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1 **Does Self-Determination Theory help explain the impact of social**
2 **prescribing? A qualitative analysis of patients' experiences of the Glasgow**
3 **'Deep-End' Community Links Worker intervention**

4

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40

41 **Abstract**

42 **Objectives:**

43 The Links Worker Programme is a primary care-based social prescribing
44 initiative in Glasgow, Scotland, targeting patients with complex needs in areas of
45 high socioeconomic deprivation. The programme aims to improve wellbeing by
46 connecting patients to appropriate community resources. This study explored
47 the utility of Self-Determination Theory (SDT) in understanding the reported
48 impacts of the intervention.

49 **Methods:**

50 Thematic analysis of semi-structured interviews with 12 patients (34-64 years, 6
51 female) referred to Community Links Practitioners (CLP) using SDT as a
52 framework. Impact was assessed from participants' description of their personal
53 circumstances before and after interaction with the CLP.

55 **Results:**

56 Four patients described no overall change in daily life, two described slight
57 improvement, and six described moderate or major improvement. Improvers
58 described satisfaction of the three psychological needs identified in SDT:
59 relatedness, competence, and autonomy. This often related to greater
60 participation in community activities and sense of competence in social
61 interaction. Patients who benefitted most described a change towards more
62 intrinsic regulation of behavior following the intervention.

64 **Conclusions:**

65 Understanding the impact of this social prescribing initiative was facilitated by
66 analysis using SDT. SDT may therefore be a useful theoretical framework for the
67 development and evaluation of new interventions in this setting.

68

69 **Keywords:**

70 Social prescribing

71 Primary Care

72 Socioeconomic deprivation

73 Self-Determination Theory

74

75

76

Introduction

Social prescribing in primary healthcare is gaining interest as an approach to tackle complex physical, psychological and social problems. Social prescribing involves “linking patients with non-medical sources of support within a community”.(1) While definitions vary, most social prescribing initiatives aim to utilize voluntary or community-based services. The majority have targeted people with long-term conditions and with a range of social problems.(2)

Social prescribing may hold promise in addressing health inequalities in areas of high socioeconomic deprivation, where social complexity is often coupled with higher levels of multimorbidity (the coexistence of two or more chronic physical or mental health conditions). People living in more socioeconomically deprived areas are also more likely to experience combined physical and mental health problems.(3) These challenges are compounded by the ‘inverse care law’, whereby availability of health and social care tends to be inversely associated with the level of need.(4, 5) Despite an increasing number of social prescribing interventions in the UK, few have been evaluated in high quality randomised controlled trials and have not included in-depth process evaluation. Furthermore, evidence of effectiveness has been largely inconclusive.(6)

The ‘Deep-End’ Links Worker Programme was one such intervention based in general practices in areas of high socioeconomic deprivation in Glasgow, Scotland. A randomized controlled trial evaluating the effectiveness of the Programme did not find significant improvement in the primary outcome of

health-related quality of life, but found some improvements in those who engaged with the programme (rather than simply being referred).(7) Central to the evaluation of interventions is understanding variation in engagement and explaining individual differences in outcomes. The explicit use of theory in the development and evaluation of complex interventions, such as social prescribing, is important in understanding how, and in what circumstances, interventions are effective.(8)

SDT is a psychological theory concerning human wellbeing, motivation and behavior change,(9, 10) which has been applied to understanding how new behaviors can be achieved and sustained in people's lives.(11) SDT argues that this requires the satisfaction of three innate needs: *autonomy* (a sense of control over one's own activities and behaviours), *competence* (a sense of ability to influence outcomes) and *relatedness* (a sense of connection to and interaction with others) (Figure 1). Proponents of SDT argue that satisfaction of all three needs is necessary for an individual's actions to be 'self-determined', and that actions which are more self-determined are likely to be maintained and to lead to greater wellbeing. Recently, *beneficence* – a sense of having a positive impact on others – has been proposed as a fourth psychological need.(12, 13) Self-determination is expressed as a continuum of motivational regulation (Figure 1). At one extreme is amotivation, or lack of motivation. At the other extreme is *intrinsic motivation*, where simple interest and enjoyment in activities drives behavior. In between are various levels of *extrinsic motivation*, ranging from behaviour driven by perceived rewards and punishments to behaviour that is integrated with a person's sense of self.

127

128 **[Figure 1]**

129

130 SDT is gaining ground as an approach in understanding health behaviour and
131 lifestyle changes, but has not, to our knowledge, been used in the context of
132 deprivation and people multiple complex problems.(14, 15) Thus, we felt it was
133 important to explore whether SDT would help explain the improvements
134 reported in the current intervention. Indeed, there is a lack of established
135 theoretical frameworks to inform the development and evaluation of social
136 prescribing interventions. We use SDT to explore participants' experience of the
137 Links Worker Programme. This study aims to investigate if SDT can be used to
138 understand the change, or lack of change, resulting from patients' involvement in
139 the Links Worker Programme.

140 **Methods**

141 **Study design**

142 A analysis of qualitative patient interviews conducted as part of a quasi-
143 experimental cluster randomized controlled trial (RCT) and parallel process
144 evaluation of the Links Worker Programme.(7)

145

146 **Intervention**

147 The Links Worker Programme has been described in detail elsewhere.(7) The
148 key components of the intervention are summarized in figure 2.

149

150 [Figure 2]

151

152 The RCT involved 15 general practices from the most socioeconomically
153 deprived areas of Glasgow (7 intervention practices, 8 comparator). In the
154 intervention practices, 288 patients were referred to a CLP during the evaluation
155 period, of whom 41% had one CLP consultation, 13.4% had two, 12.1% had
156 three, and 33.5% had four or more. [A random sample of 1000 patients from](#)
157 [comparator practices was selected to participate in the evaluation.](#) Intervention
158 practices received:

- 159 • A Community Links Practitioner (CLP) to work one-to-one with patients
160 to signpost, recommend, refer and support their use of community-based
161 services.
- 162 • A practice development fund.
- 163 • Access to shared learning events for practice staff three times per year.

The latter two components were intended to promote and support wellbeing and team working of practice staff, and to promote a practice-wide adoption of the Links Worker Programme. Patients were referred to the CLP by practice staff or could self-refer (most referral came from the GPs). The intervention was based on a theory of change that specified patient, practice, and community-level activities and anticipated outcomes.(7)

Our analysis concerns interviews from patients who were referred for one-to-one support from a CLP. CLPs were based in general practices meeting individually with patients to try to connect them with community services or other sources of support for their needs and difficulties. Eligibility for referral to the Links Worker Programme was deliberately broad, and included any patient with physical, psychological or social problems that the GP or practice nurse felt might benefit from seeing the CLP. These patients tended to have a combination of physical or mental health problems and were often experiencing social isolation. The number of meetings with the CLP was not pre-specified and was tailored to individual patient. Some patients had a single meeting linking them to wider resources, while others met with the CLP on numerous occasions over a period of several months.

Recruitment and Sampling

Patients referred to a CLP who had consented to participation in the RCT were eligible to be interviewed as part of the process evaluation. Patients were referred between March and December 2015, and interviews were conducted

between April and November 2016. A purposive sampling strategy was used to select participants with at least two of three reasons (physical, psychological or social problems) for referral to the CLP, and to include both males and females of different ages. Out of 32 patients approached by postal invitation, 12 responded and agreed to be interviewed and gave written informed consent. Each interviewee received a £20 voucher; however, this was not mentioned until after the interview to avoid influencing recruitment.

Data collection

Semi-structured interviews were carried out with 12 participants by one researcher. The interviewer was not involved in the Links Worker Programme and had no prior knowledge of the patients. The location of the interviews was by agreement, and included public places, health centres and participants' homes. Two of the interviewees were accompanied; one by their parent/carer and the other by their partner and son. One of these interviewees had verbal communication difficulties and their parent/carer also participated in the interview. Interviews were based on a topic guide informed by SDT. Questions around the impact of the intervention included the relationship with the CLP and wider community, changes in skills/knowledge/ability resulting from the interaction, ability to make choices and decision, and any perceived change in motivation. Interviews lasted between 25 and 60 minutes. All were audio recorded and transcribed verbatim. Identities were anonymized.

Analysis

213 A thematic analysis of the interviews was performed using line-by-line
214 coding.(16) Four researchers each read a sample of three transcripts and met to
215 agree 6 broad themes:

- 216 • circumstances prior to referral to CLP
- 217 • process of referral
- 218 • initial meeting with CLP
- 219 • subsequent interaction with CLP
- 220 • circumstances following CLP involvement
- 221 • interaction with other agencies/services

222 All transcripts were then read repeatedly, and the broad themes applied by one
223 researcher. Next, a coding frame relating to SDT was developed. The SDT coding
224 frame was refined during regular meetings and discussion between the study
225 authors. The following themes were considered:

- 226 • Relatedness
- 227 • Competence
- 228 • Autonomy
- 229 • Beneficence
- 230 • Regulation of behavior

231 These themes were applied to the descriptive codes using line by line coding,
232 collecting examples and illustrative quotes. Analyses were performed using
233 NVIVO software Version 11.

234

235 To structure the analysis, we assessed the patients' description of the overall
236 impact of the intervention on their daily life. This was to allow comparison
237 between varying levels of perceived impact. All transcripts were read and

assessed independently by two researchers. Impact was assessed based on the patients' description of change affecting daily life (if any) following their interaction with the CLP. These descriptions were identified based on the broad descriptive codes. The criteria used to assess impact were based on the Outcome Related to Impact on Daily Living (ORIDL) instrument.⁽¹⁷⁾ This was applied retrospectively to the interview data. ORIDL, designed and validated for use in assessing change in daily life in clinical practice, gives criteria for assessing perceived impact across seven levels ranging from major deterioration to major improvement. We simplified and collapsed the criteria to comprise three levels:

- No change or deterioration.
- Slight improvement, not affecting daily living.
- Moderate or major improvement, affecting daily living.

Disagreements in the assessment of impact were resolved by discussion between the researchers.

Ethical approval

The study was approved by [Institution name withheld] Medical Veterinary and Life Sciences Ethics Committee (200140077)

255 **Results**

256 *Assessment of change in behavior and wellbeing*

257 Demographics, reasons for referral and perceived impact of the Links Worker
258 Programme for the 12 patients interviewed are shown in Table 1. Six described
259 moderate or major improvement impacting daily life, two described slight
260 improvement not affecting daily life, and four described no overall change.
261 Examples and quotes illustrating any perceived change are shown in box 1.
262

263 Table 1. Demographics of participants, reasons for referral, and impact of
 264 intervention

Partici- pant	Age range	Sex	Reason for referral to CLP (physical health/mental health/social problem)	Impact of intervention (ORIDL)
1	34	Female	Social	Moderate/major improvement
2	39	Female	Psychological/social	Slight improvement
3	64	Female	Physical/social	Moderate/major improvement
4	47	Male	Psychological/social	Slight improvement
5	36	Male	Social	No change
6	44	Female	Psychological/social	No change
7	67	Female	Physical/psychological/social	Moderate/major improvement
8	26	Male	Physical/psychological	No change
9	43	Male	Physical/psychological	Moderate/major improvement
10	42	Male	Physical/psychological/social	No change
11	55	Female	Psychological/social	Moderate/major improvement
12	61	Male	Psychological/social	Moderate/major improvement

265
 266

Box 1: Impact of Links Worker Programme described by participants

Moderate or major improvement (n=6)

All patients described feeling socially isolated at time of referral. This was compounded by physical or mental ill-health.

Five out of the six patients in this group described improvements in social isolation following engagement in community groups and activities.

"... the past few month, I've actually started feeling that bit better and see before that? I was – I did nothing, I walked about in my days just dae'in things that I'm supposed to be dae'in, do you know what I mean? So, it was... but fae I've been here, I mean, I can go oot, I can laugh, and I can joke noo, wi' the walking group. An' that. We get on good." Patient 7

Three patients found the support of the CLP helped them make plans and consider future possibilities.

"An' I'm contemplating maybe college next year, but I actually feel safe in the fact o' doing that because I know I've got [the Links Worker] helping me." Patient 1

Slight improvement (n=2)

Patients in this group expressed feeling more able to approach tasks with the support of the CLP.

"[I] understand [the process of applying for housing] a bit better, 'cause sometimes you didn't know when—where to start, where to begin" Patient 4

For these patients, physical ill-health and/or complex social situation appeared to limit the translation of this support into change in experience or circumstances.

"I want to do stuff but my body won't let me" Patient 2

No change (n=4)

One patient described feeling "not ready" to engage.

For all others (n=3) services or sources of support were felt not to meet the specific needs of the patients, leading to a lack of engagement and no further interaction.

"There's nobody for the likes o' me. You're just left tae, I don't know, vegetate. Naebody there tae help. No, the system's totally wrong. The system is totally wrong. As I say, they told me, "Oh, you don't need tae come back here 'cause you don't get benefits. You'll never work again." So, where do you get the hope fae? Where dae you get the faith fae?" Patient 8

268 ***Relatedness***

269 For all participants describing improvements following the Links Worker
270 Programme, the relationship with the CLP was central to their narrative. An
271 empathetic approach was consistently seen as a key component of this
272 relationship. Patients also described feeling they had time to express themselves
273 and allow the CLP to understand their problems and difficulties. Some described
274 benefit from “emotional support”.

275 *“It’s more of emotional support, if you understand. I think that’s maybe the*
276 *best way tae explain it.” Patient 1 – moderate/major improvement*

277

278 *“when you’re actually going tae the doctor because you’re no’ functioning*
279 *properly day-tae-day, an’ somebody takes a’ the bits that you struggle with,*
280 *they’re a lifesaver. It’s better than any beta-blocker.” Patient 3 –*
281 *moderate/major improvement*

282

283 For others, the interaction with the CLP was a catalyst which allowed them to
284 overcome some initial obstacles. The impacts on daily living were described as
285 developing from activities and wider involvements, rather than from an ongoing
286 relationship with the CLP:

287 *“What it did, believe it or not, in my opinion, is it put a goal in front of me,*
288 *you know? It gave me a target to say “well, how can I do this?” – Patient 12 -*
289 *moderate/major improvement*

290

291 Many of the difficulties experienced by patients stemmed from a lack of
292 supportive relationships. Some with no change or slight improvement, but who

293 showed some evidence of reliance on the CLP, described feeling burdened by
294 their existing relationships with relatives or dependents, which was having a
295 negative impact on wellbeing. Some felt that they lacked a reciprocal relationship
296 or felt “taken for granted”. One woman with slight improvement felt that the CLP
297 helped her see the need to focus more on herself; to be “selfish”:

298 *“An’ the people who I had always done things for could never do anything*
299 *for me. So then I thought one day...Why should [I] be the one that’s always*
300 *gotta run down? [My] health is worse than theirs.” Patient 2 – slight*
301 *improvement*

302

303 All patients with moderate or major improvement developed positive
304 relationships with other people following their interaction with the CLP. This
305 was described as a change from the isolation experienced prior to the
306 intervention. These relationships were often formed through group activities
307 which had been suggested or organized by the CLP. These wider relationships
308 tended to positively impact wellbeing:

309 *“mixing wi’ with people was difficult for me... people [were] talking to you*
310 *and they were suffering fae anxiety and that as well... It made me feel like,*
311 *I'm not the only person out there... it is helping me. My anxiety's a lot*
312 *better.” Patient 9 – moderate/major improvement*

313

314 **Competence**

315 When describing their circumstances prior to referral to the CLP, most patients
316 expressed feeling unable to mix with others and participate in their community.
317 For some this lack of perceived competence was expressed as being “unable to

function". Patients described a combination of personal barriers such as communication difficulties, anxiety and lack of confidence. As a result, they felt little control over their own activities and unable to engage with the wider community. The theme of competence was therefore closely linked to that of relatedness. As well as a lack of supportive relationships, there was a sense of lacking the ability to change or influence that reality.

Some described gaining competence in new activities, or rediscovering previous interests as a result of the Links Worker Programme. These patients usually also reported moderate or major improvement overall. These activities were often in organised groups, and the described impact was often a reflection of both increased social interaction and a sense of greater confidence in undertaking specific activities. Some found it allowed them to focus on specific goals:

"What it did, believe it or not, in my opinion, is it put a goal in front of me, you know? It gave me a target to say "well, how can I do this?" and right away, because I do organise things, I started to work out how do I actually get it started." Patient 12 – moderate/major improvement

Patients who rediscovered a sense of competence in an activity often described an increased sense of confidence and control over other areas of life. For example, one woman, whose mother had recently died, joined a walking group. Her mother had enjoyed walking and she remembers previously having to "march" to keep up with her mother. She describes regaining a sense of her own ability through participation in this group, feeling she was good at "marching"

342 and “took after [her] mother”. She attributed much of the improvements in her
343 general life to the walking group:

344 *“I never went oot anywhere and then after she died, I didnae go oot ‘cause*
345 *I’d lost all my confidence and everything...*
346 *...I can walk in and out of that room now, so I can, without it feeling bad or*
347 *anything like that. And I think it is all doon to this group thing.” Patient 7 –*
348 *moderate/major improvement*

349

350 For some, a greater feeling a competence in some areas of life (e.g. social
351 interaction) was not seen in other areas such as addiction:

352 *“I just feel like a failure. I just feel like a pure failure. I’ve let myself down. My*
353 *daughter down.” Patient 9 – moderate/major improvement*

354 However, this same man did express hope to be able to address this in the future,
355 suggesting that a sense of competence had been encouraged, but change not
356 realised within the timeframe of the RCT:

357 *“I know I can do it and, hopefully, hopefully next few months, start o’ next*
358 *year that, I’ll be a different person again. I’ll be more confident” Patient 9 –*
359 *moderate/major improvement*

360

361 In contrast to those with slight or moderate/major improvement resulting from
362 the intervention, patients with no change described a lack of feelings of
363 competence. For some this was a barrier to engagement in activities suggested
364 by the CLP, often finding their specific difficulties (e.g. anxiety, communication
365 difficulties) meant they felt “unable” to engage or participate. These people
366 recognized social isolation as central to their difficulties, but did not feel they had

367 the capability to address this. For example, one participant, who had suffered a
368 traumatic brain injury, felt that difficulties with mobility and communication
369 meant he simply could not participate in the activities suggested:

370 *"I couldnae move but everything, people talk to me an' I can understand but*
371 *I couldnae respond."* Patient 10 – No change

372

373 For others, being seen as no longer capable (e.g. to work) and having a lack of
374 services able to help led to a lack of self-confidence and a feeling of isolation:

375 *"the information I've got [from the Job's Centre], "You'll never work again.*
376 *You don't need to come here to sign on because you don't get benefits"... You*
377 *go tae your doctors, the doctors, as you say, they've no' got the time tae*
378 *understand what's going on, so, they pass you..."* Patient 8 – No change

379

380 **Autonomy**

381 Common to many of the participants' circumstances prior to referral was a lack
382 of control over their lives. This was either due to physical or mental health
383 problems, lack of material resources, responsibilities to others, or other
384 problems such as an ongoing court case or difficulties with housing.

385

386 Many described how the CLP allowed them to voice their priorities and have
387 control over what goals were set. This was seen as a contrast to many of the
388 other interactions they experienced other areas of their lives:

389 *"naebody's telling you you've got to do this, you've got to do that"* Patient 7
390 *– moderate/major improvement*

Those with moderate/major improvements tended to describe actively choosing the activities from which they derived most benefit. For example, one man (patient 12), who had previously experienced loneliness, social isolation, depression, and alcohol addiction, was encouraged to develop his own ideas of starting a club for young people based on his own hobby. Pursuing something related to his previous interests, and that he chose himself, was seen as more achievable and interesting than focusing specifically on his problems. This club became the focus of much of his efforts, and through this he developed new relationships and was able to share his skills (also enhancing his sense of competence). Over the period he also stopped drinking alcohol.

By contrast, those with some improvement, but less evidence of impact of daily life, expressed a need to be guided in the actions taken as a result of the interaction. The interaction was still described positively, however there was a suggestion of dependence on the CLP, rather than promotion of autonomy:

"somebody that's trained or whatever she does to break it all down, target what's gotta be done first, an' is with you through every step o' the way."

Patient 1 – moderate/major improvement

"I've got a big fear that [the Links Worker Programme] stops. That is actually part o' my anxiety" Patient 3– moderate/major improvement

Beneficence

415 The theme of beneficence –having a positive impact on others – was expressed
416 by two patients (7 and 12), both of whom had evidence of moderate/major
417 improvement, and who engaged in self-selected activities after instigation of the
418 CLP. In both narratives the participant had engaged in an activity (walking group
419 and starting a club for young people, respectively) that appeared to satisfy needs
420 for autonomy, relatedness, and competence. Both then expressed a desire to
421 involve others, and to help them derive similar benefits:

422 *“it was actually me that was saying that, you know, I would be interested in*
423 *doing it, you know, giving something back to the community... and if it helps*
424 *me to help somebody else, it’s worthwhile doing, you know?” Patient 12 –*
425 *moderate/major improvement*

426 For others, their difficulties were such that they expressed a need to focus more
427 on their own wellbeing. This was often in the context of feeling over-burdened
428 by existing relationships:

429 *“I just decided I was gonnae start being selfish and looking after myself*
430 *rather than everybody else. So, in doing that everything kinda got better.”*
431 *Patient 2 – slight improvement*

432

433 **Regulation of behaviour**

434 Participants accounts covered a range of categories of regulation described
435 within the SDT framework. Motivation relating to different aspects of life, and at
436 different time points, was expressed in different terms. As such, regulation was
437 not a fixed state. There was variation within and between participants,
438 regardless of the assessed impact of the intervention (Figure 2). However, in
439 patients who described significant change resulting from the Links Worker

Programme, there was a contrast between their descriptions of regulation of behaviours before and after seeing the CLP. Circumstances before referral were often described in terms of amotivation or external regulation, whereas circumstances following the intervention often described identified or integrated regulation (Figure 3).

[Figure 3]

When describing their circumstances prior to referral, most participants' motivation could be characterized as 'amotivation' – a lack of motivation – or 'externally regulated' motivation driven by external rewards and punishments:

"a big major problem with him, his motivation. Very hard unless somebody's there, know, actually taking him or, you know, like pushing him intae it, you know" mother of patient 10 - no change

"I just felt sad and I didnae want to do nothing." Patient 7 – moderate/major improvement

Participants with slight improvement, or those with moderate/major improvement but who expressed some reliance on the CLP, expressed 'identified regulation' – whereby behavior is beginning to be motivated through personal importance or valuing of the activity or its intension.

"I want tae better myself next year and I think the fact I've seen the difference of the help that's available." Patient 1 – moderate/major improvement

Participants with evidence of moderate/major change, in whom activities were self-selected, showed evidence of 'integrated regulation' and more internalized motivation following the intervention. An inherent enjoyment of, or satisfaction from, new behaviours helped to reinforce and sustain them. For example, the woman who joined a walking group began to take pleasure in the activity herself, even outside the context of the group. This activity derived meaning for her as walking had a meaningful association with her mother:

"But it's just if I'm myself I love to... like, march, basically. I took that after my mam." Patient 7 – moderate/major improvement

For some with less improvement, however, their physical or material circumstances remained barriers to achieving this.

"I want to do stuff but my body won't let me" Patient 2 – slight improvement

For those participants assessed as having no change resulting from the Links Worker Programme, regulation was expressed in similar terms when discussing circumstances before and after their interaction with the CLP.

Discussion

This analysis used SDT as a theoretical framework to analyse patient interviews from the 'Deep-End' Links Worker Programme; a primary care-based social prescribing intervention in a setting of high socioeconomic deprivation in Glasgow, Scotland. Patients referred to the CLP described complex physical and

491 mental health problems, as well as a lack of supportive relationships, leading to a
492 poor sense of wellbeing.

493 There was considerable variation in the perceived impact of the intervention by
494 patients, ranging from no change to moderate/major improvement. For some,
495 the CLP was seen as a catalyst for behaviours and activities that appeared to
496 improve wellbeing. For others the CLP was seen as a source of practical help and
497 support, with improved psychological wellbeing but little impact on health-
498 related behaviours. Others did not report any benefit from the intervention.

499 Satisfaction of the three innate psychological needs identified by SDT –
500 relatedness, competence and autonomy was prominent in the accounts of
501 patients expressing positive change affecting daily life. Some of these also
502 described a sense of beneficence and being able to have a positive impact on
503 others. Those seeing the CLP mostly as a source of emotional support
504 demonstrated less development of autonomy and competence, and showed some
505 evidence of reliance on the CLP. Others who benefited less from the intervention
506 tended to have had their psychological needs thwarted, often through external
507 circumstances or the interaction with the CLP not addressing their specific
508 needs.

509 510 **Strengths and limitations**

511 This study has several strengths and limitations. Our analysis was part of a
512 detailed process evaluation of the Links Worker Programme, described in detail
513 elsewhere.⁽⁷⁾ This provides detailed description of the context and components
514 of the intervention itself, as well as analysis of how the intervention was
515 adopted, which can be used to inform judgements about the transferability of

our qualitative findings of patients' experience. However, the sample size of 12 was small and was determined by the number of participants who responded to invitations and the available resources, rather than data saturation. It is not possible to assess to what extent the experiences of this small sample reflect the experiences other patients. Specifically, we purposively sampled patients with at least two reasons for referral to the CLP. Therefore, experiences of patients with potentially less complex problems may have differed from those interviewed, and would not be captured in our analysis. We also do not know the intensity of intervention received by specific individuals. The use of a theoretical framework is a strength, however by using an theory of behaviour change our analysis may not fully capture structural barriers to change.

Findings in relation to wider literature

Research applying SDT to health behaviours has shown that satisfaction of the psychological needs for relatedness, competence and autonomy is associated with more purposeful, consistent and sustained behavior change.(11) Studies have tended to focus on specified behaviours, such as smoking cessation or physical activity. In the Links Worker Programme, the focus was on a broad patient-centred approach to promoting wellbeing in patients with complex mental, physical, and social problems. Factors affecting wellbeing were usually multiple and included lack of supportive relationships, financial difficulties, addiction, as well as impaired function or participation resulting from mental or physical ill-health, as described in the study report.(7) Behaviours or activities targeted were not pre-specified, but rather identified through a holistic assessment of the participants' own priorities and circumstances. Despite the

broad range of problems and potential targets, perceived improvements in daily life could be understood in terms of improved relatedness, competence (often in perceived ability to interact and engage with others) and autonomy.

The combination of physical and mental health problems in association with social complexity, as described by participants in this study, is typical of qualitative evaluations of other social prescribing interventions.(2) *Moffat et al* recently published a qualitative evaluation of a Links Worker intervention in the UK.(18) Similar to this study, participants described a range of physical and mental health problems compounded by social isolation. The reported improvements in health-related behaviours appeared to be mediated through improvements in self-confidence and reduced social isolation. Although framed in different terms, this is similar to our findings of low perceived competence in social interaction, and that the Links Worker Programme led, in some patients, to greater perceived competence in social interaction and a greater sense of relatedness.

The CLP's empathy, a non-judgmental approach, and having time to listen to the patient were seen as important aspects of the interaction with the CLP in this analysis. This relates to broader literature around health professional consultations, particularly in areas of high socioeconomic deprivation, highlighting that empathy is central to the development of effective relationships in the healthcare setting.(19, 20) Empathy is also a central component of non-clinical interventions (such as befriending) aiming improve social isolation or mental wellbeing.(21, 22) However, our findings suggest that feeling

“understood” by the CLP and developing a supportive relationship, while important, were not sufficient in isolation for perceived improvement in daily life. Some found that this relationship allowed them to overcome initial obstacles, whereas others appeared to become more dependent on the CLP. Empathy therefore appeared an important aspect of positive change, but not sufficient in isolation. This is coherent with previous work assessing the impact of general practitioners’ empathy:(23, 24) greater perceived empathy in a general practice consultation is associated with improvements in symptom severity and associated wellbeing. Perceived empathy is also central to, but not sufficient for, patient enablement following general practice consultations.(24)

An approach based on psychological theories of individual behaviour change (such as SDT) may not, when used in isolation, adequately reflect the barriers and complexities associated with promoting healthy behavior and wellbeing.(25, 26) SDT is a theory of individual behavior change, and so analysis using SDT alone may not reflect the extent to which physical or social circumstances remained barriers to participation in activities or behavior change – particularly in settings of high socioeconomic deprivation. People may also face structural barriers to accessing support. Contextual factors such as social norms, cultural expectations, education and health literacy also influence health-related behaviour.(25) Analysis using individual-level theory must be coupled with exploration of these wider factors, particularly in the context of socioeconomic deprivation.

Implications

Our findings indicate that SDT is a useful theory to understand individual level change in the context of this social prescribing intervention. The importance of relatedness was central to the interaction with the CLP. Patients describing the greatest change also experienced a greater sense of competence and autonomy, and described more identified, and in some cases integrated, regulation of behaviour. Most patients were socially isolated, and the sense of competence gained often related to their ability to engage in wider social interaction. This has the potential to inform the development of future interventions, such as social prescribing, that seek to improve wellbeing for socially isolated patients. While the development of supportive relationships is likely to be of central importance, focus should also be given to the development of wider social relationships and developing competence to engage in the wider community. This may include training and support for practitioners (such as CLPs) to develop supportive relationships with patients while promoting patient motivation and limiting reliance.

Conclusions

Our analysis of the Links Worker Programme demonstrated perceived impact can be understood in terms of the satisfaction of psychological needs and regulation of behaviour as described in SDT. For those describing the greatest impact on daily life, a satisfaction of needs for relatedness, autonomy and competence were evident from the interviews. Others with less or no improvement lacked satisfaction of at least one of these needs. Beneficence was less prominent but was described by two participants with greatest impact.

While useful in unpicking the variation in response to the intervention, analysis using SDT may overlook some important physical, material or structural barriers to change expressed by participants. We would argue that SDT is therefore a useful theory to underpin the development interventions targeting multimorbidity and socioeconomic deprivation, whilst recognizing limitations in its scope.

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