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Green social prescribing delivered by community organisations supports wellbeing among ethnically diverse communities in England

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Abstract

Social prescribing connects people to community activities and services to meet practical, social and emotional needs affecting their health and wellbeing. Green social prescribing (GSP) focuses on prescribed activities that are nature-based using green and/or blue spaces. GSP has the potential to address health inequalities faced by migrants and refugees. We aimed to understand how GSP activities impacted the health and wellbeing of individuals in ethnically diverse communities within Hull and York (England) working alongside community organisations ($n=6$) to deliver the research. This study utilised a mixed methods design; A pre-post intervention study design ($n=103$) and face-to-face, semi-structured interviews ($n=20$). Participants were recruited from community organisations ($n=6$). Our study identified that a high proportion of people participating in GSP activity were able to sustain or improve their overall wellbeing. After 6-months of engagement in GSP activity, slight improvements were observed in scores for all ONS4 questions however only the anxiety construct demonstrated a statistically significant change (Mean change: -0.7 (95% CI -1.4 to 0.01). Qualitative data indicated community organisations are seen as trusted providers who can support access and engagement with green space. The study provided evidence that GSP can help to maintain and improve wellbeing within underserved communities, even at times of social and economic stress. Community organisations have a strong reach to those suffering the most health inequalities and can play a significant role in supporting health and wellbeing when empowered and provided with the appropriate resources.

1 Introduction

1.1 Social prescribing

Social prescribing connects individuals to community activities, groups, and services [1]. It aims to address social, practical, and emotional needs that impact health and

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wellbeing [1]. Tailored prescriptions complement existing medicalised treatments and are co-designed with link workers based in primary care or community organisations and settings [1, 2].

1.2 Green social prescribing

Green Social Prescribing (GSP) focuses on nature-based activities which specifically occur in green or blue spaces [3]. These spaces can be natural or man-made, of varying size, and vegetated by plants and/or fresh or saltwater [4]. Evidence suggests that spending time in nature improves mental health by enhancing positive emotions, reducing negative thoughts, and lowering mental fatigue [5–7]. Pathways for this are complex including increasing positive emotion, reducing negative thoughts and invigorating attention, and require further investigation [5–7]. Whilst the evidence base is building for GSP, less is known about how to integrate GSP into current care pathways and its impact on different populations [8–10]. Research is also lacking as to the acceptability and usefulness of GSP for different populations [9].

1.3 Migrants and GSP

Diverse groups of migrants, including asylum seekers and refugees, face a range of unique challenges. These include for example different health risk patterns, language barriers, lack of knowledge about the healthcare system, immigration status challenges and higher levels of social exclusion, making some of them a high-risk group who could benefit from GSP [11]. In this article we utilise the terms 'people from ethnically diverse communities', 'migrants' and 'refugees' for inclusivity and to appreciate the range of situations the communities who participated voiced. These for example included those who had lived all their lives in Hull, and East Yorkshire, those who migrated to the UK, as well as those who were in the process of seeking sanctuary. There is however scarce evidence for GSP for these populations, with a lack of robust data collection and low rigour of programme evaluation [12]. A recent large-scale evaluation of GSP in the UK did not consider how GSP may support migrants and refugees [13].

It is proposed that GSP could help migrants by connecting individuals to community-based interventions that can support social connections through group activities such as community gardening [14]. Green space confers unique opportunities for migrants and refugees by enabling individuals to forge new territorial connections as well as maintain ties to their countries of origin, supporting a sense of belonging, attachment and integration [15, 16]. Accessing greenspaces can be challenging owing to socioeconomic barriers, ethnic discrimination, or unfamiliar environmental characteristics [17]. The concept of "curated sociability" which highlights the varied strategies, technologies, and projects that can be used to support migrants and refugees suggests that facilitated activities offered in GSP programmes can be helpful [14].

It is argued that SP and GSP has the potential to address health inequalities such as those faced by migrants and refugees [18, 19], but there is a need to build the evidence base to understand who is accessing these programmes, how it is accessed, and outcomes and variations amongst groups [10]. Developing the evidence surrounding health inequalities is critical to ensure there is no unintentional inequity widening [20].

1.4 Context

In April 2021, a cross-government initiative was launched in England that aimed to integrate GSP into mental health pathways across seven test sites impacted by COVID-19 and health inequalities [13]. Between 2021 and 2023, 7225 of 8,500 people (85%) accepted a green prescription, which yielded positive impacts on mental health and community engagement [13]. The final evaluation identified areas to strengthen evidence for scale up, focussing on GSP's role in addressing health inequalities. In response to this, the Humber and North Yorkshire test and learn site received additional funding to support six community-based organisations to deliver GSP activities for minority ethnic, migrant, refugee and asylum-seeking communities. Consequently, the aim of this work is to explore the impact and experience of GSP activities for migrants and refugees using a mixed method design.

2 Methods

2.1 Study design

We used a mixed methods design, with pre-post intervention quantitative measures and semi-structured interviews. The pre-post data were collected from participants taking part in GSP activities at six community sites. Demographic data were collected at baseline (before the activity began), and outcome measures at baseline, 3 months and at 6 months. Qualitative interviews were carried out to understand how individuals in ethnically diverse communities come into GSP activities, the role of community organisations in delivering them, and the experiences of participants and organisers to identify barriers and enablers to delivery.

Community leaders contributed to the development and conduct of the research. This was important to promote skill development within the organisations to enable them to gather evaluation data independently in the future once the funded programme was completed.

2.2 Setting and context

We recruited from six community-based groups in Hull and York (England) with all individuals accessing support through the groups eligible for participation. The organisations, herein referred to as the collaborative, were BAMEEN (Black & Minority Ethnic Environment Network), Bora Shabaa, HACA (Hull Afro Caribbean Association), Solidarity Hull CIC, Welcome House and people from ethnically diverse communities who engaged with the York St John University community allotment. The organisations collectively provide support to individuals from a wide range of ethnic minority backgrounds, including providing services for asylum seekers and refugees.

During the period of this study, Hull was subject to riots that targeted the cities' ethnic minority communities. All the community organisations taking part in the study were impacted by the rioting. This context has important implications on participation and was considered during questions with participants.

2.3 Intervention

The collaborative members delivered either horticultural or sport and exercise activities in green or blue spaces. For the three collaborative members delivering horticultural activities, this involved food growing on community allotments, home-based 'gardening

clubs' and hub-based food growing linked to English for Speakers of a Second Language lessons. Two of the collaboratives ran walking groups, accessing both greenspace within urban areas and walks in the wider countryside. One of the walking groups was specifically for male refugees and asylum seekers, many of whom are housed in hotels, while the other was open to all. One of the collaboratives, following consultation with their student members, developed a programme of outdoors physical activity and sport which included paddleboarding and archery.

2.4 Inclusion and exclusion criteria

Anyone taking part in the GSP activities provided by the six collaborative organisations was eligible to contribute quantitative data, and all were also invited to take part in the interviews. People were not excluded based on their level of spoken English. Community translators were provided but individuals saw the interview as a positive chance to practice English skills, so nobody took this option.

2.5 Recruitment and consent

An opt-out approach was used for pseudonymised demographic data only. Posters displayed at the community centres made it clear to participants that the study was taking place and that they could opt out of providing their data. Participants were invited to provide informed written consent to complete the additional data collection measures. Participants were supported to complete consent forms by the community staff members delivering the activity for the quantitative and qualitative data collection. Consent was then checked prior to interviews being conducted by the lead interviewer HA.

Opportunity sampling was used to recruit interviewees. A poster and information sheets were provided to each group. The invitation was shared physically in organisational bases and across social media. We wanted to recruit a minimum of three individuals taking part from each community organisation ($n = 24$). In addition, a minimum of two activity delivery leads (key informants) were identified for interview per group ($n = 12$). We were also interested in the experiences of individuals who choose not to access the GSP activity to understand their reasons and potential barriers. Group organisers were also able to share information from the conversations they had people who had declined involvement in the activities. Written informed consent was obtained before all interviews.

2.6 Data collection

Previous work with the collaborative and research evidence indicates that communities often lack the resources, skills, time and budget to measure and evaluate their own work [21]. A training session on evaluation methods and study design, and two follow up sessions, were held with community leaders (named as co-applicants) to support the collaborative in developing skills and capacity in data collection and evaluation. Data were collected by a named individual in the collaborative organisations, with support and guidance from the research team. Qualtrics survey platform [22] was used by the collaborative for data submission.

Each organisation aimed to gather demographic data for every participant engaging in their GSP activity (age, gender, ethnicity and Index of Multiple Deprivation (IMD) decile). All study participants were invited to provide additional information on referral

route (how the individual found out about the activities); activity being accessed (type and frequency) and the reason why they got involved in the activity.

The primary outcome measure for quantitative analysis was the Office for National Statistics measure of personal wellbeing (ONS4) [23]. Data was collected between June 2024 and May 2025. The primary outcome point for this study was 6 months. ONS4 is a 4-item measure with rating scales for life satisfaction, life feeling worthwhile, happiness and anxiety. Personal well-being data on the ONS4 are presented as both average scores (out of 10) and thresholds (very low or low, medium, high, or very high); the mean averages provide an overall estimate of personal well-being, and the thresholds allow us to look at the distribution of the scores. ONS4 is widely used for measuring social prescribing effectiveness and recommended for use by NHS England Common Outcomes Framework [23].

Interviews were conducted by the lead author (HA), a Clinical Psychologist with extensive clinical and research experience working with community and vulnerable groups. The researcher was unknown to the interviewees at the time of the interview and started each interview by explaining her role and the purpose of the research. Interviews were conducted face to face at the community buildings using a topic guide and lasted between 20 and 50 min (average 30 min). Interviews were conducted between September 2024 – December 2024. Interviews were audio recorded for transcription.

2.7 Data analysis

In terms of the quantitative data, for categorical variables the frequency and percentage of participants was analysed. ONS-4 outcome measures (Life Satisfaction, Worthwhile, Happiness, Anxiety) were summarised at baseline and at 6 months follow-up. The change in score for participants with both a baseline and post score was analysed using a paired samples t-test, reporting the mean change, 95% confidence interval, and P-value. These enabled us to explore how mental wellbeing had changed both across the population but also on an individual service user level. For the latter, we calculated the frequency and percentage of people who had an increase, no change or a reduction in score.

Inductive thematic analysis was used to analyse the qualitative data [24], using a relativist ontological approach and subjectivist epistemological approach [25]. All interviews were transcribed verbatim and anonymised before coding, with NVIVO software [26] used to manage the data. The analysis followed the six steps set out by Braun and Clarke to identify patterns across the data [27, 28]. Initial familiarisation with data was achieved through multiple reading of transcripts to develop understanding. Initial codes were generated from reading the data and were subsequently applied to sections of the transcript. The codes were reviewed and revised as an iterative process as familiarisation with data increased. Themes were generated from codes by collapsing similar ideas to reduce redundancy and overlap. Themes were discussed by team members HA, AH, MT and TD offering an opportunity to add additional insights and for HA to reflect on analysis. Finally, an analytic map visualising the connections between codes and themes was created further deepening data familiarisation and supporting final analysis.

2.8 Reflexive statement

Reflexive thematic analysis was conducted by HA under supervision of MT, an experienced qualitative methodologist. HA is a Clinical Psychologist with an interest in intersectionality and understanding power dynamics in therapeutic interactions. HA is White British and has primarily lived in more rural areas of the UK. Whilst the data were viewed through this lens peer debriefing sessions took place with a wider programme steering group and emerging themes shared at three meetings with the community groups. This provided an opportunity to test out preliminary analysis and identify potential biases. Discussions included why some participants may have struggled with the language on the measures, the limitation or absence of the words 'depression and anxiety' in other languages and what the facilitators felt barriers to access may have been.

2.9 Ethical approval

Ethical approval provided by The University of Hull Health Science Research Ethics Committee (FHS 23-24.68).

3 Results

3.1 Descriptive statistics – who is accessing GSP?

Demographic data were collected from 143 participants (Table 1) alongside the activity they were engaging in (Table 2). Over half (53% $n = 76/143$) took part in gardening activities, with 34% engaged in walking ($n = 48/143$) and 13% taking part in sport-based activity such as paddleboarding ($n = 19/143$). Participants represented 12 different ethnic groups, with the majority Black or Black British African (50% $n = 71/143$) or any other Asian background (19% $n = 27/143$). 62% of all participants lived within the top 20% most deprived postcodes in England ($n = 88/142$). There was a near equal split in participation between male (48% $n = 69/143$) and female (52% $n = 74/143$) and 97% were of working age (18 to 64 $n = 138/143$).

From the 143 taking part in GSP activity, 103 consented to additional data collection including ONS4; 79 participants provided follow up data to the 6-month time point. Almost a quarter of people had an unplanned ending (drop-out (22%, $n = 23/103$). Reasons for drop out varied and included some individuals signing up but not attending the activity or feeling that the GSP activity was not for them. Other reasons were because of issues in people's lives rather than GSP including being moved by the Home Office or changes in working patterns.

3.2 Descriptive statistics on ONS4 cohort – who is accessing, how, why, what, when?

The demographic data of the 79 participants providing 6-month outcome data is presented in Table 3. Those who provided 6-month outcome data were more likely to be Black or Black African, and more likely to be female. Table 4 indicates the specifics relating to how the 79 participants found out about the GSP activity. Most of the participants found out about the activity through the community organisation (59%, $n = 61/79$), followed by recommendation by family and friends (25%, $n = 26/79$) and then through another community organisation (16%, $n = 16/79$). Data indicates no participants found out about GSP through a healthcare service. Most participants attended GSP activity to support their mental health and wellbeing (44.3% $n = 35/79$). Some of the activities were ongoing after the study ended however this varied depending on funding arrangements.

Table 1 Demographics of all participants engaging in funded GSP activity

Demographics of all participants engaging in GSP activity			
	Sample size	**Number**	**Percentage**
Gender			
Male	*n* = 143	69	48%
Female		74	52%
Non-Binary		0	0
Prefer not to say		0	0
Age Group			
Under 18	*n* = 143	1	1%
18–24		30	21%
25–29		27	19%
30–34		22	15%
35–39		18	13%
40–44		15	10%
45–49		10	7%
50–54		7	5%
55–59		5	3%
60–64		4	3%
65–69		3	2%
70–74		1	1%
75–79		0	0
80–84		0	0
85 or over		0	0
Prefer not to say		0	0
Ethnic Group			
Any other Asian background	*n* = 143	27	19%
Any other Black, African or Caribbean background		11	8%
Any other ethnic group		2	1%
Any other Mixed or multiple ethnic background		1	1%
Any other White background		7	5%
Arab		6	4%
Asian or Asian British - Bangladeshi		0	0
Asian or Asian British - Chinese		11	8%
Asian or Asian British - Indian		1	1%
Asian or Asian British - Pakistani		2	1%
Black or Black British - African		71	50%
Black or Black British - Caribbean		0	0
Mixed - White and Asian		0	0
Mixed - White and Black African		1	1%
Mixed - White and Black Caribbean		0	0
Prefer not to say		0	0
White - English, Welsh, Scottish, Northern Irish or British		3	2%
White - Gypsy or Irish Traveller		0	0
White - Irish		0	0
IMD Decile			
IMD Decile 1 (most deprived)	*n* = 142	55	39%
IMD Decile 2		33	23%
IMD Decile 3		18	13%
IMD Decile 4		11	8%
IMD Decile 5		0	0%
IMD Decile 6		3	2%
IMD Decile 7		8	6%
IMD Decile 8		1	1%
IMD Decile 9		4	3%
IMD Decile 10 (least deprived)		9	6%

Table 2 GSP activity engaged in

Activity referred to (*n* = 143)	Number	Percentage
Gardening	76	53%
Walking	48	34%
Sport-based	19	13%

3.3 Primary analyses: impact on wellbeing measures across time

After 6-months of engagement in GSP activity, slight improvements were observed in scores for all ONS4 questions (Table 5) however only the anxiety construct demonstrated a statistically significant change. In terms of life satisfaction, there was a positive increase in mean score of 0.1 (from 7.3 to 7.4) (95% CI – 0.58-0.31). Tthis was not statistically significant (P Value: 0.269). In terms of feeling worthwhile, there was a mean increase of 0.4 (from 7.4 to 7.7) (95% CI -0.8 to 0.8). However, this increase was not statistically significant (P Value: 0.052). Similarly for happiness, there was a mean increase of 0.5 (from 6.7 to 7.2) (95% CI -0.1 to 1.1) which was not statistically significant (P Value: 0.054). In terms of anxiety, there was a statistically significant reduction in anxiety (P Value: 0.02) from – 4.9 to 4.2 (a reduction in score for anxiety indicates an improvement) (Mean change: -0.7 (95% CI -1.4 to 0.01).

On an individual basis, 39.2% (*n* = 31/79) of people experienced an increase in life satisfaction score, 43.8% (*n* = 34/79) had an increase in feeling worthwhile score and 43.8% (*n* = 34/79) had an increase in happiness score. Just over half (51.9%, *n* = 41/79) experienced a decrease in anxiety score, indicating they were feeling less anxious. A proportion of people also maintained their wellbeing score, indicating that GSP may play a role in supporting people to maintain their wellbeing. Across the 4 constructs, around two-thirds of people experienced an improvement or maintained their wellbeing when accessing GSP (Life satisfaction: *n* = 52/79, 65%; Worthwhile: *n* = 54/79, 68%; Happiness: *n* = 54/79, 68%; Anxiety: *n* = 66/79. 70%).

3.4 Qualitative interviews

Twenty interviews were conducted; 14 with participants taking part in GSP activities and five with organisers of the GSP activities; one interview was conducted with an individual who had only attended one GSP session and then withdrew. Demographic information is represented in Table 6. Quotes related to each theme are provided in Tables 7, 8 and 9.

Three themes were generated from the data and concepts were identified within each.

3.4.1 Theme 1: community organisation as trusted provider of social prescribing activities (Quotations in Table 7)

This theme identified connection, access and providing choice as important concepts. As identified in the quantitative data none of the participants had been referred to the activities by healthcare providers and GSP organisations had few links to statutory services. Seeing others in the community taking part in activities on social media or hearing about the opportunity through word of mouth was crucial in individuals taking up a GSP activity.

The community organisations were described as having strong relationships with local communities by both the organisers and participants. Some community groups worked primarily with individuals from specific ethnic backgrounds whereas others worked with

Table 3 Demographics of participants who consented to ONS4 and who completed 6 months of ONS4 collection

Demographics of participants who completed 6 months of ONS4 collection			
	Sample size	**Number**	**Percentage**
Gender			
Male	*n* = 73	31	42%
Female		42	58%
Non-Binary		0	0
Prefer not to say		0	0
Age Group			
Under 18	*n* = 73	0	0
18–24		8	11%
25–29		15	21%
30–34		13	18%
35–39		3	4%
40–44		9	12%
45–49		5	7%
50–54		10	14%
55–59		4	5%
60–64		4	5%
65–69		1	1%
70–74		1	1%
75–79		0	0
80–84		0	0
85 or over		0	0
Prefer not to say		0	0
Ethnic Group			
Any other Asian background	*n* = 73	9	12%
Any other Black, African or Caribbean background		3	4%
Any other ethnic group		1	1%
Any other Mixed or multiple ethnic background		1	1%
Any other White background		1	1%
Arab		0	0
Asian or Asian British - Bangladeshi		0	0
Asian or Asian British - Chinese		2	3%
Asian or Asian British - Indian		0	0
Asian or Asian British - Pakistani		1	1%
Black or Black British - African		53	73%
Black or Black British - Caribbean		0	0
Mixed - White and Asian		0	0
Mixed - White and Black African		0	0
Mixed - White and Black Caribbean		0	0
Prefer not to say		0	0
White - English, Welsh, Scottish, Northern Irish or British		2	3%
White - Gypsy or Irish Traveller		0	0
White - Irish		0	0
IMD Decile			

Table 3 (continued)

Demographics of participants who completed 6 months of ONS4 collection			
	Sample size	**Number**	**Percentage**
IMD Decile 1 (most deprived)	*n* = 73	39	53%
IMD Decile 2		12	16%
IMD Decile 3		11	15%
IMD Decile 4		4	5%
IMD Decile 5		0	0
IMD Decile 6		1	1%
IMD Decile 7		1	1%
IMD Decile 8		1	1%
IMD Decile 9		1	1%
IMD Decile 10 (least deprived)		3	4%

Table 4 Activity, referral route, reason and frequency of cohort

How did participants find out about the GSP activity?	**Sample size**	**Number**	**Percentage**
Through the organisation running the activity	*n* = 103	61	59
Through a friend or family member		26	25
Through another group or organisation		16	16
Through a Social Prescriber		0	0
Through a Mental Health service		0	0
Through a GP		0	0
Another way		0	0
Why participants took part in the GSP activity?	**Sample size**	**Number**	**Percentage**
To connect with other people	*n* = 103	8	10
To learn something new		5	6
To support a long-term health condition		0	0
To support my mental health and wellbeing		35	44
To support my physical health		10	13
To take part in activities I enjoy		20	25
Other		2	3
Frequency	**Sample size**	**Number**	**Percentage**
More than once a week	*n* = 103	31	39
Once a week		24	30
Every two weeks		7	9
Once a month		18	23

Table 5 Changes in ONS-4 across time points

	Pre			**Follow-Up**		**Mean change**	**95% CI**	***P*-Value[1]**
	N	**Mean**	**SD**	**Mean**	**SD**			
Life Satisfaction	79	7.3	1.9	7.4	1.4	0.13	−0.58 to 0.31	0.269
Worthwhile	79	7.4	1.9	7.7	1.4	0.4	-0.8 to 0.8	0.052
Happiness	79	6.7	2.4	7.2	1.5	0.5	-0.1 to 1.1	0.054
Anxiety	79	4.9	2.4	4.2	2.0	-0.7	-1.4 to 0.01	0.024

[1]Paired samples t-test

individuals with shared situations e.g. new asylum seekers. Participants reflected that they trust the community organisation as a single point of contact for their emotional, social and practical needs.

Participants talked about how the community groups provided them with the opportunity to connect with others within their own culture as well as people from other

Table 6 Interview participant demographic details

Participant Number	Participant or activity organiser	Gender	Age	Country of Birth	GSP activity	Time spent in UK (Years – approximate)
1	Organiser	Female	61	England	Walking	N/A
2	Participant	Male	21	Eritrea	Walking	2
3	Participant	Male	26	Afghanistan	Walking	1
4	Organiser	Male	40	Gambia	Gardening	10
5	Participant	Female	30	Somalia	Gardening	20
6	Participant	Male	55	The Gambia	Gardening	24
7	Participant	Female	42	Congo	Walking	14
8	Participant	Female	50	Congo	Walking	10
9	Organiser	Female	50	Congo	Walking	18
10	Participant	Female	31	Nigeria	Sports	3
11	Organiser	Male	36	Nigeria	Sports	31
12	Participant	Female	29	Nigeria	Sports	4
13	Participant	Female	50	Hong Kong	Allotment	2
14	Organiser	Female	55	UK	Allotment	N/A
15	Participant	Female	56	Hong Kong	Allotment	2
16	Participant	Female	39	Turkey	Allotment	1
17	Participant	Female	30	Turkey	Allotment	2
18	Participant	Female	33	China	Allotment	5
19	Participant	Female	34	Kenya	Allotment	1.5
20	Participant	Female	65	Congo	Allotment	10

Table 7 Example quotes supporting theme 1 in qualitative data

Participant ID	Quote
P11 - Organiser	'From the people that took pictures, they put the pictures out and then the referrals, the word of mouths kind of came in, like, oh that looks nice, what, who, where did you do that?'
P10 - Participant	'Medical help maybe, yeah, the NHS, but other physical help I seek out, you know, charity organisations, types of programmes like this'
P8 - Participant	*'Connecting with people and reducing the stress, because when you are there, you are not alone; if you're alone you may be stressed'.*
P17 - Participant	*'There are people from different countries, so it's a like cultural interaction*
P11 - Organiser	*'You know, there is a safety in numbers kind of thing because people knew that they were not going to be alone, that there's going to be a group of us, we kind of felt comfortable'*
P7 - Participant	*'So, at x community organisation they take the families too; so, when we come here, I feel much happiness, I enjoy that the kids are smiling outside'.*
P1 - Organiser	*'I want to smell the sea maybe paddle, he'll set up a row of stones, right, we're going to play a game where you have to hit these stones down. Yeah, so it's very, more active for them, more contemplatory for me, I think'*

cultures. This was noted as an important means of developing friendships and supporting emotional wellbeing especially addressing social isolation.

The community organisation was seen by all participants as central in providing access to green spaces activities both in a practical sense (transport and equipment) and through the sense of safety that the group provided. Participants talked about finding safety in the group especially when accessing spaces and activities that they might not have experienced before.

Some of the organisations provided structured activities such as organised walks or physical activities such as paintballing. An important factor was the need to provide choice of GSP activities tailored to individual needs and preferences. Participants

Table 8 Example quotes illustrating theme 2 in qualitative data

Participant ID	Quote
P6 - Participant	'I come from Africa, I've been digging soil since I was there, I don't come to Europe to dig soil'.
P15 - Participant	*'Because I came from Hong Kong, I never did any gardening before, so that's why I find it so interesting'*
P14 - Organiser	*'I think as well learning stuff about different vegetables, growing things that they haven't been able to get so much here. So, for instance, mooli is one of those things that you can grow at this time of year, thankfully; it's also a really, really kind of, oh wow, for the Chinese participants'*
P5 - Participant	*'it's good for our wellbeing, to be honest. Like when we come together (sighs) we, we talk about food and obviously I think food connects people, I mean regardless of where we go, anywhere around the world you will see that food connects people, that's the one thing that we all have in common'*
P8 - Participant	*'When I went there (to the farm), I think it was the same, when I went there, I feel that it was like in Congo. Yeah, I was happy'.*

Table 9 Example quotes illustrating theme 3 in qualitative data

Participant ID	Quotes
P9 - Organiser	'We can enjoy more activities outside and the space is, you know, amazing, so it's huge, and you don't have to worry about anything'.
P10 - Participant	'I just decided to just explore, you know, space, I walked in the bush, it was really refreshing'.
P12 - Participant	*'At some point I walked bare-footed, I smelt some plants, I was really happy, there was sunlight, and everything was so calm, cool and collected'.*
P17 - Participant	*'Gardening in the nature, definitely has a calming and relaxing effect, because like the inside activities also, like you can feel yourself safe in, in, indoor but outdoor has a calming and relaxing effect that the others don't have'*
P3 - Participant	*'Not the centre of town but a bit far away, the places that there is no voices, no noise, there would be a quiet place to feel relaxed'*
P6 - Participant	*'Yeah, and when you are moving around, making your body work, you're burning calories and all that, instead of being in, stuck in that room'*
P10 - Participant	*'I had this fulfilment, like, yes, like I was part of this and now I'm eating the fruit of my labour'*

identified that being able to involve children and family members in these activities was beneficial for the whole family's wellbeing.

Not everyone wanted to be physically active, for example some individuals liked spending time in the space as opposed to taking part in an organised activity. Other participants enjoyed bringing games and items to play with when outdoors.

3.4.2 Theme 2: GSP activity can provide a link to heritage and culture (Quotations in Table 8)

This theme had three important concepts activity type, food, and natural environment.

GSP was often referenced in the context of the individuals' previous experiences of green spaces and activities in their country of birth. Developing of an understanding of green heritage and culture within the UK was also a key theme. Many participants described how they were excited by the opportunities to connect with and explore the local environment and learn about the UK, for example foods to grow and native plants and animals. Links to their own heritage and culture could be both a barrier to accessing GSP and a positive hook into the activity. Some individuals had negative perceptions of certain activities that were directly linked to traditional practices in their country of birth.

The type of activity type was very important when participants were deciding whether it was something they would want to engage in. Some participants preferred to engage in

activities that were seen as self-improvement such as learning English or learning craft skills and saw gardening and allotments as not helping them move forward. For others, gardening was new, and they relished the chance to try an activity that they had not experienced in their countries of birth.

Both growing and sharing food in GSP activities was a popular activity to both connect to their own cultural heritage as well as learn about UK culture. Food was identified as an important way to create connections with others and enjoy the time spent outdoors.

Aspects of the green space environment including the natural habitat and wildlife often reminded participants of their countries of birth, but there was also a fascination and interest in the newness of the UK natural environment. Some participants referenced the UK countryside as being 'the bush' and felt it brought positive memories of childhood to them.

3.4.3 Theme 3: green space and the GSP activity provide opportunities to improve health and wellbeing (Table 9)

The green space that the activity took place in and the positive impact that being in the space had on their mental health and wellbeing was commonly described. Many individuals were living in small homes or hotel rooms and described how being outdoors and away from the 'same four walls' gave them a sense of freedom and relaxation.

Participants often included vivid descriptions of sensory exploration of the space and there were frequent references to the sights, tactile sensations and sounds in the green space. Whilst the GSP activity itself was positively referenced in respect of health and wellbeing benefits, the facilitated access to green space in a safe and contained manner was also central to wellbeing benefits.

Engaging in the GSP activity positively impacted on participant's health and wellbeing and there were additional benefits to the GSP activity that they had not noticed when undertaking indoor based activities. The benefits were emotional and physical as well as related to self-improvement. Emotional benefits encompassed the sense of relaxation, reduction in stress and an overall increase in mental health experienced by individuals. The sense of quiet in the space was referenced and the impact that this had on relaxing the mind.

Participants also talked about the importance of movement and being able to become more physically active in the green space. References were made to how the GSP activity could support with weight loss.

4 Discussion

The study findings indicate that GSP can help to maintain and improve wellbeing in ethnically diverse populations living in some of the most deprived areas of England. The study was carried out during a challenging time for the participants and their communities, with the riots occurring between baseline and three-month data collection and an ongoing negative atmosphere such as media reporting and political environment. Global events were highlighted as a challenge to participants wellbeing with nine ethnic groups represented in the cohort, many from areas of the world currently in conflict. Continued cost of living challenges were also highlighted. Our collaborative of organisations acted as community anchors, engaging with people to promote the benefits of their GSP activity, and so despite these challenges a high proportion of participants experienced

sustained or improved overall wellbeing. Our study supported the upskilling of community leaders to be active partners in the delivery of research activity. This enabled us to learn valuable lessons about community engagement and the use of validated outcome measures when working with ethnically diverse community groups. Feedback from the collaborative highlighted that whilst there is understanding of the need to use validated measures, there are practicalities which make the ONS4 difficult to administer for diverse communities. Language barriers, conceptual understanding of wellbeing, and the focus on the previous day, particularly given the instability faced by participants including the riots and immigration status, were all cited as challenges.

Nonetheless, the use of the ONS4 contributed to normalising conversations about wellbeing within their groups. There was a contrast between the interviews where people discussed how attending GSP had benefited their wellbeing, but this was not always reflected in an improved ONS4 score. Organisations reflected that this may have also influenced why ONS4 scores dropped slightly at 3 months and only increased slightly after 6 months of GSP activity, suggesting that by 3 months participants had built a stronger and more trusting relationship with the GSP activity lead and were therefore more comfortable and honest in answering the ONS4 questions. This is a possible alternative explanation for the figures observed. Organisations also reflected that the very nature of being outdoors gave participants more space to reflect and ultimately be more open about their feelings when answering the ONS4 questions.

Interviews with participants underscored the role of community organisations in supporting ethnically diverse communities' access GSP activities. These organisations created safe spaces where trust was paramount to engagement, supporting the concept of curated sociability [14]. Informal routes were especially important for identifying and supporting engagement in GSP activities, *especially as none of the participants accessed GSP activity through healthcare/their GP. The potential reasons for this are multifaceted, including the role that society's discriminatory attitudes and behaviours may have on help-seeking behaviour. The research was conducted during a period of significant community unrest, which reflects broader societal discrimination. Systematic review of literature has found that society's discriminatory attitudes and behaviours, as well as strict immigration laws and policies, may lead to refugees and asylum seekers avoiding social and health care services even when needed* [29]. This reluctance can be further exacerbated by the transference of negative feelings onto health professionals [29]. *Thus, the lack of referral from health care services may have resulted from a broader issue of mistrust and lack of access of health care services. Additional reasons may include perceptions of health care services as a provider of medical care but not of physical activity.* This underscores the critical role of community organisations and informal support networks, which provide "safe" access and engagement in GSP activities for these vulnerable communities.

GSP activity was found to provide a connection to heritage and culture in the UK and 'home'/country of birth, supporting earlier literature on the unique contribution of green space [15, 16]. Research shows that access to quality green space is a significant predictor of general health in ethnically diverse community groups [30]. Our findings align with the call for UK policy to prioritise local green space amongst these communities [30] rather than focus on individual behaviour change, which may not impact health inequalities for vulnerable populations [31].

GSP can provide an invaluable opportunity for individuals to engage in their local community in a safe and supportive way to improve health and wellbeing. This supports previous assertions for the potential for benefits of GSP in migrant and refugee populations, including fostering social connections, sharing cultural practises and integrating into host communities [15, 16]. It is important to understand the impact of previous culture and heritage on engagement with GSP activities in migrant and refugee populations. Investing in different GSP activities with flexibility and choice in provision could offer a means to widen participation.

The importance of social connection was apparent for both participants and organisers, although for different reasons. For organisers, it was people and "word of mouth" through which participants found out about activities as well as perceptions of safety in numbers. For participants the value of connecting to people, whether as an antidote to loneliness, or the joy brought from spending time with families and especially their children in nature. This adds to the literature that demonstrates that social connection through engaging with communities and participating in activities positively influence psychological and physical wellbeing [32]. *This underscores the importance of GSP activity, as it acts as a conduit for social connection, as well as the opportunity to build community and engage in physical activity.*

4.1 What is already known on this topic

The results of a previous study showed that participants experienced improved wellbeing when accessing GSP activities. Across seven test and learn sites in England there were statistically significant improvements in wellbeing for each of the ONS4 wellbeing domains [13]. A previous study we conducted within the Humber and North Yorkshire region also identified statistically significant improvements in mental health and wellbeing following GSP among community-based adults. Horticultural and care farming activities were associated with the greatest gains in mental health and wellbeing with those taking part in GSP activities for five to twelve weeks experiencing greater improvements in mental health and wellbeing [33]. Policy guidance including the Darzi Report (Department of Health and Social Care, 2024) [34] also recommends the need for the NHS to invest more in preventative and community-based services in line with this research.

We know that racism, as exemplified by the riots which were widespread in the UK in 2024 and experienced directly by the communities participating in this study, can have a profound effect on mental health [35], associated with greater psychological distress, poorer mental functioning and lower life satisfaction [36, 37]. Discrimination increases challenges migrant groups already face in accessing green space [17].

4.2 What this study adds

There is a scarcity of evidence as to how to improve access to and engagement with GSP among excluded and under-served groups [10, 12, 33]. This study focussed on collaborating directly with organisations working at the heart of underrepresented communities. This study highlights the importance of community organisations, and informal referral routes, in accessing GSP activities for ethnically diverse groups. It also demonstrates the different roles that nature can play depending on cultural understandings of natural space. It supports the call for investment in community organisations, informal

routes of referral, facilitation of safe space and enhancement in availability of greenspace. It also highlights the potential wellbeing benefits for community members at individual, familial and group level and identified key features to consider when developing and commissioning GSP activities.

Our study also supported the upskilling of community leaders to be active partners in the delivery of research activity. This enabled us to learn valuable lessons about community engagement and the use of ONS4 in ethnically diverse community groups.

4.3 Policy and planning implications

Implications of the findings include the recognition of the essential access point, and not peripheral service, of community organisations in connecting minority ethic, migrant, refugee and asylum-seeking communities to GSP activities. GSP guidance should support flexible and non-clinical routes with Integrated Care Services co-designing strategies with community leaders to widen access beyond traditional PCN link worker pathways. Commissioners are advised to consider funding a wide range of activities with the flexibility to adapt to cultural and heritage needs. It is also recommended that local authorities and commissioners of GSP consider barriers to GSP engagement, including access and safety, with provision of activities in in trusted community venues a potential option. Finally, policy frameworks could be improved with explicit recognition the intersection of greenspace access and public health threat posed by racism and discrimination, with appropriate risk assessment and action to support minority ethic, migrant, refugee and asylum-seeking communities in accessing greenspace.

4.4 Limitations of this study

There are three key limitations to our study. It is acknowledged that whilst supporting the community to collect data provided benefits in terms of community empowerment and engagement, this may have compromised the scientific rigor of data collection with a risk of selection bias.

ONS4 was selected by the funder as a measure of wellbeing however our study found limitations on the validity of this measure when working directly with minority ethic, migrant, refugee and asylum-seeking communities. Several issues were identified with the use of ONS4 including language barriers around concepts relating to wellbeing. We identified that the language used in theONS4 was a barrier, as well as the concept of a sliding scale. Some of the language did not directly translate into Swahili or Taabwa for example and culturally, many participants considered health in terms of "good" or "bad", a dichotomy rather than a scale. Additionally scoring wellbeing based on experiences the previous day was problematic given many participants were experiencing multiple challenges related to social issues including the riots and concerns around right to remain in the UK. Discussions with participants helped us to better understand how health is conceptualised in their respective cultures and languages. The ONS4 was simple to use but could be better adapted to participants from other cultures where English is not the spoken language e.g. translational workshops.

We conducted our work in one part of England, and it is unknown how generalisable the findings are. As the six community-based organisations were from predominantly urban environments, future research would benefit from exploring experiences of GSP activities in rural areas. Populations in rural areas tend to be less diverse and often

exclusionary, such spaces can reinforce social isolation and racial tensions [38]. Identifying how to support individuals in these spaces would be of benefit.

The sample of participants were all recruited within the Humber and North Yorkshire region of England within ethnically diverse community groups supporting migrants, refugees and asylum seekers. The participants interviewed were predominately female although we know that out of the 143 individuals accessing the programme across the organisations 48% of individuals were male ($n = 69/143$) and 52% were female ($n = 74/143$).

Only one participant was recruited who withdrew from GSP activity. Whilst attempts were made to seek additional participants who had declined to take part in GSP, reasons for declining were often complex and included situations such as having leave to remain in the UK cancelled. Our participants were also able to speak English to at least an intermediate level and whilst translation was offered, participants chose not to accept this with several noting they wanted to use the opportunity to practice English.

5 Conclusion

The study provided evidence that GSP can help to maintain and improve wellbeing within underserved communities, even at times of social and economic stress. GSP can provide an invaluable opportunity for individuals to engage in activities in their local community in a safe and supportive way to improve health and wellbeing. Community organisations in this study had few links to local statutory services and strong trusting local relationships helped support referrals into GSP activities.

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Author contributions
HA, AH, MT, conceptualised the project.HA, AH, LB, HD, MD, DC, DJ, SK, RM, OA, AM, ER, SR, TS collected the data.HA, AH, MT, AF analysed the data. HA, TD, AF, MT and AH wrote the main manuscript text. All authors reviewed the manuscript.

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Data availability
The datasets generated during and/or analysed during the current study are not publicly available. In the case of the qualitative data participants did not consent to sharing of transcripts outside of the study team. The quantitative data generated as part of this study is part of a wider data set held by the national Green Social Prescribing test and learn team (University of Sheffield, University of Exeter). Quantitative data is available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study was approved by the University of Hull Health Science Research Ethics Committee (FHS 23–24.68). All procedures performed in this research were conducted in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments.

Informed consent
Informed consent was obtained from all individual participants included in the study.

Consent for publication
Participants provided written consent for their anonymised quotations to be published.

Competing interests
The authors declare no competing interests.

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References

1. NHS England. (2023). *Social prescribing: Reference guide and technical annex for primary care networks*. https://www.england.nhs.uk/long-read/social-prescribing-reference-guide-and-technical-annex-for-primary-care-networks/
2. Polley MJ, Fleming J, Anfilogoff T, Carpenter A. Making sense of social prescribing. University of Westminster; 2017.
3. NHS England (No Date). Green social prescribing. NHS England » Green social prescribing.
4. Geneshka M, Coventry P, Cruz J, Gilbody S. Relationship between green and blue spaces with mental and physical health: A systematic review of longitudinal observational studies. Int J Environ Res Public Health. 2021;18(17):9010. https://doi.org/10.3390/ijerph18179010.
5. Ohly H, White MP, Wheeler BW, Bethel A, Ukoumunne OC, Nikolaou V, Garside R. Attention restoration theory: A systematic review of the attention restoration potential of exposure to natural environments. J Toxicol Environ Health Part B. 2016;19(7):305–43. https://doi.org/10.1080/10937404.2016.1196155.
6. Ulrich RS. (1993). Natural landscapes. *The biophilia hypothesis*, 73–137.
7. Ulrich RS, Simons RF, Losito BD, Fiorito E, Miles MA, Zelson M. Stress recovery during exposure to natural and urban environments. J Environ Psychol. 1991;11(3):201–30. https://doi.org/10.1016/S0272-4944(05)80184-7.
8. Leavell MA, Leiferman JA, Gascon M, Braddick F, Gonzalez JC, Litt JS. Nature-based social prescribing in urban settings to improve social connectedness and mental well-being: a review. Curr Environ Health Rep. 2019;6:297–308. https://doi.org/10.1007/s40572-019-00251-7.
9. Kiely B, Croke A, O'Shea M, Boland F, O'Shea E, Connolly D, Smith SM. Effect of social prescribing link workers on health outcomes and costs for adults in primary care and community settings: a systematic review. BMJ Open. 2022;12(10):e062951. https://doi.org/10.1136/bmjopen-2022-062951.
10. Khan K, Tierney S, Owen G. Applying an equity lens to social prescribing. J Public Health. 2024;46(3):458–62. https://doi.org/10.1093/pubmed/fdae105.
11. Abubakar, I., Aldridge, R. W., Devakumar, D., Orcutt, M., Burns, R., Barreto, M. L.,… Zhou, S. (2018). The UCL–Lancet Commission on Migration and Health: the health of a world on the move. The Lancet, 392(10164), 2606–2654. https://doi.org/10.1016/S0140-6736(18)32114-7.
12. Zhang CX, Wurie F, Browne A, Haworth S, Burns R, Aldridge R, Zenner D, Tran A, Campos-Matos I. Social prescribing for migrants in the united kingdom: A systematic review and call for evidence. J Migration Health. 2021;4:100067. https://doi.org/10.1016/j.jmh.2021.100067.
13. Haywood A, Dayson C, Garside R, Foster A, Lovell R, Husk K, Holding E, Thompson J, Shearn K, Hunt H, Dobson J, Harris C, Jacques R, Witherley D, Northall P, Baumann M, Wilson I. National evaluation of the preventing and tackling mental ill health through green social prescribing project: final report – March 2021 to June 2023. Department for Environment, Food and Rural Affairs; 2024. https://www.shu.ac.uk/centre-regional-economic-social-research/publications/gsp-final-report-2024.
14. Rishbeth C, Blachnicka-Ciacek D, Darling J. Participation and wellbeing in urban greenspace: 'Curating sociability' for refugees and asylum seekers. Geoforum. 2019;106:125–34. https://doi.org/10.1016/j.geoforum.2019.08.013.
15. Darling J, Healey RL, Healey L. Seeing the City anew: asylum seeker perspectives on 'belonging' in greater Manchester. North West Geogr. 2012;12(1):20–8. https://durham-repository.worktribe.com/output/1329984.
16. Hartwig KA, Mason M. Community gardens for refugee and immigrant communities as a means of health promotion. J Community Health. 2016;41(6):1153–9. https://doi.org/10.1007/s10900-016-0195-5.
17. Edge S, Davis C, Dean J, Onilude Y, Rishworth A, Wilson K. The role of urban and rural greenspaces in shaping immigrant wellbeing and settlement in place. Wellbeing Space Soc. 2023;4:100127. https://doi.org/10.1016/j.wss.2023.100127.
18. Marmot M, Allen J, Boyce T, Goldblatt P, Morrison J. (2020). Health equity in england: the marmot review 10 years on. Health Equity England: Marmot Rev 10 Years On | The Health Foundation.
19. Rigolon A, Browning MHEM, McAnirlin O, Yoon H. Green space and health equity: A systematic review on the potential of green space to reduce health disparities. Int J Environ Res Public Health. 2021;18(5):2563. https://doi.org/10.3390/ijerph18052563.
20. Moscrop A. Social prescribing is no remedy for health inequalities. BMJ. 2023;381:715. https://doi.org/10.1136/bmj.p715.
21. Dunkley RA, Franklin A. Failing better: the stochastic Art of evaluating community-led environmental programs. Eval Program Plan. 2017;60:112–22. https://doi.org/10.1016/j.evalprogplan.2016.11.005.
22. Qualtrics. (2005) Copyright Year 2024: Provo, Utah, USA. Available at: https://www.qualtrics.com
23. Office for National Statistics. (2025, January 14). *Personal well-being user guidance*. https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/personalwellbeingsurveyuserguide
24. Kiger ME, Varpio L. Thematic analysis of qualitative data: AMEE guide 131. Med Teach. 2020;42(8):846–54. https://doi.org/10.1080/0142159X.2020.1755030.
25. O'Grady P. (2002). *Relativism* (1st ed.). Routledge. https://doi.org/10.4324/9781315710730
26. Lumivero. (2023) *NVivo* (Version 14) www.lumivero.com.
27. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Res Psychol. 2006;3(2):77–101. https://doi.org/10.1191/1478088706qp063oa.

28. Braun V, Clarke V, Hayfield N, Davey L, Jenkinson E. Doing reflexive thematic analysis. Supporting research in counselling and psychotherapy: Qualitative, quantitative, and mixed methods research. Cham: Springer International Publishing; 2023. pp. 19–38.
29. da Silva Rebelo MJ, Fernández M, Achotegui J. Mistrust, anger, and hostility in refugees, asylum seekers, and immigrants: A systematic review. Can Psychol. 2018;59(3):239–54. https://doi.org/10.1037/cap0000131.
30. Roe J, Aspinall PA, Ward Thompson C. Understanding relationships between health, ethnicity, place and the role of urban green space in deprived urban communities. Int J Environ Res Public Health. 2016;13(7):681. https://doi.org/10.3390/ijerph13070681.
31. Laverack G. The challenge of behaviour change and health promotion. Challenges. 2017;8(2):25. https://doi.org/10.3390/challe8020025.
32. Song J, Corcoran J, Zahnow R. The resettlement journey: Understanding the role of social connectedness on well-being and life satisfaction among (im)migrants and refugees: A systematic review. J Racial Ethnic Health Disparities. 2024;12:2128–44. https://doi.org/10.1007/s40615-024-02036-7.
33. Darcy PM, Armitt H, Hurd A, Paton LW, White PCL, Coventry PA. Green social prescribing: A before and after evaluation of a novel community-based intervention for adults experiencing mental health problems. Health Soc Care Commun. 2025;33(1):2016261. https://doi.org/10.1111/hsc.2016261.
34. Department of Health and Social Care. Independent investigation of the NHS in England. 2024. https://www.gov.uk/government/publications/independent-investigation-of-the-nhs-in-england
35. Bhui K, Roberts D, Lashley M, Jones E, Kaufman KR. Extremism, racism and riots: exploring the political, social and cultural determinants of poor mental health. BJPsych Open. 2024;10(6):e224. https://doi.org/10.1192/bjo.2024.224.
36. Hackett RA, Ronaldson A, Bhui K, Steptoe A, Jackson SE. Racial discrimination and health: A prospective study of ethnic minorities in the united Kingdom. BMC Public Health. 2020;20:1–13. https://doi.org/10.1186/s12889-020-08655-1.
37. Pascoe EA, Smart Richman L. Perceived discrimination and health: A meta-analytic review. Psychol Bull. 2009;135(4):531–54. https://doi.org/10.1037/a0016059.
38. Hubbard P. Inappropriate and incongruous': opposition to asylum centres in the english countryside. J Rural Stud. 2005;21(1):3–17. https://doi.org/10.1016/j.jrurstud.2004.08.006.

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