



Nature-based social prescribing for health and well-being: The case of community gardening

A Scoping Brief in the Context of Vienna, Austria

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Box 1

What is nature-based social prescribing?

Nature-based social prescribing describes interventions where non-medical sources within local communities provide support through social activities in nature [9].

Background

Poor mental health is estimated to be responsible for over 30% of the global burden of disease [1]. In Austria, every second person reports having experienced mental health problems at some point in their life while approximately every fifth person currently suffers from some form of mental health issue [2]. Common mental health disorders such as anxiety and depression account for an estimated 3.6% of the Austrian gross domestic product (GDP) due to lost productivity, health care, and out-of-work benefits [3], and are a major risk factor for many physical health issues like cardiovascular diseases or diabetes as well [4]. One approach to supporting these individuals, that is experiencing growing interest globally, is nature-based social prescribing (NBSP) [5]. Research has found consistently positive effects on various mental and physical health-related outcomes in both clinical and non-clinical populations (see e.g. [6], [7]). Thus, wider implementation of NBSP could both promote widespread increases in well-being and reduce strain on the healthcare system and broader economy.

One common type of NBSP is community gardening (CG). Community gardens are plots of land maintained by a group of local residents and can be seen as a collective space to which individuals of a community can contribute [8]. Such spaces provide capacities for physical activity, facilitate knowledge sharing, and build social support within communities [8].

Overview

- Mental and physical health problems put significant strain on the healthcare system and the economy.
- Community gardening is associated with a range of health and well-being benefits, however, the direction of causality is still unclear.
- There is yet little evidence regarding cost effectiveness.
- Most gardens already existing in Vienna have very limited access and almost none are designated to social prescription schemes.

This report will summarise the key findings related to CG, its costs and cost benefits, and how such interventions can be structurally facilitated.

Although causal conclusions are hard to draw given the difficulty in conducting controlled studies, numerous studies have found positive links between community gardening health some of which are summarised below.

Health benefits

Cardiovascular

There is converging evidence that CG may reduce risks of cardiovascular diseases [9], [10], [11]. One study showed that self-paced engagement with usual gardening tasks resulted in the same levels of exercise defined as optimal for various age groups [12].

Overall, there is moderate evidence that the physical activity involved in community gardening may reduce the risk of cardiovascular diseases.

Diabetes

Two studies found beneficial effects of CG for diabetes [13], [14]. These effects come from healthier diets and increased physical activity [13], which can improve diabetes symptoms [15]. Furthermore, CG is associated with a lower body-mass index [10], [16], which is a major risk factor for diabetes [17].

There is weak evidence that community gardening reduces the risk of diabetes and can help manage symptoms.

Diet

There is converging evidence that CG is associated with a healthier diet across multiple age groups [18], [19], [20], [21], [22]. Taking part in food growing has been shown to improve individual's perception of food and nutrition and thus reduced disliking of vegetables and fruits [23].

There is moderate evidence that community gardening improves diets.

Mental health

There is converging evidence that gardening groups improve well-being by reducing stress, inspiring healthier lifestyles, creating social networks, and facilitating personal development both in clinical and non-clinical populations [24], even among school children [25]. Additionally, CG is associated with various mental health outcomes like reduced stress, depression, and anxiety [26], [27], and beneficial effects on cognitive functioning and mood disturbances like anger [28]. Residential green space which can be achieved through gardening projects is associated with lower levels of burnout symptoms [29].

Social interactions seem to be a major mechanism through which NBSP evoke positive

effects [30], [31], while the nature setting provides a calm and non-threatening environment [32]. Indeed, neighbourhoods and supportive social networks belong to the major protective factors of mental health and behavioural problems in minors [33] and older adults [34]. Community gardens have been shown to help knit communities closer together [8] and could thus facilitate valuable protective factors for various mental health problems.

There is moderate evidence that community gardening improves mental health.

Costs

We are aware of no studies investigating the full cost effectiveness of CG yet. One study did find that community gardens were associated with 311 fewer visits to doctors, 572 fewer visits to social workers, reduced antidepressant use, and a return of around €3.80 for each euro invested but did not consider many indirect costs like social benefits [35]. Relevant stakeholders also perceive decreased use of the health system after social prescriptions [36].

There is weak evidence that community gardening decreases healthcare costs.

Barriers

Greenspace interventions appear to be most effective when they were guided by structured programs [7]. Barriers to join community gardens include lacking awareness of their existence and lacking accessibility in terms of location and waiting lists [37]. Complicated regulations can furthermore hinder the emergence of grassroots community garden projects [38].

Interventions are most effective when structured. Participation is hindered by lacking awareness and accessibility.

The situation in Vienna

Vienna has 104 community gardens as of June 2023 [39]. Distribution of community gardens seems quite even over the city (see Figure 1). However, there are major differences between districts. By residents, the Viennese district *Hietzing* has the highest community garden area (see Table 1), although only two gardens in total, which impedes accessibility. Both gardens belong to social facilities for people who are homeless, schoolchildren and refugees [39].

Figure 1: Locations of CG projects in Vienna. Location data taken from [39]. Map created using [40].



Though privately owned, these could be good examples for prescribed gardening groups which could be interesting for further research. Access to community gardens is restricted in most of the cases. Oftentimes, community gardens have a very limited number of plots which they allow local residents to use for limited time periods and many projects blocked their waiting lists due to too many applications [39], indicating high interest among residents. Only three projects marketed open plots which lie in the outer regions of Vienna and are therefore difficult to reach for most people.

Of the 104 community gardens, 13 are designated for school or pre-school classes, nine are designated to social programs (one for mental-health programs), and nine had no data available regarding who could participate.

Fourteen gardens utilize open participation schemes, meaning that while general access is sometimes permitted, participation is heavily restricted in 90 garden projects [39].

While Vienna has a moderate amount of community gardens, access is notably restricted while demand is high. Social gardening projects hardly exist and just one garden is designated to mental health groups.

Table 1: Area and number of CG projects in Vienna split by districts and ranked by area per residents

District	Area in m ² [39]	Count of gardens [39]	Area in m ² per 1000 residents [41]
13. Hietzing	5300	2 (2)	95.37
12. Meidling	9450	6 (6)	94.24
21. Floridsdorf	13 600	10 (8)	73.94
6. Mariahilf	2000	4 (1)	63.63
22. Donaustadt	11 500	7 (7)	54.07
2. Leopoldstadt	5033	16 (13)	46.47
10. Favoriten	9175	7 (6)	42.01
3. Landstraße	3912	6 (6)	40.42
11. Simmering	4050	4 (3)	37.15
19. Döbling	2340	5 (4)	30.97
8. Josefstadt	610	3 (3)	24.63
9. Alsergrund	1015	6 (6)	24.04
15. Rudolfshiem-Fünf.	1177	6 (6)	15.46
16. Ottakring	1390	5 (4)	13.57
7. Neubau	350	3 (2)	11.08
14. Penzing	1030	2 (2)	10.64
17. Hernals	540	4 (3)	9.64
18. Währing	431	3 (3)	8.41
20. Brigittenau	300	1 (1)	3.50
1. Innere Stadt	30	1 (1)	1.80
23. Liesing	160	3 (1)	1.36
4. Wieden	-	2 (0)	-
5. Margareten	-	1 (0)	-

Note: Numbers in brackets indicate number of CGs with available area data.

Conclusion

There seems to be high demand for more community garden projects among citizens, but such garden projects hardly exist. Allowing communities to build community gardens (e.g. in place of parking spots, in community squares, or within existing parks) could greatly increase the number of gardening projects. This would be a necessary first step to facilitate feasibility and accessibility for community gardening as social prescription. The city should advocate more

projects designated to social prescription schemes as well as support communication efforts with practitioners to support the referral process to such programmes. Such projects should be accompanied by specialised therapy programmes and should be distributed across the city to ensure short commutes which can be especially straining for older and less healthy patients. Supporting such initiatives, could help reduce Vienna's various chronic and mental health problems, reduce strain and costs in the primary healthcare sector, and build closer knit communities. While no conclusions on the overall cost-effectiveness of such programmes can yet be established, many societal benefits are to be expected.

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Recommendations

- The city should give space to open community garden projects to promote benefits to general health and social cohesion.
- The city should invest in specialized community garden projects designated to prescription schemes to target clinical populations and reduce strain from the primary healthcare system.
- Projects should be carefully planned as cost-effectiveness is not clear yet.
- Measures should be followed by validation studies to evaluate effectiveness.

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