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The dual impact of social prescribing: targeting social determinants to enhance quality of life in chronic conditions

Rosanne Freak-Poli^{1,2*} , Alessandra K. Teunisse^{3,7} , Htet Lin Htun¹ , Leanne Wells⁴ , Vaishnavi Sudhakar³ , Paula Muis⁵  and J. R. Baker^{3,6,7} 

Abstract

Background Chronic diseases are heavily influenced by social determinants of health (SDoH), requiring care that extends beyond medical interventions to address underlying issues. Social prescribing, which connects individuals to community resources, offers holistic care complementary to health systems. However, social prescribing requires context-specific tailoring and ongoing evaluation to meet community needs.

Aim To evaluate a 12-week social prescribing intervention targeting SDoH for individuals with, or at risk of developing chronic disease on health-related quality of life, general wellbeing, mental wellbeing, self-reported health, and healthcare utilisation. A secondary aim was to assess participant satisfaction with social prescribing.

Methods A pre-post design using de-identified data collected from an ongoing intervention. Eligibility included adults in south-east New South Wales who presented to their General Practitioner (GP) with, or at risk of, chronic disease and completed the intervention between July 1, 2022, and June 30, 2024. The social prescribing model involved link workers and participants co-designing individualised plans based on their needs and interests, conducted either in-person or by telephone consultations. Outcome measures collected pre- and post-intervention included health-related quality of life, self-reported health, general wellbeing, mental wellbeing, and healthcare utilisation.

Results The study included 281 participants (mean age 57.7 years, 66.6% female). Significant improvements were observed in health-related quality of life ($p < 0.001$, Cohen's $d = 0.645$), self-reported health ($p < 0.001$, Cohen's $d = 0.709$), general wellbeing ($p < 0.001$, Cohen's $d = 0.438$), and mental wellbeing ($p < 0.001$, Cohen's $d = 0.723$). These benefits were consistent across binary gender and age groups. A non-significant trend toward reduced healthcare utilisation was observed. Participants reported high satisfaction with the program (9.27/10), with 75% stating they would not change it and a high likelihood (9.53/10) of recommending it to others.

Conclusions Social prescribing addressing SDoH improved health-related quality of life, wellbeing, and self-reported health for adults with, or at risk of developing, chronic diseases. This study is the first Australian evaluation of social

*Correspondence:

Rosanne Freak-Poli
Rosanne.Freak-Poli@monash.edu

Full list of author information is available at the end of the article



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prescribing demonstrating benefits on general wellbeing and mental wellbeing, with future analysis planned to explore impacts among Australia's specific cultural and linguistic groups.

Trial registration N/A.

English Summary

Many people with long-term health conditions need more than just medical treatment to feel better and improve their quality of life. While doctors focus on physical health, issues like food insecurity and loneliness can greatly affect quality of life. Social prescribing works alongside regular healthcare, by offering the opportunity to refer patients to link workers. Link workers connect participants with community services that enhance quality of life. These services can directly impact life quality—like food programs, social groups, and housing support. A key feature is that link workers and participants co-design personalised prescriptions that address multiple quality of life domains simultaneously that can include multiple community programs and services (rather than single clinical programs), enabling them to address various social determinants of health. Although this approach has shown promise internationally, we don't know if it works as well in Australia's unique setting. This study asked whether a 12-week social prescribing program could improve quality of life, health, and wellbeing for Australian adults living with or at risk of chronic diseases. We also asked whether participants were satisfied with the program. Our results showed that people had improved quality of life, better physical and mental health, and less stress and anxiety after completing the program. They also tended to use fewer healthcare services, suggesting potential cost savings. Participants reported high satisfaction with the program, with 75% stating they would not change it and were likely to recommend it to others. These findings are the first to show that social prescribing can successfully improve wellbeing and quality of life for Australians with chronic diseases, providing the opportunity for people to take better control of their health through community support.

Keywords Social prescribing, Social determinants of health, Chronic illness, Chronic disease, Mental health, Social support, Community support, Community referral, Social engagement, Social interaction

Introduction

Chronic diseases not only reduce the quality of life and life expectancy but also impose substantial healthcare costs and economic losses due to reduced productivity and increased healthcare expenditure [1]. The World Health Organization defines chronic diseases as non-communicable diseases that are of long duration, are not usually immediately life threatening, and require long-term management [1, 2]. Examples of prominent chronic diseases are cardiovascular disease, diabetes, chronic respiratory conditions (such as asthma and chronic obstructive pulmonary disease), cancer, musculoskeletal conditions (like arthritis and osteoporosis), and mental health disorders [1, 2]. In Australia, 80% of the population has at least one long-term health condition, with half experiencing a chronic disease [3]. This impact contributes to the estimated 5.6 million years of healthy life lost per year in Australia due to chronic diseases [1].

Social determinants of health (SDoH) are causally linked to chronic diseases [4]. They are the non-medical factors influencing health outcomes, encompassing the conditions in which people are born, grow, work, live, and age [5]. As examples, social determinants include income and financial security, education, employment conditions, housing stability, food security, social support and community connection, loneliness, access to healthcare and transportation, and experiences of discrimination or social exclusion. Therefore, addressing

chronic diseases goes beyond medical interventions. One solution is social prescribing which is defined as a means for trusted individuals in the clinical and community settings, like a General Practitioner (GP), to refer the person to a link worker who can connect them to non-clinical supports and services within the community to address their non-medical needs to improve their health, wellbeing and quality of life [6]. A key component of social prescribing is the collaborative creation of unique, personalised social prescriptions by link workers and participants tailored to the individual's specific needs and interests. This person-centred approach ensures that each prescription plan is meaningful to the individual and aligned with their personal goals. This approach also provides a holistic response to the broader social determinants that impact health, wellbeing and quality of life. Many social prescriptions benefit participants in several ways. For example, a social prescription might connect someone to a local art class to support mental well-being and increase social contact [7], or a walking group to encourage physical activity and social contact [8, 9].

A recent scoping review of social prescribing programs identified that most programs were delivered in primary care settings and targeted diverse populations, including older adults, those with mental health issues, and individuals at risk of long-term conditions. Programs varied in their staffing models, often involving healthcare professionals working alongside link workers to identify

needs, refer individuals to services, and provide follow-up support [10]. With the consistent guidance of the link worker, participants receive customised support and constant re-evaluation of the plan, ensuring each plan fulfils the patients' needs and aligns with their lifestyle and personal goals. Another paper examining the perspectives of 29 Australian and UK authors recommended eight key actions for advancing social prescribing implementation, emphasising the need for multilevel theoretical frameworks, collaborative measurement approaches, sustainable funding models, and increased focus on health equity and workforce experiences to ensure effective delivery across diverse populations and contexts [11].

Social prescribing leverages existing health, societal, and community systems to address the psychosocial factors affecting, and possibly exacerbating, a person's physical health condition [12]. Systematic reviews have identified that social prescribing benefits social contact [8, 13, 14], isolation [15], self-reported health [13, 14], wellbeing [13, 14], health-related behaviours [14, 15], quality of life [16], self-esteem [7, 14], mental wellbeing [7, 8, 16], anxiety [7, 15], depression [7, 15], physical activity [9], and blood pressure [17]. Social prescribing is also economically beneficial; for example, across 13 studies, the social return on investment ranged between £2.14–£8.56 for every £1 invested [18]. In Canada, social prescribing programs improved health outcomes for older adults and youth, delivering \$4.43 in benefits for every dollar invested [19]. The benefits of social prescribing have been so compelling that, in 2019, it was formally integrated into the UK's Universal Personalised Care strategy and is now government-funded and available to the entire population [20]. However, the evidence varies based on the population studied, the measures used, and the methodology applied [21]. The variance in evidence highlights the importance of context and the need to tailor social prescribing to meet the unique needs of each community, as well as continued evaluation.

In Australia, social prescribing is gaining traction [11, 22] with emerging evidence of economic benefits. Programs implemented in both metropolitan Sydney and rural South Australia have demonstrated positive returns on investment, yielding AU\$3.80 and AU\$2.30, respectively, for every AU\$1 invested [23, 24]. An integrated review of the current evidence highlights the growing interest in social prescribing in Australia, with a focus on global and social well-being as key outcomes [25]. Three pilot studies, focused on injured workers [26], mental illness [27] or loneliness [28], have demonstrated benefits across a range of measures. However, significant variation in outcome measures have been identified, reflecting the distinct needs of the specific participant cohorts targeted by each program (e.g., individuals with mental illness, injured workers, or those experiencing loneliness),

which poses challenges for benchmarking and synthesis [25].

While initial findings for social prescribing in Australia are promising, further research is needed to establish its effectiveness across Australia's unique demographic and geographic settings. This study aims to evaluate the impact of a social prescribing intervention for adults with, or at risk of developing, chronic diseases on health-related quality of life, wellbeing, self-reported health, and healthcare utilisation. A secondary aim was to explore participant satisfaction with social prescribing through a brief evaluation related to their expectations.

Methods

Participants

Eligible participants were adults (aged 18 and more) living in the southeast New South Wales region who self-presented to their GP with, or at risk of developing, chronic disease. Eligibility was by clinical judgment from the referring GP. Consistent with Australian primary care practices, GPs used a combination of clinical indicators, risk factor assessments, and professional judgment to identify patients who might benefit from preventive interventions. While specific chronic disease diagnoses for each participant was not collected, the population health profile for this region identifies coronary heart disease, dementia, cerebrovascular disease, lung cancer, and chronic obstructive pulmonary disease as the five leading causes of mortality and also has higher than state and national average prevalence of mental health conditions and psychological distress [29].

After GP referral, participants were contacted within 24 hours to undertake the intake process. The intake process was undertaken either in their homes or over the phone by a social worker. Eligibility was confirmed based on information from the GP referral, demographic data, and a risk assessment that confirmed no adverse reason for participation. If eligible, the participants were assigned a link worker within 4–6 weeks of the intake process.

The program's philosophy focused on early intervention for individuals with modifiable risk factors, rather than waiting for chronic disease to develop, reflecting growing evidence that addressing SDoH can help prevent disease progression. The referral process adopted a holistic approach, incorporating clinical indicators (e.g., biomarkers for prediabetes, elevated blood pressure, or relevant family history), psychosocial factors associated with increased chronic disease risk, and practical social needs such as housing insecurity, limited access to food, or social isolation. The region is large and diverse, covering metropolitan, rural, and regional areas. Chronic disease was defined as per the Australian Institute of Health and Welfare's definition which considers chronic diseases

as conditions that have long-lasting effects and require long-term management which includes mental conditions [1]. Referral into the social prescribing program was offered if the person disclosed to the GP that they needed practical help with issues that could significantly impact their health and wellbeing, such as housing, food security, lack of access to aged care or disability supports, social disconnection, domestic violence, financial stresses, low physical activity, or any other significant stressors. If they were receiving current acute inpatient treatment or had a significant cognitive impairment, they were excluded.

Social prescribing intervention

As this social prescribing intervention is ongoing, the “data cut” for this study was collected between July 1, 2022 and June 30, 2024. The social prescribing program was fully funded through the Primary Health Network, with no out-of-pocket expenses for participants. Link workers coordinated with participants to accommodate various schedules, including those who were employed. The intervention utilised existing community assets and resources where possible, enhancing sustainability and accessibility. After referral, the link worker assessed the participants via a battery of surveys, delivered either in their homes or over the phone. Questions and response scales were read aloud to participants. The link workers also asked participants about their needs in various domains to facilitate the development of social prescriptions.

Link workers and participants co-designed their individualised plan: first, discussing their social, emotional, or practical needs and goals; second, the potential services available as solutions to support their needs; and third, developed referrals for various services. This includes direct support to access government services as well as linking to services in the voluntary, not-for-profit and community sectors. Social prescriptions were tailored to each participant’s interests, aspirations, and quality of life goals, spanning a diverse range of community-based activities and supports. These included creative pursuits (e.g., painting groups, craft circles), physical activities (e.g., bushwalking groups), social gatherings (e.g., coffee groups, book clubs), and skill-based activities (e.g., digital literacy programs). When needed, link workers also facilitated access to practical support services addressing fundamental life challenges, such as housing, money, food, and safety. The link workers continued to support participants for up to 12 weeks, offering additional referrals if required. At the conclusion of the program, the link worker assisted the patient in completing the post-intervention assessment, which included a satisfaction survey.

Outcome measures

Health-related quality of life

5-level EuroQol five dimensions (EQ-5D-5L) scale [30] assesses levels of mobility, self-care, usual activities, pain/discomfort, and anxiety/depression on a 5-point scale (1: No problems to 5: Extreme problems). This widely validated instrument has demonstrated good reliability and validity across many populations, including those with chronic conditions. The Australian value set we used has been rigorously developed and validated [31]. The sum of the five dimensions are indexed to a range from 0 (worst possible health) to 1 (full health) [31].

General wellbeing

A single item sub-scale of the Measure Yourself and Concerns and Wellbeing [32] assesses wellbeing concerns on a scale of 0 (Not bothering me at all) to 6 (Bothers me greatly). While this single-item measure does not have traditional psychometric properties like Cronbach’s alpha, it has demonstrated sensitivity to change in social prescribing populations and is widely used in the field [32]. This scale was then reversed-scored such that higher scores represented greater wellbeing.

Mental wellbeing

Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) [33] assesses feelings of optimism about the future, being useful, relaxed, dealing with problems well, thinking clearly, feeling close to others, and making up their own minds on a 7-item scale (1: none of the time to 5: all of the time). This scale is valid and reliable with Cronbach’s alpha typically around 0.84 [33]. Scores are summed and range from 7 to 35, with higher scores indicating better mental wellbeing.

Self-reported health

EuroQol health thermometer [30] assesses participant health today on a visual analogue scale from 0 (worst health you can imagine) to 100 (best health you can imagine). This visual analogue scale is a validated component of the EuroQol instrument with demonstrated sensitivity to change in social prescribing studies [30].

Healthcare utilisation

It was assessed through four questions: (1) “*In the last 4 weeks, have you gone to hospital for treatment*” with response options “yes” or “no” for both inpatient and outpatient treatment separately. If “yes”, they were asked to specify how many times; (2) “*In the last 4 weeks, how many times have you visited your GP?*”, with numeric responses; (3) “*In the last 4 weeks, have you seen any of these health providers? (Apart from treatment in the hospital)*” with responses “yes” or “no” to a list of 20 different

healthcare providers; and (4) “Are you worried about going to hospital?” with responses “yes” or “no”.

Satisfaction survey

It asked about overall satisfaction with the program (1: not satisfied at all to 10: extremely satisfied), the likelihood of recommending the program (1: not likely at all to 10: extremely likely), and if there was anything they would change (yes or no).

Statistical analysis

Data were collected pre-intervention and post-intervention (after three months, at the conclusion of the program). All participants signed informed consent for participation. The present study has been approved by the Monash University Human Research Ethics Committee (MUHREC Project ID: 44387). MUHREC operates under the National Statement on Ethical Conduct in Human Research (2007, updated 2025) and in accordance with The Declaration of Helsinki (1964). All statistical analyses were conducted using SPSS version 27 and Stata version 17.0. Overall and gender-disaggregated data were summarised by frequencies with percentages for categorical variables, means with standard deviations (SD), and medians with interquartile ranges (IQR) for continuous/ordinal variables. Gender-disaggregated analysis was undertaken as men and women are susceptible to have different adverse SDoH [35], different impacts from health events [36], and different impacts from SDoH on health outcomes [34, 35]. Therefore, incorporating gender-specific analysis into research is crucial to guide decision-making and the development of interventions that effectively address SDoH, as well as improve well-being and quality of life across all genders. When categories contain fewer than 5 participants, counts were suppressed to ensure the protection of participant identification. Pre- and post-intervention outcome values were compared using paired t-tests for continuous data, Wilcoxon matched-pairs signed-rank test for ordinal data, and McNemar’s chi-squared test for binary variables. Additionally, we conducted subgroup analyses stratified by gender (men and women) and age group (young adults [18–30 years], middle-aged adults [31–64 years], and older adults [65+ years]).

Results

On June 30, 2024, 442 eligible participants enrolled in the social prescribing intervention, Fig. 1. Of these, 126 were still undertaking the intervention, and 2 were duplicates. Of the remaining 314 participants, 5 were unable to complete as they either moved out of the area, were referred elsewhere, or hospitalised. Therefore, 309 participants completed the intervention during the two-year period. Of these, 22 could not be contacted or 6 declined further

contact, resulting in the follow-up questionnaire not being completed for evaluation purposes. For this analysis, the final sample is 281 adults (93 men, 187 women, 1 ‘other’), with a mean age of 57.7 years (SD: 16.8, range: 18 to 94), Table 1. Aligned with the intention that the intervention being approximately 12 weeks, the mean duration was 12.8 weeks (SD: 6.7; median 11.7, range: 0.3 to 48.6). The delayed outliers were due to many factors, but often due to waiting on approval for entry to disability or aged care schemes before concluding the social prescribing intervention. The shorter outliers were mainly due to some participants simply needing a single meeting to remind them of skills and hobbies they already had and could re-engage in, resolving their issues. On average, 5.3 social prescriptions (i.e., referrals to an activity or organisation) were made per person (SD: 4.5, range: 0 to 30). In sensitivity analyses, the change in the primary outcome was similar for participants with zero prescriptions compared to the overall cohort (9 vs. 272). Furthermore, there was no statistically significant relationship between the number of prescriptions and the change in the primary outcome. Therefore, the participants with zero prescriptions suggest that meeting with a link worker was likely sufficient to reconnect with their existing skills and hobbies, effectively addressing their concerns. Prescriptions were diverse and person-centred, commonly including referrals to community-based activities such as bushwalking groups, book clubs, painting groups, craft circles, and social coffee groups. Some participants also received support accessing practical assistance services when needed to enable their social participation. Each prescription plan was uniquely tailored to what mattered most to the individual participant, focusing on activities and connections that could meaningfully improve their quality of life.

Health-related quality of life, self-reported health and wellbeing

We observed improvements in health-related quality of life (0.60 vs. 0.78, $p < 0.001$, $d = 0.65$), self-reported health (49.31 vs. 65.58, $p < 0.001$, $d = 0.71$), general wellbeing (3.39 vs. 4.11, $p < 0.001$, $d = 0.44$), and mental wellbeing (19.19 vs. 22.61, $p < 0.001$, $d = 0.72$) between pre- and post-intervention, Table 2. For quality of life, mental wellbeing, and self-reported health, these differences are considered large effect sizes from a statistical perspective [37]. For general wellbeing, this difference is considered a moderate effect size [37]. Improvements were observed for each gender and age group subgroup, Table 2. These benefits were observed across binary gender and three adult age groups. Based on the Cohen’s D, we noted slightly greater benefits for men, than women, for all measures. We also noted greater benefits for middle-aged adults, compared to other adults ages, for quality of

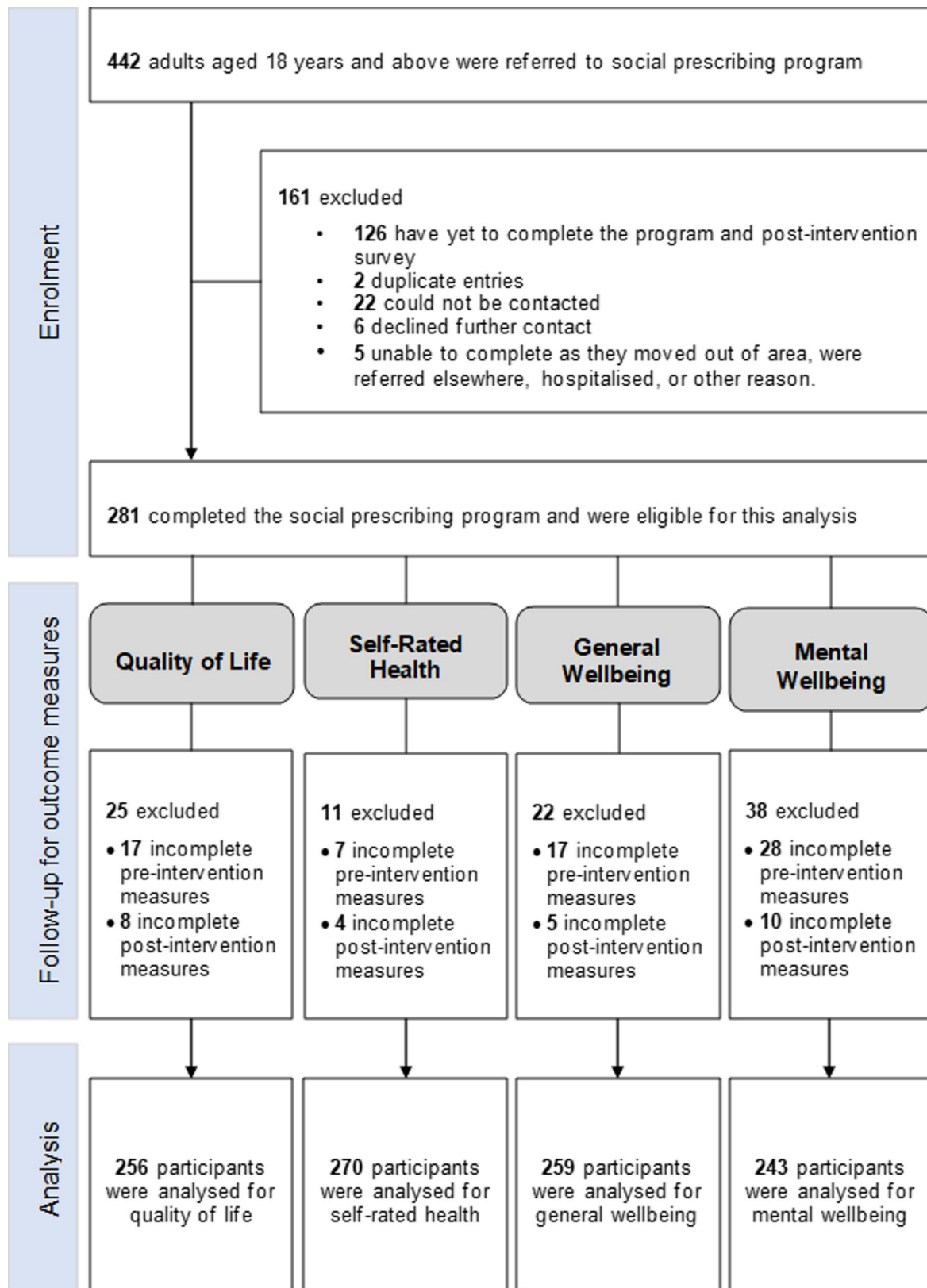


Fig. 1 Flow diagram of study participants

Table 1 Characteristics of study population ($n = 281$)

Characteristics	Overall ^a	Gender ^a	
		Men	Women
Number (%)	281 (100.0)	93 (33.1)	187 (66.6)
Average duration of social prescribing per-person, weeks			
Mean (SD)	12.8 (6.7)	13.3 (6.5)	12.6 (6.8)
Median (IQR)	11.7 (8–16)	11.4 (8–17)	11.9 (8–16)
Range	0.3–48.6	1.1–34.1	0.3–48.6
No. of social prescribing per-person			
Mean (SD)	5.3 (4.5)	5.2 (4)	5.4 (4.7)
Range	0–30	0–21	0–30
Age, years			
Mean (SD)	57.7 (16.8)	59 (15.8)	57.2 (17.2)
Median (IQR)	60 (46–69)	61 (50–68)	58 (45–67)
Place of birth, n (%)			
Australia/New Zealand	239 (85.0)	78 (83.9)	159 (84.5)
EU countries	7 (2.5)	NR	NR
UK	12 (4.3)	NR	NR
Asia and other regions	23 (8.2)	NR	NR
Indigenous identity, n (%)			
Aboriginal	28 (10.0)	13 (14)	15 (8)
Torres Strait Islander	0 (0.0)	0 (0.0)	0 (0.0)
Neither	240 (85.4)	75 (80.6)	164 (87.7)
Not stated	13 (4.6)	5 (5.4)	8 (4.3)
Current employment status, n (%)			
Employed	18 (6.4)	NR	NR
Unemployed	100 (35.6)	37 (39.8)	63 (33.7)
Not in the labour force	152 (54.1)	51 (54.8)	101 (54)
Not stated	11 (3.9)	NR	NR
Main income source, n (%)			
Aged pension	44 (15.7)	12 (12.9)	32 (17.1)
Disability support pension	45 (16.0)	13 (14.0)	32 (17.1)
Others ^b	16 (5.7)	5 (5.4)	11 (5.9)
Other pension or benefit ^b	70 (24.9)	25 (26.9)	45 (24.1)
Paid employment	15 (5.3)	5 (5.4)	9 (4.8)
Nil income	41 (14.6)	19 (20.4)	22 (11.8)
Unknown	50 (17.8)	14 (15.1)	36 (19.3)
Main language spoken at home, n (%)			
English	267 (95.0)	90 (96.8)	176 (94.1)
Others	14 (5.0)	NR	NR

NR not reported – Counts are suppressed when categories contain fewer than 5 participants to ensure the protection of participant identification

^a One participant identified as an “Other” gender, resulting in totals not always summing to 281.

^b The category “Others” includes various sources of income such as superannuation and investments, while “Other pension or benefit” excludes these sources but includes forms of support such as unemployment benefits and job search allowances.

life and self-reported health. As the self-reported health measure captures participants’ health on a single day, this result should be interpreted with caution due to potential day-to-day variation.

Healthcare utilisation

We observed a marginal trend in reduced healthcare utilisation; however, these did not reach statistical significance. Between pre- and post-intervention, we observed a decrease in demand for GP (continuous: mean \pm SD -0.12 ± 1.02 , $p = 0.055$; ordinal: Wilcoxon test $z = 1.73$, $p = 0.085$), outpatient (continuous: -0.89 ± 0.93 , $p = 0.110$; ordinal: $z = 1.45$, $p = 0.148$), and inpatient (continuous: 0.004 ± 0.66 , $p = 0.928$; ordinal: $z = 0.40$, $p = 0.691$) visits Fig. 2. For example, we noted an overall increase in the “no” categories, and reductions in weekly visits to the GP (from 6.76 to 5.34%, $n = 281$ completed at both pre- and post-intervention), outpatient (5.34–3.56%, $n = 281$), and inpatient (1.78–1.42%, $n = 281$). In addition, there was a decrease in participants who expressed worry about visiting the hospital between pre- and post-intervention (31.71–26.42%, $n = 246$, McNemar’s $\chi^2 = 3.31$, $p = 0.0919$).

Satisfaction

The mean satisfaction score for the social prescribing program was 9.27, SD = 1.32 (ranging from 0 to 10) and the mean likelihood of recommending the program was 9.53, SD = 1.18 (ranging from 0 to 10). Out of 232 participants, 74.57% said they would not change the program and 19.83% said they would (with 5.60% not responding).

Discussion

This study demonstrates that participating in a 12-week social prescribing program is associated with improvements in health-related quality of life, self-reported health, mental wellbeing, and general wellbeing for people with, or at risk of developing chronic disease. Benefits were observed among men and women, across all age groups. We observed a trend in reduced healthcare utilisation; however, a greater sample is required to test for statistical significance. We noted that the number social prescriptions varied in duration and frequency, demonstrating the tailored nature of the program. Participants reported high satisfaction with the program, with the vast majority stating they would not change it and would recommend it to others.

Quality of life

The effectiveness of social prescribing interventions in improving quality of life has been extensively studied, though findings remain mixed. A recent systematic review of social prescribing link workers identified four

Table 2 Comparison pre- and post-intervention

Outcomes	Subgroups	No. ^a	Pre-intervention Mean (SD)	Post-intervention Mean (SD)	df	t	p	Cohen's d
Overall								
Quality of life	–	256	0.60 (0.31)	0.78 (0.23)	255	0.955	<0.001	0.645
Self-reported health	–	270	49.31 (22.65)	65.58 (23.20)	269	10.932	<0.001	0.709
General wellbeing ^b	–	259	3.39 (1.61)	4.11 (1.69)	258	5.939	<0.001	0.438
Mental wellbeing	–	243	19.19 (4.13)	22.61 (5.27)	242	10.635	<0.001	0.723
By gender ^c								
Quality of life	Men	84	0.57 (0.32)	0.77 (0.22)	83	6.735	<0.001	0.737
	Women	171	0.61 (0.31)	0.78 (0.23)	170	7.419	<0.001	0.597
Self-reported health	Men	88	47.06 (22.18)	65.76 (22.20)	87	7.826	<0.001	0.843
	Women	181	50.62 (22.72)	65.55 (23.79)	180	7.929	<0.001	0.642
General wellbeing ^b	Men	83	3.25 (1.55)	4.26 (1.76)	82	4.567	<0.001	0.608
	Women	175	3.43 (1.63)	4.04 (1.66)	174	4.156	<0.001	0.366
Mental wellbeing	Men	77	19.41 (3.64)	23.13 (5.74)	76	6.094	<0.001	0.773
	Women	165	19.10 (4.35)	22.36 (5.05)	164	8.613	<0.001	0.693
By age group								
Quality of life	18–30 yr	18	0.71 (0.27)	0.84 (0.25)	17	3.471	<0.001	0.516
	31–64 yr	150	0.54 (0.32)	0.74 (0.25)	149	8.195	<0.001	0.683
	65+ yr	88	0.67 (0.28)	0.83 (0.18)	87	4.982	<0.001	0.645
Self-reported health	18–30 yr	17	52.94 (26.62)	67.06 (22.08)	16	1.849	<0.001	0.577
	31–64 yr	154	44.67 (22.10)	62.05 (24.18)	153	8.971	<0.001	0.750
	65+ yr	99	55.91 (21.21)	70.82 (20.93)	98	6.201	<0.001	0.708
General wellbeing ^b	18–30 yr	16	3.56 (1.63)	3.97 (1.87)	15	0.676	<0.001	0.232
	31–64 yr	148	3.13 (1.51)	3.81 (1.64)	147	4.169	<0.001	0.435
	65+ yr	95	3.76 (1.69)	4.59 (1.65)	94	4.468	<0.001	0.499
Mental wellbeing	18–30 yr	18	18.88 (5.65)	24.14 (6.59)	17	0.577	<0.001	0.858
	31–64 yr	138	18.19 (3.62)	21.82 (5.11)	137	8.615	<0.001	0.820
	65+ yr	87	20.83 (4.05)	23.55 (5.07)	86	1.663	<0.001	0.591

^a Complete-case analysis based on the number of participants who completed each type of questionnaire.

^b In the original dataset, lower scores indicated better health outcomes. However, the scores were transformed through reversed scoring, meaning that a higher score now suggests a better health outcome.

^c One participant identified as an "Other" gender, resulting in totals not always summing to 281

randomised controlled trials reporting no impact on health-related quality of life [21]. However, a prior systematic review on social prescribing found that 16 out of 17 studies reported improvements in quality of life among predominantly working-age adults referred for issues such as anxiety, depression, social isolation, and loneliness [16]. We have demonstrated similar benefits in a different demographic cohort (e.g. more –41% - aged over 65 years, and lower – 5.3% - employed). Since the systematic review's search, two Australian pilot studies have demonstrated that social prescribing improves quality of life in Australians returning to work after injury [26] and Australians with mental illness [27]. Notably, the study involving 175 injured workers observed improvements in all quality of life components including the EQ-5D-5 L health status and social life status, and the World Health Organisation quality of life tool components of physical, psychological, social relationships, environmental, as well as the overall one-item [26].

Among individuals with chronic diseases, two systematic reviews have identified benefits of social prescribing for quality of life for individuals managing a chronic disease [38] and for individuals with long-term chronic diseases like cancer and diabetes [39]. Notably, the latter provided evidence for both short- and long-term quality of life improvements [39]. In contrast to our study, greater benefits were observed for female, rather than male, cancer survivors [39].

General wellbeing

Our study is the first Australian evaluation of social prescribing using a general wellbeing scale. A systematic review has highlighted the benefits of social prescribing across general wellbeing measures, as well as a range of mental wellbeing measures [14]. Similarly to our study, Moffat et al. [40] restricted their social prescribing intervention to individuals with chronic diseases and found benefits to wellbeing. Through qualitative semi-structured interviews, the thematic analysis revealed that

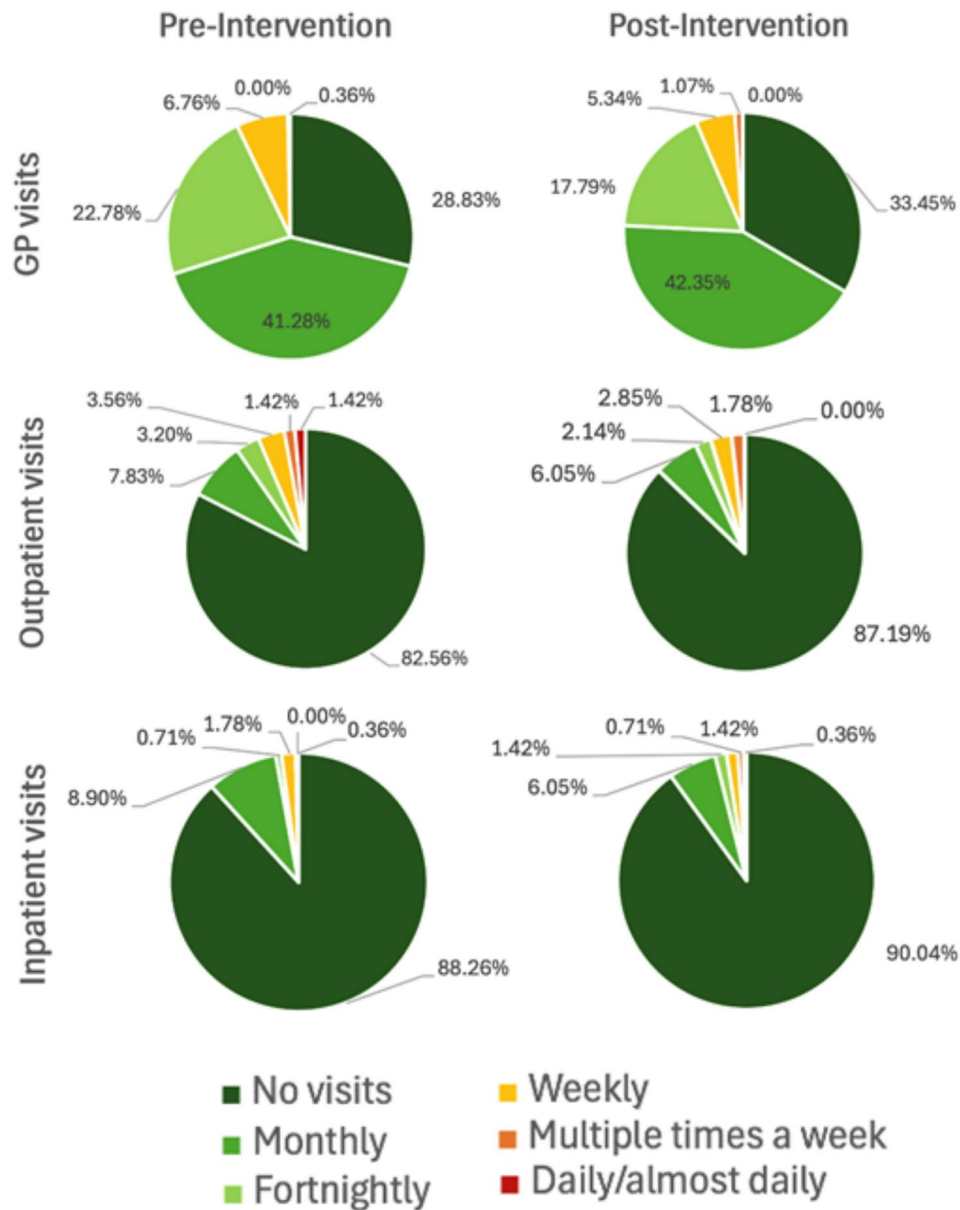


Fig. 2 Proportion of healthcare utilisation pre- and post-intervention (n=281)

personalised support enabled participants to identify and pursue meaningful health goals, including weight reduction and improved fitness [40]. These meaningful health outcomes were instrumental in better managing chronic diseases such as diabetes and arthritis, as participants reported enhanced symptom control and improved overall wellbeing [40].

Mental wellbeing

Several systematic reviews highlight the growing evidence of social prescribing on mental wellbeing using a range of measurements [7, 8, 13, 14, 16, 21]. However, there are inconsistencies between these reviews suggest the overall evidence may not be definitive. Notably,

the systematic review that reported quality of life benefits among individuals with long-term chronic diseases reported no improvements in the participants’ psychological wellbeing [39]. In contrast, the Australian research demonstrates more consistent positive results regarding mental wellbeing. Australian pilot studies have demonstrated benefits on indicators like psychological distress among injured workers [26] and social anxiety among lonely individuals [28]. An Australian randomised controlled trial found that social prescribing had a positive benefit on mental wellbeing (as measured on the same scale as ours) for people with self-reported loneliness, although the difference between the treatment and control groups was not statistically significant [28]. We

are the first Australian evaluation of social prescribing demonstrating a statistically significant improvement to mental wellbeing for people with chronic diseases.

Individual studies may shed light on specific elements required for benefit in social prescribing models. A social prescribing program in areas of high socioeconomic deprivation found that participants meeting face-to-face with the community link-worker more than three times showed improvements in their HADS-Anxiety and HADS-Depression scores [41]. Another program that showed benefits to mental wellbeing also identified that the likelihood of success included the sustained and flexible relationship with the link worker and a strong and vibrant voluntary and community sector for participants to be prescribed to [42].

Self-reported health

An Australian study has identified that social prescribing had a positive benefit on self-reported health (as measured on the same scale as ours) for individuals with mental illness [27]. A systematic review of British studies found inconsistent findings of social prescribing on self-reported health [14]. Pescheny et al. [14] identified two studies with reporting benefits and four studies reporting no statistically significant change in various self-reported health measures. Again, the inconsistency of measurement tools used across studies, often reflecting the needs of the specific participant cohorts targeted by each program, may be a limitation.

Healthcare utilisation

Social prescribing's impact on healthcare utilisation, particularly in terms of reducing GP visits and hospital admissions, has been studied internationally. Among Australian injured workers, social prescribing was associated with reduced health service utilisation generally (e.g. 27% reduction in weekly contact), as well as hospitalisations (17% reduction) and time spent in hospital (1.24 fewer days) [26]. These findings aligns with an extensive report indicating that social prescribing reduces hospital utilisation (emergency department, inpatient admissions, and outpatient appointments) at six and twelve months among patients and their carers who self-presented to their GP [43]. However, a scoping review revealed the variable impact of social prescribing on healthcare utilisation [44]. GP appointments either decreased or were stable, and referrals to mental health services were variable (both increases and decreases reported) [44]. Although, they noted that consultation content changed, with a decrease in social issues discussion, a psychosocial aspect, and prescriptions for psychosocial medicine [44]. We found a modest reduction in GP, inpatient, and outpatient visits, but a larger sample is needed to allow a more detailed analysis. Importantly, reducing GP visits

does not necessitate a benefit; maintained or increased GP visits may reflect a more comprehensive approach to addressing health issues, potentially improving the overall quality of care. The participants were extremely satisfied with the program and extremely likely to recommend it to others, demonstrating the value of the program.

Limitations

First, the pre-post study design employed is not considered the gold-standard to obtain effectiveness evidence. Randomised controlled trials (RCTs) are superior, however, there are known limits to evaluating complex social interventions, particularly when a lifestyle and a personalised approach are used [45]. While our data includes intervention duration and number of social prescriptions, we did not collect link worker contact time, which would provide additional insights into resource requirements for implementing similar models. Second, evaluation data were collected by the link workers rather than independent staff, which would be optimal. At baseline, participants may have felt less comfortable with the link worker and therefore provided more favourable responses. As trust developed over time, responses at the end of the intervention may have been more candid, suggesting these findings could be conservative. Notably, satisfaction measures were also administered by the link workers, which may have contributed to the high satisfaction rates reported. Independent assessment would be preferable for future evaluations. Third, a longer intervention period and linkage to hospital data and prospective hospital data could offer a more comprehensive assessment of the intervention's impact. Fourth, the sample predominantly comprised individuals with moderate to severe chronic disease conditions, which could have made it challenging to observe improvements for healthcare usage metrics [45]. Fifth, this study represents the first cut-point of an ongoing social prescribing intervention. While we observed benefits for health-related quality of life, wellbeing, mental wellbeing, and self-reported health across binary gender and three age groups, it would be optimal to undertake more advanced analysis and ensure benefits are across other demographic characteristics within the Australian context, such as diverse cultural and linguistic groups. A larger sample would also provide scope for a comprehensive economic evaluation of the social prescribing program. While we have demonstrated positive clinical benefits, future research should examine cost-effectiveness across different implementation models and settings to inform sustainable funding decisions. This would provide valuable insights for policymakers considering broader implementation within Australian healthcare systems. In addition, a larger sample would provide the opportunity to assess program logistics, such the influence of link worker engagement

(e.g. appointment number and time taken) and social prescription type (e.g., arts compared to walking). However, we note that the greatest strength of social prescribing is the personalisation and tailoring, so engagement and prescription choice may reflect the participant rather than the intervention. With a larger sample from this ongoing social prescribing intervention, we intend to further explore participant subgroups, healthcare utilisation and the influence of program logistics. Finally, we note a gender imbalance in our sample (66.5% women, 33.1% men, 0.4% non-binary “other”), which reflects broader trends in healthcare-seeking behaviours. Men are consistently underrepresented in preventive and community-based interventions, influenced by factors such as traditional masculinity norms, work-related time constraints, and lower engagement with help-seeking services [46–48]. However, the higher proportion of women in the sample may be considered a strength. Women are generally more exposed to adverse SDoH than men and tend to be more significantly impacted by them [46–48]. However, the higher proportion of women in the sample may be considered a strength, as women are generally more exposed to social determinants than men, and social determinants are more likely to influence women’s health than men [49]. As such, an intervention targeting social determinants may be particularly relevant and potentially more beneficial for women.

Future directions

The literature on social prescribing for individuals with chronic diseases internationally could be enhanced by incorporating longitudinal data with a diverse sample encompassing a wider range of chronic disease severity levels, integrating both objectively measured chronic disease markers and subjective measurements to provide a holistic understanding of the intervention’s beneficial effects. The literature on social prescribing, more generally, could be enhanced by a focus on script appropriateness and utility. For example, reinvigorating old interests rather than introducing new ones, and assessment of the social prescription program (i.e. length, setting, activity). It is also important to understand individual needs and provide appropriate prompts and support based on their stages of change, levels of activation and agency, and specific circumstances. Some people may only need a reminder, while others may require more guidance or assistance. By addressing these limitations and focusing on these future directions, social prescribing interventions can be better tailored to meet the needs of diverse populations and achieve more consistent and significant improvements in both wellbeing and healthcare utilisation.

Conclusion

This study demonstrates that participation in a social prescribing intervention for adults with, or at risk of developing, chronic diseases is associated with health-related quality of life, wellbeing, and self-reported health improvements. These benefits were observed across binary gender and three adult age groups, with men and middle-aged adults reporting slightly greater benefits. Participants also reported high satisfaction with the social prescribing program, with 75% stating they would not change it and most would recommend it to others. Future research within this cohort will explore the Australian-specific cultural and linguistic groups, potential healthcare utilisation benefits and the impact of program logistics, including the types of social prescriptions offered. This study is the first Australian evaluation of social prescribing demonstrating benefits on general wellbeing and mental wellbeing for people living with chronic diseases. The evidence for and implementation of social prescribing is growing internationally. Our findings highlight the importance of personalised social prescribing interventions, with link workers playing a crucial role in facilitating these positive outcomes. By embracing social prescribing as a holistic and community-centred intervention, Australia can take significant strides towards promoting health equity, improving patient outcomes, and strengthening the fabric of its healthcare system.

Abbreviations

EQ-5D-5L	5-level EuroQol five dimensions
EQ-VAS	EuroQol-Visual Analogue Scale
GP	General Practitioner
HADS	Hospital Anxiety and Depression Scale
IQR	Interquartile range
SD	Standard deviation
SWEMWBS	Short Warwick-Edinburgh Mental Wellbeing Scale

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Author contributions

Conceptualisation: JB, AT and RF. Methodology: JB, AT, RF, and HLH. Formal analysis and investigation: AT, and RF. Writing - original draft preparation: JB, AT, RF, and HLH. Writing - review and editing: AT, RF, HLH, VS, LW, and PM. Funding acquisition: JB. Resources: JB. Supervision: JB and RF. All authors reviewed the manuscript.

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Data availability

As this is an ongoing intervention, the de-identified data we analysed are not publicly available, but requests to the corresponding author for the data will be considered on a case-by-case basis.

Declarations**Ethics approval and consent to participate**

The present study has been approved by the Monash University Human Research Ethics Committee (Project ID: 44387). All participants signed informed consent on participation.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

¹School of Public Health and Preventive Medicine, Monash University, Melbourne, VIC, Australia

²Stroke and Ageing Research, Department of Medicine, School of Clinical Sciences at Monash Health, Victorian Heart Hospital, Monash University, 631 Blackburn Rd, Clayton, Melbourne, VIC 3168, Australia

³Primary & Community Care Services Limited, Thornleigh, NSW, Australia

⁴Chair, ASPIRE Consumer and Community Expert Panel, Sydney, Australia

⁵School of Nursing, Health Quality Programs, Queen's University, Kingston, Ontario, Canada

⁶Faculty of Health, Southern Cross University, Bilinga, QLD, Australia

⁷Australian Social Prescribing Institute of Research and Education, Surry Hills, NSW, Australia

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