Impact and cost-effectiveness of care farms on health and well-being of offenders on probation: a pilot study

Helen Elsey,[1]* Rachel Bragg,[2] Marjolein Elings,[3] Cathy Brennan,[1] Tracey Farragher,[1] Sandy Tubeuf,[4] Rochelle Gold,[5] Darren Shickle,[1] Nyantara Wickramasekera,[4] Zoe Richardson,[6] Janet Cade[7] and Jenni Murray[1]

[1]Academic Unit of Public Health, University of Leeds, Leeds, UK
[2]Essex Sustainability Institute, University of Essex, Colchester, UK
[3]Plant Research International, Wageningen University, Wageningen, the Netherlands
[4]Academic Unit of Health Economics, University of Leeds, Leeds, UK
[5]NHS e-Referral Service, Health Digital Services, NHS Digital, Leeds, UK
[6]York Trials Unit, Department of Health Sciences, University of York, York, UK
[7]Nutritional Epidemiology Group, University of Leeds, Leeds, UK

*Corresponding author h.elsey@leeds.ac.uk

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Disclaimer: This report contains transcripts of interviews conducted in the course of the research, or similar, and may contain language which offends some readers.

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Scientific summary

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Background

Care farming (also called social farming) has been defined as the use of commercial farms and agricultural landscapes to promote mental and physical health through normal farming activity. Through a supervised, structured programme of farming-related activities, care farms (CFs) provide health, social or educational care services for a range of vulnerable groups. The type of farming activities (e.g. horticulture and livestock farming), other activities (e.g. gardening, conservation, woodwork and metal work) and well-being and skills interventions provided (e.g. health promotion, counselling and skills qualifications) differ across farms. A wide range of service users access CFs, including those with long-term conditions, such as dementia, depression, learning disabilities, substance misuse and behavioural issues, as well as probation service users. It is estimated that there are about 230 CFs in the UK.

The evidence for the effectiveness of care farming is relatively recent (within the last 10 years). The complexities and multifaceted nature of CFs means that randomised controlled trial (RCT) study designs are challenging. In the light of this, our study synthesised the published and unpublished literature using a mixed-methods systematic review design.

In addition to this systematic review, we wanted to understand the feasibility of assessing the cost-effectiveness of CFs in improving quality of life. Offenders (referred to here as probation service users) serving community orders (COs) are an important user group for CFs in the UK; 27% of CFs in England were working with probation in 2012. In England, there is a policy emphasis on the use of COs, whereby those who have committed lower-risk offences are sentenced by court to serve their punitive order in the community rather than in prison. COs may be spent on a CF or other location, such as picking litter, cleaning-up public spaces or helping in a charity shop. Randomly allocating service users to CF or comparator CO location would not be acceptable within probation services, so a RCT design is not appropriate. Instead, we tested feasibility of a natural experiment using statistical analysis (propensity analysis) to account for differences between CFs and comparator locations.

Our study, therefore, aimed to (1) synthesise existing evidence to better understand the impacts of CFs and (2) establish the feasibility of conducting a future natural experiment to determine cost-effectiveness of CFs in improving quality of life and reducing reconvictions among probation service users serving COs.

Our research questions were:

1. What is the existing evidence of impact of CFs and potential mechanisms of impact for different groups?
2. How can recruitment of probation service users undertaking COs on CFs and in comparator settings be maximised?
3. What are the optimum ways to collect baseline and follow-up data, cost data and individual reconviction data from the Police National Computer (PNC)?
4. What are the impacts of CFs on probation service users' lives and how appropriate are our measures in identifying changes in quality of life, health and well-being?
5. What is the extent of variation between the activities and approaches used on different CFs?
6. What is the influence of seasonality?
7. What are the potential confounders and how can these best be measured?
8. What is the feasibility of measuring key parameters to undertake a cost-effectiveness analysis of CFs in comparison with other CO settings for probation service users?

Design and findings: systematic review

To answer research question 1, we conducted a systematic review using a sequential exploratory approach to mixed-methods synthesis. This method identifies main concepts from theories, synthesising qualitative data to compare with the theoretical concepts and then interrogating the quantitative data to test any qualitative findings.

Methods

In November 2014, we searched 22 health, education, environmental, criminal justice and social science electronic databases, databases of grey literature and care farming websites across Europe. There were no language restrictions. A full list of databases searched is given in *Appendix 1*; some examples include Web of Science, Cumulative Index to Nursing and Allied Health Literature (via EBSCO*host*), The Campbell Library, Criminal Justice Abstracts (via EBSCO*host*), MEDLINE (via Ovid) and Scopus (Elsevier B.V., Amsterdam, the Netherlands).

Selection criteria

We included a broad range of study designs: randomised and quasi-RCTs; interrupted time series and non-randomised controlled observational studies; uncontrolled before-and-after studies; and qualitative studies. We excluded single-subject designs, reviews, overviews, surveys, commentaries and editorials. Study participants were those who typically receive support at a CF, including people with mental ill health, people with learning difficulties, people with health problems, people with substance misuse, probation service users and disaffected youth. Those attending for only a single day were excluded.

Data collection and analysis

Each screening stage involved two independent reviewers. Studies that were potentially eligible after title and abstract screening underwent full-paper screening. Disagreements were discussed and resolved by consensus at each stage. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to document the review process. We used an adapted version of the COnsolidated criteria for REporting Qualitative research (COREQ) tool to assess qualitative studies and the Effective Practice and Organisation of Care and Effective Public Health Practice Project tools to assess the risk of bias in quantitative studies. No study was excluded based on quality.

Results

Our search methods identified 1659 articles, of which 14 qualitative, 12 quantitative and one mixed-methods study met the inclusion criteria. In addition, we identified 15 theories quoted in connection with care farming. We created four logical models explaining how care farming may work for: (1) all service user groups, (2) people with mental ill health and substance misuse combined, (3) disaffected youth and (4) people with learning disabilities. These models comprised five key theoretical concepts (restorative effects of nature, being socially connected, personal growth, physical well-being and mental well-being), five CF components (being in a group, the farmer, the work, the animals and the setting) and 15 categories of mechanisms (achievement and satisfaction, belonging and non-judgement, creating a new identity, distraction, feeling valued and respected, feeling safe, learning skills, meaningfulness, nurturing, physical well-being, reflection, social relationships, stimulation, structure and understanding the self). We identified 12 different outcomes, both process (secondary) and primary, that we expected to find when testing the logic models against the quantitative studies. One key theoretical concept, 'restorative effects of nature', was under-represented in the intervention components and mechanisms reported within the qualitative studies. The types of mechanisms appeared to differ according to different service user groups, suggesting that care farming may work in different ways according to different needs. Across the 14 studies, 24 different outcome measures were reported, and a number of studies reported results for mixed service user groups. We found no evidence to indicate that CFs improve quality of life and limited evidence that they might improve

depression and anxiety. There was some evidence to suggest that CFs can improve self-efficacy, self-esteem, affect and mood, with inconsistent evidence of benefit for social outcomes. All of the studies were rated as being at a high risk of bias. The results should be treated with caution.

Design and findings: the pilot study

We tested the feasibility of conducting a future natural experiment to assess cost-effectiveness of CFs compared with other CO sites in improving quality of life. As a pilot, the study was not powered to determine effectiveness, but designed instead to identify feasibility.

Setting

The pilot study was conducted in three centres. Each centre was a probation service region in England and included a CF, at least one comparator CO project and the probation service.

Participants

Adult probation service users (aged ≥ 18 years) serving a CO.

Intervention

The three centres in this study demonstrated the considerable range in types of CFs, with one social enterprise specialising in aquaponics, horticulture and skills building (centre 1); a religious charity with emphasis on horticulture and maintenance (centre 2); and one family-run cattle farm with a focus on rehabilitation (centre 3). Users at centre 2 served their CO at different locations and, unlike the other centres, were allocated to multiple sites during their CO. In centre 3, probation services used the CF as a 'specified activity (SA) requirement' rather than an 'unpaid hours' CO.

Comparator

Identifying suitable comparators sites was challenging. Comparator users in centre 1 were allocated to a charity warehouse sorting second-hand clothes, in centre 2 we were unable to recruit comparator users and in centre 3 comparator users attended locations that addressed a range of different SA requirements, including alcohol misuse, domestic violence, anger management and drink-driving.

The primary outcome was quality of life derived from the Clinical Outcome in Routine Evaluation–Outcome Measure (CORE-OM), from which a utility score can be valued and quality-adjusted life-years (QALYs) derived. The 34 items cover four dimensions: subjective well-being, problems/symptoms, life functioning and risk/harm. The full version of the questionnaire can be found on the CORE IMS website (www.coreims.co.uk; accessed 1 October 2013).

The secondary outcomes were:

- individual-level data on reconviction rates obtained from the PNC
- mental well-being derived from the Warwick–Edinburgh Mental Health and Well-Being Scale
- measures of smoking, alcohol, drug use, diet and physical activity adapted from the General Lifestyle Survey and Health Survey of England
- measures of the connectedness to nature
- exploration of social and health resource use costs and health utility, as derived from CORE-OM.

All questionnaire outcomes were collected at the beginning of users' CO and at 6 months. PNC data on reconvictions (i.e. offences that have received a court sentence) were collected at least 6 months, and up to 18 months, following CO completion.

We conducted a qualitative study to understand allocation decisions and differences in the use of CFs by probation services. We interviewed eight service users (all male because of the limited number of women allocated to CFs), care farmers (six in total: five male and one female) and probation staff (five: three male

and two female). All interviews were recorded and transcribed verbatim. We used a theoretically driven approach to analysis, testing our logic models derived from the systematic review.

Results

We recruited 134 respondents. This was below our recruitment target of 300. Only 14% ($n = 21$) of the probation service users approached declined to participate. Recruitment proved challenging as a result of changes in probation (probation trusts were disbanded in May 2014) and the closure of one CF site. Of those recruited, 37% attended the three CFs, although the remainder were at different comparator sites.

Differences in operations in each probation service required bespoke recruitment strategies. Factors that aided recruitment and data collection included having a research assistant seconded from the probation services, having a co-investigator working at a senior level within a probation service, incentivising users by allowing time spent with the researchers to count towards their unpaid hours, including probation service users with multiple requirement orders, and recruiting at weekends as well as during the week.

At baseline, we found significant differences between users allocated to CF and comparator sites in terms of the following: gender (4% of CF users were female compared with 44% of comparator users); risk of reoffending scores [as measured via the Offender Group Reconviction Scale (OGRS)] were 26 points higher [95% confidence interval (CI) 6.86 to 45.14 points] among CF users; CF users had a percentage change of 139% (95% CI 21% to 370%) more missing CORE-OM questions; substance use and smoking were 47% and 78% among CF users and 24% and 57% among comparators, respectively; and comparators found healthy foods preferable. These differences reflect the fact that, in at least one centre (centre 3), users with a higher risk of reoffending were actively allocated to the CF. Our qualitative findings highlighted that those responsible for allocation decisions within probation felt that CFs, unlike some of the comparator sites, were able to appropriately manage and support those with more complex needs and higher OGRS scores. The OGRS score is thus a key confounder to be considered in any future study.

We were able to follow up 52% of participants. These participants were older, were more likely to be in National Probation Service rather than community rehabilitation company (CRC), were non-smokers and used fewer substances and fewer health services than those not followed up.

Participants consented to, and we were able to, access and link the probation service and reconviction data for 90% of respondents. Given the challenges and potential bias in following up probation service users to fill in questionnaires, the feasibility of using existing PNC data to assess reconvictions among our participants 6 months (or more) after completing their CO is a valuable finding to inform future studies. We were able to collect cost data on health and social care use and transform the CORE-OM scores into CORE-6D, allowing derivation of QALYs.

Our qualitative study identified different uses of CFs as part of COs by probation services, with some formally recognising the CFs as rehabilitative and others misinterpreting them as punitive. By combining the findings from the qualitative study with existing theories on care farming and desistance, and the logic model developed from the review, we were able to construct a logic model specific to probation service users (*Figure a*). Only the process and final outcomes measured in the published studies included in the systematic review are shown in *Figure a*. It is likely that outcomes identified for other user groups are relevant to probationers but, as they have not been assessed in the literature, they are not included in *Figure a*.

To gain service user involvement, we used an existing probation service user group. This limited involvement, establishing and supporting our own service user group, may have increased user engagement.

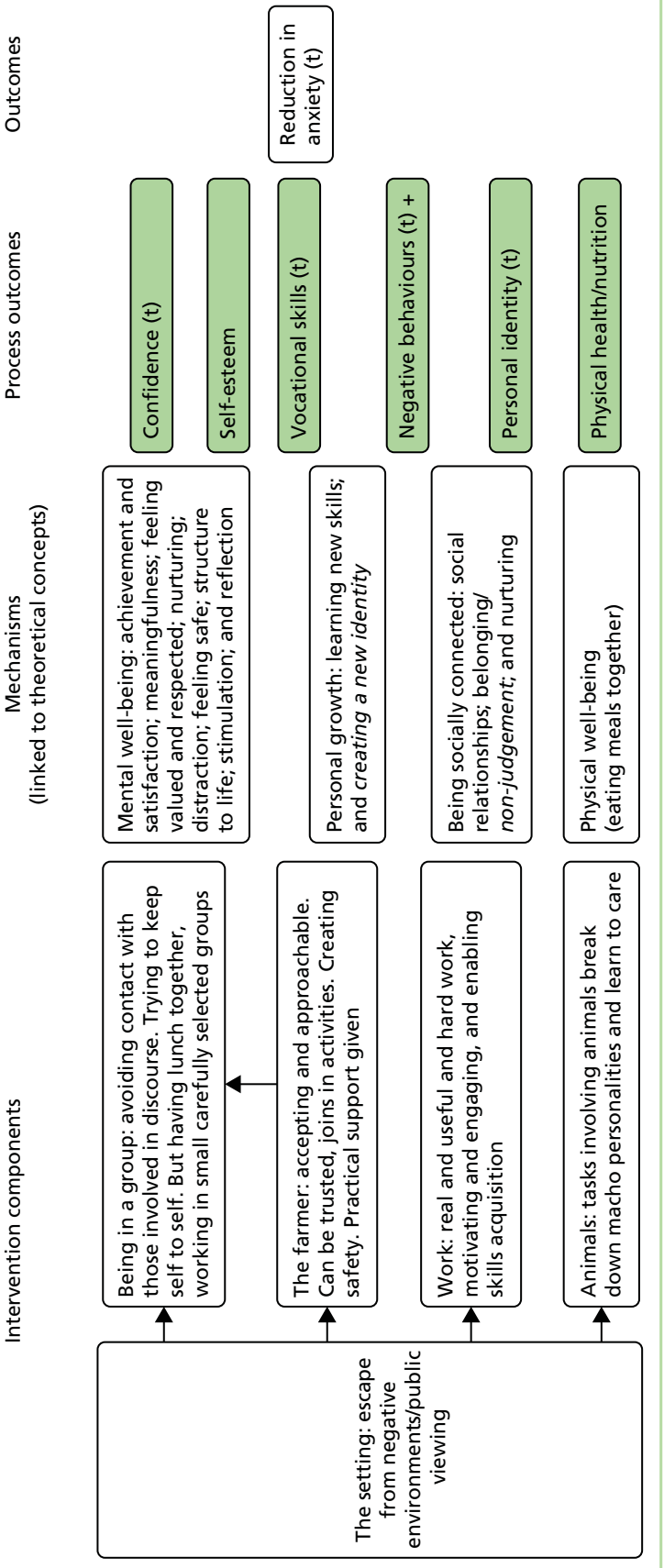

FIGURE a Logic model on care farming for probation service users. t, theory based.

Conclusions

Our study was conducted at a time of transformation within probation services. These system changes, rather than service user resistance, undermined recruitment to the study. We therefore conclude that recruitment would be feasible in a more stable probation environment. However, retention among probationers is challenging. Using reconvictions as a main outcome measure, utilising existing police data rather than follow-up questionnaires, is one solution to retention challenges. We found significantly worse health and risk of reoffending among those at CFs, reflecting the use of CFs by probation to manage challenging offenders. Propensity analysis provides a viable method for comparison despite differences in probationers at CFs and comparator sites. Although randomisation is not possible within probation, a sufficiently powered natural experiment is feasible and would be of value to commissioners.

Our review identifies the aspects of care farming that may potentially improve health and well-being and our logic models present the mechanisms that may lead to the changes for different client groups. The limited quantitative evidence to test the impact of the mechanisms of health and well-being outcomes underlines the need for well-designed and -powered studies.

The study provides lessons for the newly formed CRCs, particularly on how to maximise the rehabilitative nature of CO site allocations and to ensure that women have equal opportunities with men to benefit from the potential advantages of CFs. For care farmers, adapting activities and organisational culture to meet the needs of different service user groups may well be a way to improve outcomes for service users. Consideration of how male-dominated environments may impact on the participation of women in care farming is an area that could be usefully addressed by CFs.

Study registration

This study is registered as CRD42014013892 and SW2013–04 (the Campbell Collaboration).

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