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ORIGINAL ARTICLE

Impact of social prescribing to address loneliness: A mixed methods evaluation of a national social prescribing programme

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Abstract

Loneliness is considered a global public health issue because of its detrimental impact on physical and mental health but little is known about which interventions can reduce loneliness. One potential intervention is social prescribing, where a link worker helps service-users to access appropriate support such as community activities and social groups. Some qualitative studies have identified that social prescribing may help to reduce service-users' loneliness. Given this, the British Red Cross (a third sector organisation) developed and delivered a national social prescribing service in the United Kingdom to support people who were experiencing, or at risk of, loneliness. Service-users could receive up to 12 weeks of support from a link worker. A mixed methods study was conducted to understand the impact of the support on loneliness, and to identify the facilitators and barriers to service delivery. The study included: (a) analysis of quantitative data collected routinely between May 2017 and December 2019 ($n = 10,643$) including pre-post analysis of UCLA data ($n = 2,250$) and matched comparator work to measure changes in loneliness; (b) semi-structured interviews with service-users, link workers and volunteers ($n = 60$) and (c) a Social Return on Investment Analysis. The majority of the service-users (72.6%, $n = 1634/2250$) felt less lonely after receiving support. The mean change in UCLA score was −1.84 (95% CI −1.91 to −1.77) of a maximum change of 6.00 (decrease indicates an improvement). Additional benefits included improved wellbeing, increased confidence and life having more purpose. The base case analysis estimated a social return on investment of £3.42 per £1 invested in the service. Having skilled link workers and support tailored to individual needs appeared key. However, challenges included utilising volunteers, meeting some service-users' needs in relation to signposting and sustaining improvements in loneliness. Nonetheless, the service appeared successful in supporting service-users experiencing loneliness.

KEYWORDS

Loneliness, Mixed Methods, Voluntary Sector

1 | INTRODUCTION

Loneliness is considered a global public health issue due to its detrimental impact on physical and mental health (Cacioppo & Cacioppo, 2018; Steptoe et al., 2013). There is increasing evidence that loneliness affects people of any age, not just older adults (Kantar Public, 2016; Victor et al., 2018). Loneliness is defined as the person feeling they have a lack of meaningful contact. Similar, but conceptually different, is social isolation, defined as the absence of social contact (Hawkley & Cacioppo, 2010). We use the term loneliness because the focus of the research is on people's subjective feelings of their context.

Loneliness is considered comparable to obesity and smoking with regard to its detrimental impact on health (Holt-Lunstad et al., 2010) and is associated with an increased risk of coronary heart disease, stroke, depression, cognitive decline and Alzheimer's disease (Valtorta et al., 2016). Loneliness affects a third of adults in industrialised countries (Cacioppo & Cacioppo, 2018), with 5% of adults in the United Kingdom (UK) reporting feeling lonely 'often' or 'always' (Office for National Statistics, 2018). In response, the UK Government developed a Loneliness Strategy, promoting taking collaborative approaches to developing person-tailored interventions (HM Government, 2018).

Despite the prevalence of loneliness and policy drive to address it, the evidence-base on loneliness interventions is limited. Whilst a number of interventions exist to address loneliness including befriending, community allotments, digital technology and physical activities (Gardiner et al., 2018; Macdonald et al., 2018), little is known about their impact, especially for adults across the age spectrum (Victor et al., 2018), partly because interventions have often focused on older adults (Gardiner et al., 2018). Furthermore, studies have generally utilised small samples (Victor et al., 2018).

Consequently, there is a need for larger-scale evaluations of loneliness interventions aimed at adults of any age. One potential intervention is social prescribing (HM Government, 2018). Whilst there are different models of social prescribing (White, 2012), a prominent model entails short-term support from a link worker to help service-users access community activities and other services (Kilgarriff-Foster & O'Cathain, 2015; Polley & Richards, 2019). There is increasing quantitative evidence that social prescribing improves the wellbeing of service-users and some qualitative evidence that service-users experience reduced loneliness (Bickerdike et al., 2017). Furthermore, the UK Government has sought to expand the delivery of social prescribing nationally through the NHS Link Worker programme (NHS, 2019). However, to date, social prescribing services have generally not had the primary aim of addressing loneliness (Bickerdike et al., 2017). To address this gap in service provision, the British Red Cross (a national third sector organisation (TSO)), in collaboration with, and funded by the Co-op partnership, delivered a national social prescribing service for people experiencing, or at risk of loneliness.

The social prescribing service operated across 37 different sites throughout the UK. Service-users needed to be 18 years or older

What is known about the topic

- Loneliness is considered detrimental to people's mental and physical health but little is known about what interventions can reduce loneliness.
- Some qualitative evidence exists that social prescribing, where service-users are supported to access community activities, may improve loneliness, but specific research is needed.

What this paper adds

- This model of social prescribing can help to reduce people's loneliness along with increasing their wellbeing and sense of purpose. Furthermore, there is a positive net social value for money invested (£3.42 return per £1 invested).
- Having skilled link workers delivering personalised support appears key to success but there are service delivery challenges including using volunteers, signposting and sustaining improvements in loneliness.

but referrals were accepted from any source, including statutory services and self-referrals. There was no specific eligibility criteria in relation to loneliness, although the service did target specific population groups (called trigger groups) including young parents, individuals with health and/or mobility issues and people recently bereaved, retired or had children leaving home. Previous research identified that people experiencing these circumstances were at risk of loneliness but there was also a lack of service provision targeting these trigger groups (Kantar Public, 2016).

The social prescribing service entailed paid link workers alongside volunteers developing a supportive relationship with service-users, assessing their needs and providing person-tailored care, Mortimer (2016) identified these three components as critical in loneliness interventions. Support was provided for up to 12 weeks focused on developing service-users' confidence so they felt able to socialise and to facilitate access to appropriate community activities and services (signposting) such as craft groups, adult learning and leisure facilities. However, the tailoring of support resulted in there being considerable variation in service delivery to individuals including the location of appointments and length of support. Examples included helping service-users to access public transport or the link worker accompanying someone to community activities. While support was primarily delivered by link workers, volunteers were also recruited to increase service capacity. For example, a link worker may undertake a service-user's initial assessment and then a volunteer accompanies them to a community activity. Link workers and volunteers also spent time developing relationships with statutory and third sector partners to encourage referrals and identify signposting opportunities. Notably, the service was delivered within an external context of the UK Government's austerity policy (Jones et al., 2016) which

had implications for delivery because other organisations including local authorities and community groups were experiencing financial stresses and increased demand (Marmot et al., 2020).

To understand the impact of the social prescribing service, the British Red Cross commissioned the University of Sheffield to undertake a mixed methods evaluation between May 2017 and January 2020. The aims were to establish whether the service supported people to feel less lonely, identify the facilitators and barriers to service delivery and establish the economic impact of the service.

2 | METHODS

A concurrent mixed methods design (Tashakkori & Teddlie, 2010) was undertaken encompassing qualitative interviews with a range of stakeholders and quantitative analysis of routinely collected data and additional outcome measures specifically collected for the evaluation. Furthermore, a Social Return on Investment analysis (SROI) was conducted. Ethical approval was granted by the University of Sheffield (Reference: 015364).

2.1 | Quantitative data and analysis

2.1.1 | Routinely collected data

Routine data collected between May 2017 and December 2019 was analysed to coincide with the evaluation's timeframe. In a database designed for the service, link workers recorded service-users' demographic information and details of the support they received such as number of sessions and referral source. To measure changes in loneliness, link workers administered the validated UCLA-3 item questionnaire (UCLA questionnaire) (Hughes et al., 2004) to service-users at the start (pre) and end (post) of support. Using the UCLA questionnaire produces an individual score of between 3 and 9, someone is classified as experiencing loneliness if they score 6 or more (Steptoe et al., 2013). Link workers experienced issues with collecting data, resulting in differing sample sizes for each part of the analysis (discussed in the limitations).

2.1.2 | Additionally collected data

A subsample of service-users was asked to complete the UCLA questionnaire 3 months after finishing in the service to understand the longer-term impact of support (follow-up questionnaire). The British Red Cross posted out a UCLA questionnaire, freepost envelope and cover letter to service-users. The letter explained the study, the use and storage of data and that by completing and returning the UCLA questionnaire the service-user was providing consent. The UCLA questionnaire included a service-user's unique case number so that the data could be linked with the routinely collected data. Due to staff capacity, the follow-up questionnaires were posted

sporadically and the return rate was low, resulting in a small subsample of 101 service-users who completed both a post and follow-up UCLA questionnaire.

2.1.3 | Analysis

The quantitative data were anonymised by the British Red Cross before being shared with the University of Sheffield. Researchers cleaned and recoded the data before analysis. Descriptive statistics included exploring demographics, the nature of service received and changes in loneliness. Paired samples t-tests were used to compare pre, post and follow-up changes in loneliness (measured by the UCLA questionnaire). Chi-square tests were used to explore differences in reduction in loneliness between demographic groups of service-users and the type of support received.

It was not possible to include a comparator group within the study. However, we compared service-users to respondents in the English Longitudinal Study for Ageing (ELSA) to understand whether there were differences in changes in loneliness between people who accessed the service and those that did not. ELSA is a longitudinal dataset of individuals in England aged 50 and over. Service-users were matched to ELSA controls (2014/15 data with follow-up data in 2016/17) based on their pre-intervention UCLA questionnaire scores, age groups, gender and trigger groups (excluding young new parents as ELSA is an older cohort) using coarsened exact matching (Blackwell et al., 2009). An individual from ELSA was identified to match a service-user on a one-to-one basis on these characteristics; matching on all characteristics reduced the sample therefore different combinations were used to assess the robustness of the results. We assessed change in UCLA questionnaire scores for the service-users compared to the ELSA controls. Comparisons were also based on the proportion of people who changed in loneliness status from starting in the service to follow-up. Supplementary file 1 provides the technical detail about the methods used for the matched comparator analysis.

For the quantitative element, data preparation and analysis was undertaken using a combination of different software including Microsoft Excel, SPSS 24 (Field, 2009), Stata (StataCorp, 2015) and R (R Core Team, 2019).

2.2 | Social return on investment analysis

An SROI which incorporated wellbeing valuation methods (Fujiwara, 2013; Trotter & Rallings Adams, 2017) explored the efficiency of the service by valuing outcomes in relation to the cost of inputs. The SROI utilised the data and findings from the evaluation in addition to specific data collection. Two rounds of surveys, a workshop, discussions with stakeholder representatives, evidence from routinely collected data (e.g. referral and signposted organisations) and qualitative findings were used to establish the outcomes of the service.

Stakeholders for the first survey included managers, link workers and volunteers from the British Red Cross, representatives from the funders and employees from other TSOs. Representatives from these stakeholder groups attended a workshop to discuss the impact of the service. The second survey was sent to 257 potential respondents including people from the previous stakeholder groups alongside local authority and health service representatives and 175 service-users. Thirty-two responses were received from a range of stakeholders. To compensate for low response rates, we drew upon existing literature and on the findings of this evaluation.

Service-user outcomes were valued with global values of changes in subjective wellbeing (using the short Warwick Edinburgh Mental Wellbeing Scale (SWEMWBS)) (Davidson & Rossall, 2015; Tennant et al., 2007). Subjective wellbeing was assumed the ultimate outcome, which could be brought about as a result of reduced loneliness (Michaelson et al., 2012). The SWEMWBS was collected through a small number of link workers administering the measure with service-users pre and post support during 2018 and 2019 (*n* = 96). Other relevant outcomes were the avoidance of missed healthcare appointments and the improved wellbeing of volunteers.

2.3 | Qualitative data and analysis

Semi-structured interviews with service-users, volunteers and link workers took place between October 2017 and December 2018. To recruit service-users, a sampling frame was developed which reflected the broad characteristics including geographical location, trigger groups and pre-intervention UCLA scores. Using the sampling frame, the British Red Cross approached service-users and if they were willing to be interviewed, their contact details were passed onto researchers. The British Red Cross sent an email to all volunteers asking them to contact the research team if they were willing to be interviewed. Everyone who responded were interviewed. Every link worker was contacted by the research team via email and subsequent telephone contact; all who agreed to take part were interviewed. The interviews took place during the first year of the service. To understand how the service had developed, approximately half of the service-users and link workers interviewees were approached to be re-interviewed three to six months following their first interview. They were selected based on experiences identified in the first interview.

Interviews were undertaken by academic researchers (JT, EH and AH) who were not known to the interviewees. All interviews besides two service-users interviews were undertaken over the telephone. This was because of the participant's preferences, logistical challenges and evidence which indicates that telephone interviews produce the same quality of data as face-to-face interviews (Sturges & Hanrahan, 2004). Participants were sent an information sheet and consent form at least 48 hr in advance of the interviews to give people the opportunity to understand the study and their involvement. Informed consent was taken before commencing the interviews, usually through recording verbal consent as interviews were predominantly undertaken over the telephone. Topic guides were developed focusing on the experience and impact of the support, service delivery and sustainability. Interviews lasted between 30–90 min. They were audio-recorded, transcribed verbatim, checked for accuracy and imported into NVivo 11 for data management and coding. Three researchers read the transcripts and an interpretive thematic analysis approach was used, utilising iteratively developed coding frameworks (Bryman, 2012; Holding et al., 2020; Seale, 2004). The researchers met regularly to compare and refine coding and develop the findings (Taylor & Bogdan, 1998).

2.4 | Integrating the findings

A 'following the thread' technique was used to integrate the findings from the different methods. This entailed identifying a finding and exploring whether other parts of the evaluation helped to further understand the finding (O'Cathain et al., 2010).

3 | FINDINGS

3.1 | The sample

Between May 2017 and December 2019, a total of 10,643 people were referred to the service (the sample). Of these, a subsample of 2,250 service-users completed a UCLA questionnaire pre and post support and 101 service-users also completed a follow-up UCLA questionnaire. The demographics of the service-users who completed the UCLA questionnaire were generally comparable to the main sample however there were some differences (Table 1). The subsamples included a greater number of service-users with health issues and/or mobility issues and on average they received twice as many appointments as the main sample.

The service-users' demographics are summarised in Table 1. Amongst all referrals, almost two-thirds were female (*n* = 5388/8,191, 65.8%), 70.2% were White British (*n* = 4491/6398) and the mean age was 65.5 (*SD*: 19.3). Almost half of service-users had health issues (*n* = 5242/10643, 49.3%) and almost a quarter had mobility issues (*n* = 2564/10643, 24.1%). The organisation did not record further detail about the nature of health issues.

The SROI included both the study population described but also additional stakeholder groups such as people working in organisations who made referrals or received signposts (described in the methods section). Six responses were received for the initial survey and 32 for the second survey. Eight people attended the workshop.

Qualitative interviews were conducted with 26 service-users, 9 volunteers and 15 link workers during the first year of the programme. Follow-up interviews were undertaken with 12 service-users and 7 link workers. Three additional link workers were recruited who had received additional resources to develop their local service.

TABLE 1 Characteristics of the service-users

Demographics	All service-users n = 10,643 (%)	Subsample of service-users with a pre and post UCLA n = 2,250 (%)	Subsample of service-users with a follow-up UCLA n = 101 (%)
Gender			
Female	5,388 (65.8)	1,426 (67)	79 (78.2)
Male	2,802 (34.2)	702 (33)	22 (21.8)
Total	8,190 (100)	2,128 (100)	101 (100)
Ethnicity			
White British	4,491 (70.2)	1,313 (72.5)	60 (75)
Not White British	1907 (29.8)	499 (27.5)	20 (25)
Total	6,398 (100)	1812 (100)	80 (100)
Living arrangements			
Living alone	4,573 ((65.4)	1,166 (61.7)	62 (73.8)
Living with family/friends	1,194 (17.1)	352 (18.6)	12 (14.3)
Living with spouse/partner	739 (10.6)	214 (11.3)	7 (8.3)
Nursing/care home	117 (1.7)	41 (2.2)	1 (1.2)
Sheltered accommodation	365 (5.2)	117 (6.2)	2 (2.4)
Total	6,988 (100)	1980 (100)	84 (100)
Age			
18–24	155 (2.2)	35 (1.7)	1 (1.1)
25–49	1,212 (17.4)	351 (17.5)	21 (23.1)
50–74	2,745 (39.3)	809 (40.4)	30 (33)
75 and over	2,864 (41.1)	808 (40.4)	39 (42.8)
Total	6,976 (100)	2003 (100)	91 (100)
Mean Age (SD)	65.5 (19.3)	65.6 (18.8)	65.4 (19.6)
Experiencing health issues			
Yes	5,242 (49.3)	1715 (76.2)	79 (78.2)
No	5,401 (50.7)	535 (23.8)	22 (21.8)
Total	10,643 (100)	2,250 (100)	101 (100)
Experiencing mobility issues			
Yes	2,564 (24.1)	970 (43.1)	41 (40.6)
No	8,079 (75.9)	1,280 (56.9)	60 (59.4)
Total	10,643 (100)	2,250 (100)	101 (100)
Number of appointments	Median 4 (IQ range: 2–9)	Median 9 (IQ: 5–16)	Median: 11 (IQ: 8–16)

3.2 | Impact of the programme: Social prescribing reduces loneliness

The majority of the 2,250 service-users, who completed a UCLA questionnaire, pre and post receiving support, experienced a reduction in their loneliness. The mean pre-UCLA score was 7.2 (SD: 1.77, 95% CI: 7.15 to 7.30), improving to 5.38 (SD: 1.80, 95% CI: 5.31 to 5.46) after receiving support. This equates to a mean change score of −1.8 (95% CI: −1.91 to −1.77, p=<0.001) (maximum change is 6). Over 70% of service-users experienced a reduction in loneliness (n = 1634, 72.6%); additionally 24% of services-users (n = 541) did not become lonelier whilst receiving support, indicating that social prescribing may have a preventative function. Furthermore, based

on the UCLA classification, a large proportion of service-users changed from being categorised as 'lonely' to 'not lonely'. Before support, 83.9% (n = 1887) of service-users were recorded as feeling lonely, decreasing to 47.4% (n = 1,066) after receiving support (p=<0.001).

There was some evidence that younger service-users were more likely to experience a reduction in loneliness when accessing the service. Amongst service-users who were aged under 50, 76.2% (n = 313/411) experienced an improvement in their loneliness compared to 70.2% (n = 1128/1606) of service users aged over 50 (p = .018). Other demographics did not appear to be associated with differences in changes in loneliness. This includes gender (Male: n = 514/702, 73.2%, Female: n = 1036/1426, 72.7%,

TABLE 2 SROI Sensitivity Analysis

	Base Case	Lower 95% CI	Upper 95% CI	50% SWEMWBS
Total Present Value (PV) of outcomes	£16,183,490.67	£11,329,554.15	£21,037,441.45	£8,440,564.45
Present Value of investments	£4,726,792.83	£4,726,792.83	£4,726,792.83	£4,726,792.83
Net Present Value (NPV)	£11,456,697.84	£6,602,761.33	£16,310,648.62	£3,713,771.62
Social Return £ per £	£3.42	£2.40	£4.45	£1.79

$p = .822$); ethnicity (White British: $n = 975/1313$, 74.3%, Other ethnicity: $n = 353/499$, 70.5%, $p = .110$) and Living status (Living alone: $n = 853/1166$, 73.2%, Living with others: 532/724 73.5%, $p = .919$). Other demographics considered included whether a service-user had health issues ($n = 1252/1715$, 73%) or not ($n = 382/535$, 71.4%, $p = .503$) and whether a service-user had mobility issues ($n = 692/970$, 71.3%) or not ($n = 942/1280$, 73.6%, $p = .255$).

The matched comparator results indicated that service-users ($n = 613$ to 743 as a number of sensitivity analyses were run) had a statistically significant greater decrease of 0.7 to 0.9 in their UCLA scores compared to their matched control group taken from ELSA. More service-users moved from lonely to not being lonely, 34 to 37%, compared to those in ELSA, where 18 to 20% were in this group. This indicates that people receiving the social prescribing service experienced a greater improvement in their loneliness than the matched comparator group.

3.3 | Additional benefits experienced by service-users

Interviewees felt the impact of the service could not be underestimated, particularly in terms of the development of service-users' self-esteem, confidence and improvements in wellbeing. Interviewees felt the service supported people to make what appeared small, but were significant changes to their daily lives, such as being able to catch the bus or engage in a hobby:

> I built up so much energy, I'm getting back to what I like doing and I'm moving forwards going into doing my other volunteer job later in the year. And I am meeting all sorts of new people and it's great, you know
>
> (Service-user 4)

3.4 | Social prescribing provides favourable returns on investment

The base case analysis (the model with the most likely set of assumptions and values) found improvements in service-users' wellbeing valued at £5,425.81 per user ($n = 96$). Inflation was added at 3.58% per annum, 27% deadweight was applied (to prevent over-valuing caused by the pre-post methods), and discounting applied at 3.5%.

This was extrapolated to a representative sample of $n = 4,010$ by excluding users with less than two contacts and self-referrals, which gave a present value of £15,485,852.44.

From a combination of qualitative evidence, survey responses and routine data, the number of avoided missed health appointments was estimated as 536, valued at £30 each (present value=£15,314.11). Using the Wellbeing Valuation Approach (Value Calculator V4_0-2), a value of £2,632 for each of the 271 volunteers was estimated (present value= £682,324.12).

After taking into account central organisation and service specific costs and the cost of time given for volunteering (including training and service delivery at £10 per hour) the net present value and the social return ratio were calculated. Over the 30 months of the service, a return of £3.42 per £1 invested was achieved. This figure was derived from a total present value of outcomes of £16,183,490.67, a present value of investments of £4,726,792.83 and therefore a Net Present Value of £11,456,697.84.

3.4.1 | SROI sensitivity analysis

The model was particularly sensitive to changes in the value of service-user wellbeing and the small number of pairs of scores required extrapolation to a much larger matched sample (Table 2). Therefore, the upper and lower 95% confidence intervals for the value of wellbeing outcomes for service-users were calculated (£3,725.13 to £7,126.50), which resulted in a SROI ratio range of between £2.40 and £4.45.

An earlier analysis, conducted in 2019, used 3-month follow up SWEMWBS scores ($n = 67$) to estimate the rate of drop-off for benefits. This indicated that benefits were only sustained for 6-months and we should count only 50% of the value. This was repeated with a larger data set ($n = 108$), which indicated that the default assumption built into the valuation (12-month drop-off) was correct and we should count 100% of the value for the base case. Whilst the available evidence no longer indicates that the benefits should be discounted, the low number of follow-up scores that are matched with post scores ($n = 9$) means that confidence in this revised assumption is weak. Therefore, we conducted a sensitivity analysis with the 50% estimate so that comparisons could be drawn with the previous analysis. This generated a return on investment of £1.79 per £1 invested and a Net Present value of £3,713,771.62. This represented an increase from £1.48 for the previous analysis, using the same assumptions.

Additionally we calculated the threshold sensitivity: the reductions needed to SWEMWBS present values to create a neutral SROI ratio (1:1). In this scenario the total present value of service-user well-being outcomes would need to be £4,029,154.60 rather than the base case of £15,485,852.44; a reduction in the value of outcomes of 74%.

3.5 | Components facilitating the success of the service

Several factors appeared to facilitate service delivery including the shifting of support from statutory services to community activities, link workers' skills and tailoring support to individual service-users' needs.

3.5.1 | Shifting support from statutory to community activities

There was a difference between the source of referral and type of organisation service-users were signposted to. Link workers were able to accept referrals from any sources, interviewees viewed this as advantageous because referral routes appropriate for each geographical area were developed and there were greater opportunities for people to access support:

> About November or October they all started, I was being deluged by referrals. And I always give feedback to the referrer about the referrals, what I will do with a client. Because in that way I keep the referrers onboard, so I continue to get the referrals. And it shows them the value of the service as well.
>
> (Link worker 6)

The main sources of referral were statutory services including the NHS and local authorities ($n = 3,880$, 36.5%) and self-referrals ($n = 3,792$, 35.6%). Less common sources of referral included TSOs/community activities ($n = 1,184$, 11.1%) and the private sector ($n = 208$, 2.0%). Whilst statutory services were a key source of referral, service-users were primarily signposted to TSOs/community activities ($n = 4,065$, 57.7%) indicating that people were being helped to access support beyond statutory services. This included support services delivered by TSOs like Age UK or Mind and community activities such as craft groups or volunteering opportunities.

3.5.2 | Importance of personalised support delivered by skilled link workers

Interviewees valued the skill of link workers at tailoring support to individual service-users' specific needs. While the service specification was initially for 12 weeks of support, the number of appointments, length of appointments and location varied between

individuals. For example, the mean number of appointments was 4 (IQ range: 2–9); however, there were a small number of service-users who received greater support, with 428 (6.3%) service-users having more than 20 appointments. Furthermore, appointments took place in different locations including at community activities, in cafes and home visits.

3.6 | Issues with service delivery

Link workers experienced challenges with utilising volunteers, getting service-users beyond their first appointment and signposting. Volunteers delivered less support than anticipated, with only a small number of service-users having contact with a volunteer ($n = 406/3663$, 11.1%). Link workers reported how the British Red Cross faced challenges with recruiting volunteers and utilising them to support service-users:

> The problem with volunteers is that's all they are. They are volunteers. You can't rely on a volunteer in the same way as a paid member of staff. And that's not knocking the volunteers…A lot of people think they can come along, you know, just do a couple of visits and a couple of hours a week. But when they find out there's more to it than that they sort of think ooh I can't do it.
>
> (Link worker 1)

Another delivery challenge was keeping service-users engaged in the programme. A fifth of service-users received just one appointment ($n = 1482/6,828$, 21.7%). Whilst some of these service-users may have had their needs met in the first appointment, it raises questions about why service-users do not want further support. Little is known about these service-users because they were rarely interviewed nor did they complete the UCLA questionnaires after receiving support.

Finally, just over a third of service-users accepted for support were signposted ($n = 3207/9253$, 34.7%) ($n = 3,207$). One reason for this lower than anticipated rate was that service-users wanted companionship but an absence of specific befriending services resulted in link workers and volunteers providing befriending. Other service-users faced barriers to accessing signposting opportunities including mobility issues, not being able to afford to attend activities, limited public transport and a lack of community activities:

> But anyhow, as I say the problem is transport, really, is my problem. But that's the only way that you meet people.
>
> (Service-user 8)

3.6.1 | Improvements in loneliness may not be sustained

A key issue was the emerging evidence that not all service-users sustained reductions in their loneliness after finishing in the service.

Among the 101 service-users with a follow-up UCLA score at 3 months, 61 (60.4%) experienced a worsening of their loneliness compared to their post-UCLA score. In this subsample, the mean follow-up UCLA score was 6.63 (SD: 1.88, 95% CI: 6.26 to 7.0) compared to the mean post UCLA score of 5.21 (SD: 1.8, 95% CI: 4.85 to 5.56). This equates to a mean deterioration change of −1.43 (95% CI: −1.83 to −1.03, p=<0.001). Despite this, amongst the follow-up sample, the mean follow-up UCLA score was still greater than the mean pre UCLA score of 7.1 (SD: 1.89, 95% CI: 6.8 to 7.55, p = .005), indicating that people still experienced an improvement in loneliness from receiving the social prescribing service. It is important to consider why service-users may not be sustaining their improvements in loneliness after the support finishes. One issue could be whether service-users received further support through signposting. However, there did not appear to be a relationship between being signposted and deterioration. Deterioration rates amongst service-users who were signposted was 57.4% (n = 35/61) compared to 45% (n = 18/40) amongst service-users who were not signposted, but this difference was not statistically significant (p = .223).

Interviewees discussed why service-users may struggle to maintain a reduction in loneliness after finishing in the service. One reason given was that some service-users had been unable to continue attending activities because they were reliant on link workers/volunteers to support them with transport. Furthermore, some service-users missed the relationships they had developed with link workers/volunteers. This issue indicates the need for services to consider how to manage the ending of support for individual service-users:

> 'I miss her. I wish she could keep doing it'.
> (Service-user 24)

4 | DISCUSSION

The service appeared to help reduce service-users' loneliness and provide other benefits including improved wellbeing and confidence. Wider benefits included helping people to access support outside of statutory services. Tailoring support to individual service-users was important but there were delivery challenges including using volunteers, signposting and sustaining improvements. Many of the findings compliment previous research, thus enhancing knowledge on interventions for addressing loneliness.

Our evaluation appears to be the first published study using a validated loneliness measure to demonstrate how social prescribing can be used to address loneliness (Bickerdike et al., 2017). Identifying that the service improved wellbeing and confidence is consistent with other social prescribing interventions (Bickerdike et al., 2017; Chatterjee et al., 2018; Kilgarriff-Foster & O'Cathain, 2015). Two-thirds of service-users were female; reflecting existing research that women are more likely to seek support for loneliness (Vandervoort, 2012). Woodall et al. (2018) suggested males experience greater benefits from social prescribing than females, however,

this study did not identify any differences between genders in respect of changes in loneliness. Service-users under 50 years old appeared to be more likely to experience improvements in loneliness; this enhances the evidence base, which has primarily focused on interventions for older people (Victor et al., 2018). The finding may be because the causes of loneliness can differ between people of different ages. Luhmann and Hawkley (2016) identified how older people's loneliness can be more entrenched and arises from the deaths of family/friends and a loss of functional ability to engage in activities. In contrast, younger people's loneliness often arises from a lack of social contacts, which could be addressed through signposting opportunities.

The social prescribing programme appeared to provide value for money, reflecting other SROI studies. For example, Kimberlee et al. (2016) reported a return of £2.90 per £1. The positive SROI results of this study are somewhat challenged by the only traditional cost-effectiveness study on social prescribing, which reported social prescribing as £20 more expensive than usual care (Grant et al., 2000). However, their study is over 20 years old, was a pilot trial with a small sample and was not focused on reducing loneliness. Consequently, further economic analyses are required given our research provides strong evidence for a positive social return on investment.

Having front-line workers skilled at developing relationships (Mortimer, 2016) and with the flexibility to offer support to meet individual need appeared a key asset of the service, reflecting other studies on social prescribing (Dayson & Bennett, 2016; Woodall et al., 2018). However, the diversity of support raises questions about whether the service can be classed as one intervention. In future, similar interventions could be considered as a stepped model of support depending on people's needs and nature of their loneliness. There were challenges relying on volunteers to deliver support, indicating the need for social prescribing services to have sufficient paid link worker capacity. This finding is supported by other research recognising the skilled nature of the link worker (Wildman et al., 2019; Woodall, 2020).

Signposting was a core element of the service and of social prescribing more generally. However, as with other research, this study identified challenges to signposting including a lack of community activities especially befriending services and transport infrastructure such as public and community transport (Dayson & Bashir, 2014; Husk et al., 2020; Peshemy et al., 2018). Given the barriers to signposting, a case could be made for social prescribing services to also support service-users to develop relationships and interactions with their family and friends, rather than focusing purely on signposting. While based on a small sample, there was some indication that service-users struggled to maintain reductions in loneliness after support finished, a finding which has not been identified in other literature. One reason could be that the intervention was only short-term, and there may not be sufficient time or focus on addressing the underlying psychological issues experienced by some service-users in relation to their loneliness (Cacioppo et al., 2015). Further research is needed on whether this finding occurs in a larger sample and if so, exploration of how

to sustain improvements such as services providing social events for former service-users. The barriers to signposting and potential issues of service-users maintaining reductions in loneliness raises questions about the impact of short-term support especially when people's loneliness may be entrenched. However, this has to be balanced with service delivery costs.

4.1 | Implications for practice and policy

Social prescribing is gaining momentum internationally and this study has demonstrated it can be used as an intervention to address loneliness for adults of all ages. However, it is important that services utilise skilled link workers who have the flexibility to deliver personalised support and there may need to be further consideration of how to support service-users to sustain improvements. Furthermore, commissioners need to consider social prescribing in the wider context of funding community activities including befriending services and transport to enable service-users to engage with signposting opportunities.

4.2 | Strengths and Limitations

There are three major strengths to this study. 1. It is the first study on social prescribing to use a validated loneliness measure. 2. The study had a relatively large sample for a social prescribing evaluation, which typically have quantitative samples of less than 100 (Bickerdike et al., 2017). 3. Taking a mixed methods approach added depth to the research with findings from the qualitative interviews helping to explain the results of the quantitative analysis.

However, there are six key limitations. 1. There was a large quantity of missing data and issues with data quality because link workers did not always have the skills or time to collect the data. 2. The subsample of service-users who completed UCLA questionnaires received twice the amount of appointments compared to the overall sample, which has implications on how representative the findings are. This issue was exacerbated in relation to the follow-up data, which only involved a small subsample of service-users. 3. The majority of the analysis focused on exploring associations within the sample using statistical tests such as Chi-square. Undertaking logistic regression may have enhanced understanding of the relationships between variables but this was not feasible because of the sample size and concerns about data quality. 4. While matched comparator analysis was undertaken, having an in-study control group would have enhanced the findings. 5. There were omissions within the routinely collected data which meant it was not possible to explore socioeconomic variables such as potential changes in loneliness between people living in areas of high or low deprivation. 6. Service-users and other organisations were not as involved within the SROI valuation process as much as planned due to poor response rates. However, we drew upon the data collected for this evaluation and existing literature to overcome this.

4.3 | Conclusion

There is increasing policy interest and evidence on both social prescribing and loneliness, this study spans the two areas by identifying that social prescribing is an intervention that can be used to address loneliness. Key to the service's success appeared to be having skilled link workers who could take a service-user-led approach and having accessible activities available to signpost people to. Further research is needed on the impact of the service once people finish receiving support, such as sustaining improvements in loneliness and methodologies using a control sample. Commissioners can build upon the research by funding social prescribing services to address loneliness, using the learning on what factors help and hinder service delivery.

CONFLICT OF INTEREST
The authors declare that none of them have any conflicts of interest in respect of this paper.

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Additional supporting information may be found online in the Supporting Information section.