in deprived than in affluent areas.<sup>26</sup> Primary care clinicians and patients in deprived areas struggle to cope with such complexity.<sup>27,28</sup> Given the ongoing existence of the inverse care law in deprived areas<sup>4,29,30</sup> and the current workforce shortage of GPs in the UK<sup>31</sup>, social prescribing is an attractive option for policy makers as a potential way to reduce health inequalities. However, the findings of the present study questions the effectiveness of this approach, with no benefits found in any measured outcome overall, and possible benefit found only in those who repeatedly saw the CLP (which was less than half of those referred, and which may be a spurious finding). Finding ways to improve the uptake and engagement rates of the intervention may lead to better overall outcomes, but further research is required

on this. Wide-scale deployment of social prescribing initiatives to reduce or mitigate health inequalities would seem inappropriate until such further research is conducted.

### **Author contributions**

SWM and SW were the Principal Investigators, and together with BF and CO'D, conceptualized and planned the study. All authors contributed to protocol development, BF and SWM liaised with practices and coordinated recruitment of patients. BF coordinated the trial. AMcC led the statistical analyses, which were undertaken by AB and GJR. SWM and SW wrote the first draft of the manuscript; all authors reviewed the manuscript for intellectual input, and all authors were involved in revisions, including the final revision.

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### **Conflicts of interest**

The authors declare that they have no competing interests

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**Box 1. Description of the Glasgow Deep End Links Worker Program using the TIDieR framework<sup>1</sup>**

|                 |  |
|-----------------|--|
| Name            | The Glasgow ‘Deep End’ Links Worker Program  |
| Why             | <p>The development of the Glasgow ‘Deep End’ Links Worker Programme (LWP) drew on the theory of community-oriented primary care,<sup>2</sup> and was based on a report by general practitioners working in the ‘Deep End’.<sup>3</sup> Patients attending general practices in very deprived areas commonly have multiple problems, many of which are not amenable to medical intervention.</p> <p>Community organizations offer a wide range of resources but people in deprived areas with multiple health and social problems can find it hard to access them. Closer links between general practices and community organizations, and support to access t available community resources, could help mitigate the effects of deprivation.</p> <p>Links between general practices and community organizations could be enhanced by adding a non-medical Community Links Practitioner (CLP) to the practice team. CLPs would operate from the general practice, forge relationships between general practices and community organizations and support patients to access the non-medical services and support on offer. CLPs would act as a catalyst to hope and self-determination, using the strong relationships with patients that exists in general practice. If patients with complex needs feel supported, they would be more likely to respond to information on ways to improve their health.</p>  |
| What; materials | <p>A practice-attached CLP with a previous working background in community-development. The CLPs all had previous experience of working with individuals and community organisations and had skills in identifying assets, needs, opportunities, rights and responsibilities. Management support for the program was provided by the CLPs’ employing organization, the Scottish Alliance for Health and Social Care (Scotland). Support included: (1) an experienced Programme Director, overseeing all aspects of the programme including the production of detailed records of learning (<a href="https://www.alliance-scotland.org.uk/blog/resources/links-worker-programme-record-of-learning-series-1/">https://www.alliance-scotland.org.uk/blog/resources/links-worker-programme-record-of-learning-series-1/</a>); (2) a Community Links Manager, responsible for establishing protocols and polices for CLP working and line managing the CLPs. The Community Links Manager had experience in community development and in managing staff; (3) a Learning and Evaluation Officer, responsible for establishing local protocols for programme monitoring (independent of the evaluation conducted by the research team); (4) administrative staff and (5) a Clinical Lead.</p> <p>A practice development fund (GBP 35,000) to spend on activities to help each practice develop the new LWP approach. The fund was mainly used to ‘buy time’ away from clinical care to focus on the LWP.</p> <p>ALISS (A Local Information System for Scotland) website (<a href="https://www.aliss.org">https://www.aliss.org</a>) which allows individuals and community organisations to make real-time listings of sources of support searchable by locality.</p> |
| What; procedure | <p>CLPs made links between practices and community organizations in the local area (e.g. walking groups, debt management support, welfare rights, drug and alcohol management support, lunch clubs, befriending schemes, crafting clubs, bereavement support).</p> <p>Practice staff used time away from clinical care to set up systems and learn more about services and support available in community organisations.</p> <p>Each practice devised its own system for GPs and PNs to identify and refer patients who would benefit from help from a CLP who would link them to community-based resources.</p>   |

|                   |   |
|-------------------|---|
|                   | <p>The system was devised jointly by clinical staff and CLPs and was bespoke for each practice to suit their own systems. The choice of which patients to refer to the CLP was left open by practices but was mainly based on the presence of social problems which exacerbated long term health problems.</p> <p>CLPs met patients. CLPs elicited patients' main needs, and worked flexibly, making links with community organisations for patients, and, if necessary, supporting patients to attend the organisations' services. Services with which to match patients depended on their need, their enthusiasm to engage and the availability of local services accessible to patients.</p> <p>CLPs met together weekly with a manager to share and discuss experiences and problem solve collectively.</p> |
| Who provides      | <p>General Practitioners and Practice Nurses referred patients who might benefit to CLPs.</p> <p>CLPs saw patients and provide support to link patients to existing community organisations.</p>  |
| How               | All contacts were one to one and usually face-to-face although some telephone contacts could occur.   |
| Where             | CLPs contact with patients were usually in the practice although some home visits could occur and the CLPs could accompany a patient to support their contact with a community organization.  |
| When and how much | CLPs and patients could meet as many times, and when, they thought necessary.   |
| Tailoring         | The intervention was very flexible and dependent on patient needs, wants and professionals' judgements as to what help was needed.  |
| Modifications     | The intervention was not modified during the research.  |
| How well          | Given the flexibility of the intervention we did not assess fidelity.   |

1. Hoffmann TC, Glasziou PP, Boutron I, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ*. 2014;348.
2. Lenihan P, Iliffe S. Community-oriented primary care: a multidisciplinary community-oriented approach to primary care? *J Community Appl Soc Psychol* 2001;11(1):11-18.
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**Table 1. Patients' characteristics at baseline.**

| <b>Characteristic</b> | <b>Intervention</b> | <b>Comparison</b> | <b>p value</b> |
|-----------------------|---------------------|-------------------|----------------|
| Age in years          | 49 (16)             | 56 (15)           | <0.001         |
| Female                | 59.2%               | 61.1%             | 0.61           |
| Deprived              | 79.3%               | 58.1%             | <0.001         |
| Employed              | 24.1%               | 48.7%             | <0.001         |
| Lives alone           | 67.5%               | 45.9%             | <0.001         |
| Current smoker        | 45.2%               | 20.4%             | <0.001         |
| Never exercises       | 58.0%               | 31.0%             | <0.001         |
| Multimorbidity        | 3.1 (2.1)           | 2.3 (1.8)         | <0.001         |
| Social problems       | 3.9 (2.5)           | 1.8 (2.1)         | <0.001         |
| EQ-5D-5L              | 0.382 (0.337)       | 0.683 (0.300)     | <0.001         |
| ICE-CAP               | 0.563 (0.228)       | 0.812 (0.212)     | <0.001         |
| WASAS                 | 22.3 (12.2)         | 9.4 (11.4)        | <0.001         |
| HADS-A >10            | 71.7%               | 29.0%             | <0.001         |
| HADS-D >10            | 57.5%               | 19.0%             | <0.001         |

Characteristics are either shown as mean (standard deviation) or percentages. Deprived refers to those in the top quintile of deprivation for Scotland as measured by the Scottish Index of Multiple Deprivation. Multimorbidity is the count of self-reported chronic conditions; social problems is the count of self-reported social problems. HADS shows the percentage scoring above 10 (likely case-ness) for anxiety (A) and depression symptoms (B)

**Table 2. Effect of referral to a Community Links Practitioner on patient outcomes.**

Intention to treat analysis. Mixed effects regression models at follow-up in relation to intervention group. Effect estimates represent mean differences.

| Outcome measure | <b>Intervention group versus Comparison group</b> |                          |         |
|-----------------|---|--------------------------|---------|
|                 | Adjusted Effect Estimate                          | 95% Confidence Intervals | P value |
| EQ-5D-5L        | 0.008   | (-0.028, 0.045)          | p=0.648 |
| ICE-CAP         | -0.011  | (-0.039, 0.016)          | p=0.411 |
| WASAS           | 0.05  | (-1.37, 1.48)            | p=0.940 |
| HADS-A          | -0.41   | (-0.99, 0.18)            | p=0.172 |
| HADS-B          | 0.09  | (-0.49, 0.68)            | p=0.753 |
| Exercise        | 0.12  | (-0.06, 0.3)             | p=0.183 |

Each model adjusts for age, sex, SIMD, comorbidity and significant baseline outcome measures as covariates and includes practice ID as a random effects term.

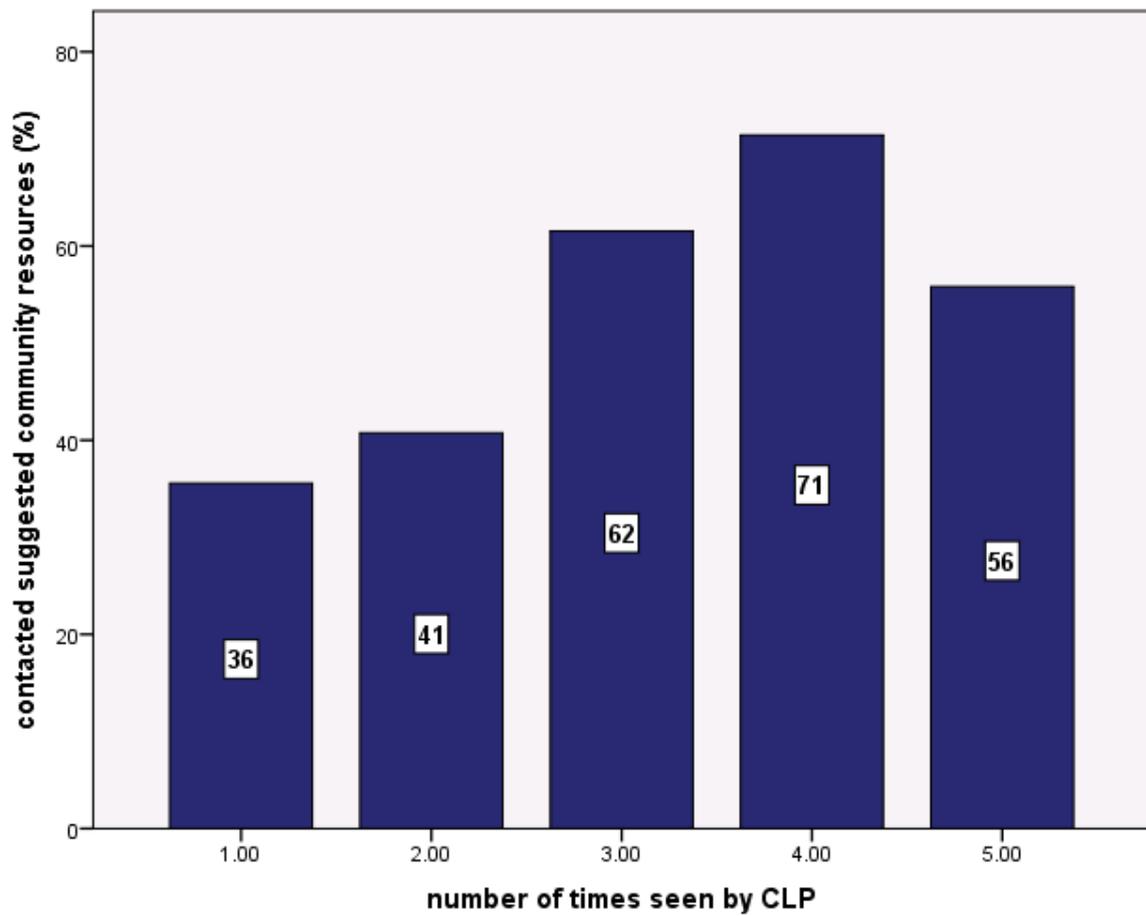
**Table 3. Effect of attending a Community Links Practitioner on patient outcomes.**

Intention to treat analysis. Mixed effects regression models at follow-up in relation to intervention group. Effect estimates represent mean differences.

| Outcome measure | Intervention group versus Comparison group |                          |                          |         |
|-----------------|--|--------------------------|--------------------------|---------|
|                 | CLP Variable                               | Adjusted Effect Estimate | 95% Confidence Intervals | P value |
| EQ-5D-5L        | Saw CLP once                               | 0.009                    | (-0.047,0.065)           | p=0.755 |
|                 | Saw CLP twice                              | -0.041                   | (-0.117,0.036)           | p=0.298 |
|                 | Saw CLP 3+                                 | 0.071                    | (0.016,0.126)            | p=0.011 |
| ICE-CAP         | Saw CLP once                               | 0.004                    | (-0.038,0.046)           | p=0.841 |
|                 | Saw CLP twice                              | -0.002                   | (-0.056,0.052)           | p=0.938 |
|                 | Saw CLP 3+                                 | 0.002                    | (-0.038,0.042)           | p=0.909 |
| WASAS           | Saw CLP once                               | -1.097                   | (-3.361,1.168)           | p=0.342 |
|                 | Saw CLP twice                              | 1.146                    | (-1.766,4.058)           | p=0.441 |
|                 | Saw CLP 3+                                 | -0.795                   | (-3.042,1.452)           | p=0.488 |
| HADS-A          | Saw CLP once                               | -0.768                   | (-1.815,0.278)           | p=0.150 |
|                 | Saw CLP twice                              | 0.064                    | (-1.194,1.322)           | p=0.920 |
|                 | Saw CLP 3+ T                               | -1.380                   | (-2.339,-0.421)          | p=0.005 |
| HADS-D          | Saw CLP once                               | -0.497                   | (-1.465,0.471)           | p=0.314 |
|                 | Saw CLP twice                              | 1.256                    | (0.009,2.504)            | p=0.048 |
|                 | Saw CLP 3+                                 | -1.280                   | (-2.209,-0.352)          | p=0.007 |
| Exercise        | Saw CLP once                               | 0.118                    | (-0.159,0.396)           | p=0.403 |
|                 | Saw CLP twice                              | 0.064                    | (-0.292,0.420)           | p=0.726 |
|                 | Saw CLP 3+                                 | 0.339                    | (0.071,0.607)            | p=0.013 |

Each model adjusts for age, sex, SIMD, comorbidity and baseline outcome level as covariates and includes practice ID as a random effects term.

**Figure 2. Relationship between number of times seen by CLP and patient contact with suggested community resource**



**Figure 2. Effect sizes of frequency of attending a Community Links Practitioner on patient outcomes**

**Forrest Plot showing effects of frequency of attending a recommended community resource on outcomes.**

