



Nature-based activities for people living with dementia: a nice day out or a matter of human rights?

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Manuscripts

	Mean score (range) out of a possible 35		Significant difference at 95%
	Pre	Post	
All valid* scores (between subject)	19.22 (7-35) n=99	16.05 (7-27) n=108	Significant improvement p<0.001, t=1.97 (16.5% improvement)
All valid matched** scores (n=94) (within subject)	19.28 (7-35)	16.02 (7-26)	Significant improvement p<0.001, t=1.99 (16.9% improvement)

* valid = all seven statements on the SWEMWBS were answered. ** matched = an individual had a valid score for both the pre and post measures for the same session

	Mean score (range)		Significant difference at 95%
	Pre	Post	
All valid scores (between-subject)	18.30 (7-30) n=54	15.15 (7-23) n=55	Significant improvement $p < 0.001$, $t = 1.98$ (17.2% improvement)
All valid matched scores (n=53) (within-subject)	18.28 (7-30)	15.00 (7-21)	Significant improvement $p < 0.001$, $t = 2.01$ (18.0% improvement)

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	Mean no. days active (range)		Significant difference at 95%
	Pre	Post	
All responses (between-subjects)	1.91 (0-7) (n=89)	2.01 (0-7) (n=88)	No significant difference $p=0.76$, $t=1.97$ (5.3% improvement)
All matched responses (n=74) (within-subjects)	1.58 (0-7)	2.12 (0-7)	Significant improvement $p<0.001$, $t=1.99$ (34.2% improvement)

Working with Older People

	Mean no. days active (range)		Significant difference at 95%
	Pre	Post	
All responses	3.96 (0-7) SD=2.58 n=53	4.21 (0-7) SD= 2.53 n=51	No significant difference p=0.63, t=1.98 (6.1% improvement)
All matched responses (n=49)	3.80 (0-7) SD=2.57	4.21 (0-7) SD=2.51	No significant difference p=0.07, t=2.01 (11.0% improvement)

Working with Older People

Outcome	Indicator	Target
1. The creation and development of a strong network of partners who can work together to increase the supply of nature-based adventures.	1.1 Number of licenced partners	4 organisations
	1.2 Number of delegates trained	32 (8 per partner)
	1.3 Number of locations of delegates	32 (working in unique postcodes)
2. Increase in delegates understanding of dementia and confidence in using nature based approaches in supporting people to live well with dementia.	2.1 Delegate dementia awareness/knowledge	Average 10 point improvement
	2.1 Delegate confidence	Improvement on 0-10 scale
	2.3 Delegate satisfaction	Average 10 point improvement on Job Satisfaction scale
3. Increase in local provision of 'dementia friendly' or 'dementia inclusive' outdoor activities and in the number of people with dementia taking part.	3.1 Number of outdoor activities	12 per delegate per year (12 x 32 x 3 = 1,152)
	3.2 Number of people taking part	24 unique individuals per year, per delegate (24 x 32 x 3 = 2,304)
	3.3 Range of outdoor activities	A diverse range of offered outdoor activities.
4. Maintained/improved wellbeing for people taking part in regular activities.	4.1 Self-reported wellbeing	Stability or improvement in SWEMWBS score for people with dementia; reflective indication via qualitative interviews with people with dementia
	4.2 level of physical activity	Self-reported increase in the number of days per week when undertaking physical activity
	4.3 Carer coping	Stability or improvement in SWEMWBS score for carers; reflective indication via interviews

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INTRODUCTION

As humans we have an innate affiliation with nature and other forms of life. The psychiatrist Carl Jung referred to the natural world as ‘the nourishing soil of the soul’ and believed that we have a symbiotic relationship with nature that provides us with emotional and spiritual nourishment (Noone et al., 2015). Similarly, the biologist Edward Osborne Wilson proposed the Biophilia hypothesis over 30 years ago (Wilson, 1984), asserting that human beings have an evolutionary drive to interact with nature that makes it essential to our psychological health. This approach has been developed by environmental psychologists such as Kaplan (1995), who suggested that the natural environment addresses an innate need for contemplation, restoration and distraction.

In recent years a growing body of evidence has highlighted the salutogenic effects of nature in terms of improved quality of life and wellbeing (Mensah et al., 2016; Russell et al., 2013). Several systematic reviews have identified a diverse range of direct benefits such as reduced blood pressure, lowered depression/anxiety, greater social interaction, and increased happiness (Bragg and Atkins, 2016; Natural England, 2016; Barrett et al. 2019). The recent focus on the value of connecting with nature is demonstrated by the popularity of forest bathing, a Japanese initiative which has been demonstrated to deliver a range of psychological, physiological and physical benefits (Park et al. 2010). There is also a developing evidence-base to suggest that interaction with nature is associated with specific benefits for older people, including increased self-reported happiness, improved sleep, reduced anxiety, and greater cognitive function happiness score after each session. Research has also shown that horticultural therapy can improve social connectedness (Ng 2018).

There is growing interest in and evidence for the benefits of connecting with nature for people living with dementia, sometimes known as ‘green care’ (De Bruin et al. 2009), including reduced stress, improved sleeping and eating patterns, better mood, reduced agitation, positive reminiscence and even enhanced cognition (Clarke et al. 2013; Whear et

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3 al., 2014). The value of connecting with nature may be in part due to opportunities for
4 relaxation and social interaction, increased independence, and maintaining specific outdoor
5 hobbies and activities despite living with dementia (Olsson et al. 2013; Hendriks et al. 2016).
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7 In some care settings there is also evidence of benefits for staff who are able to facilitate
8 connections with nature, including greater job satisfaction (Evans et al. 2019).
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13 Despite these widely recognised benefits, many people living with dementia have limited
14 opportunities to connect with the natural world (Mapes et al. 2016), often due to concerns
15 about safety and security and the inaccessibility of some outdoor spaces. These barriers are
16 particularly common in many long-term care settings such as care homes, where they raise
17 issues of human rights and inequality (Argyle et al. 2016).
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23 This paper reports on a project that aimed to facilitate connections with nature for people
24 living with dementia by piloting a social licence approach across the United Kingdom.
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30 **ABOUT 'DEMENTIA ADVENTURE IN A BOX'**

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32 Dementia Adventure is a social enterprise with an overarching aim to build long term
33 innovative and mutually beneficial partnerships which directly increase the choices on offer
34 for people living with dementia – specifically connecting them to outdoor nature-based
35 adventures through the support of confident, trained Dementia Adventure leaders.
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38 Dementia Adventure received funding from the Big Lottery to pilot a social franchise, named
39 Dementia Adventure in A Box (DAiAB), across five licensee organisations over the period
40 2017-2020. Through operational activity delivered locally, jointly branded and delivered
41 with skilled, experienced and confident staff in partner organisations, the aim was to share
42 innovation, share financial modelling and harness local resources for the benefit of more
43 people with dementia. Under the social licence scheme, an entry level licence ran for 12
44 months and provided a range of benefits including course materials, face-to-face staff and
45 volunteer training days, specialist online resources, branded materials and regular reviews.
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55 Five organisations with diverse structures and operating practices were recruited by
56 Dementia Adventure to be delivery partners in the project. One withdrew at an early stage,
57 which left four: A provider organisation operating over 500 care homes mainly in the UK; a
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3 UK care home provider operating a network of over 70 schemes that support people to live
4 independently in their own homes; a network who organise a range of activities delivered
5 by volunteers, across the UK, with the aim of getting disadvantaged people outdoors in
6 order to improve the health and wellbeing, re-engage with the community and learn new
7 skills; and a charity who promote the therapeutic use of farming practices and care farms to
8 provide health, social or educational care services for individuals from one or more of a
9 range of vulnerable groups.
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17 Each delivery partner committed to identifying a minimum of eight delegates across their
18 organisation, enabling the work to be piloted in over 32 localities. A comprehensive training
19 programme was developed for delegates, through a mixture of blended on and offline
20 method of delivery. Armed with new knowledge and confidence, delegates from each
21 organisation aimed to implement and establish a programme of regular outdoor activities
22 that would leave a legacy of support for people living with dementia. The participating
23 organisations also agreed to provide sufficient evaluation data sets in order to learn, adapt,
24 and collate evidence to support a sustainable licence model.
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32 The Big Lottery grant included funding for an evaluation of this pilot project, which was
33 carried out by a team from across two universities in England, combining expertise in
34 dementia research with that in green exercise research.
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41 **METHODS**

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44 The evaluation adopted a mixed methods approach in order to assess the impact of the
45 social licence pilot and its' overarching aim to give people living with dementia
46 opportunities and support to access the natural environment, leading to improved health
47 and wellbeing. The evaluation was commissioned to measure progress against the project
48 aims and to explore in detail the process of implementation with project partners and
49 individual delegates, the outdoor activities they provided and the resulting impacts on
50 people living with dementia and their family carers. A range of core project outcomes,
51 indicators and targets were agreed in the form of an evaluation framework.
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3 As shown in Figure 1, a combination of bespoke and commonly-used tools were used to
4 measure progress against each indicator across the life of the project. These included a
5 modified version of the Shorter Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al.
6 2007) (SWEMWBS; described below), Milton et al.'s (2010) single-item self-report measure
7 of physical activity, the Dementia Knowledge Assessment Scale, the Generic Job Satisfaction
8 Scale, and a question exploring delegate confidence. These tools were administered by
9 Dementia Adventure trainers and provider organisation delegates and coordinators and
10 returned to the evaluation team for analysis and reporting. Additional data were collected
11 from delegates and coordinators including the number of delegates and their geographical
12 locations, attendance at training events, the number and types of activities hosted as part of
13 the project, and the number of participants attending each activity.
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27 Figure One Here
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32 **Developing a dementia-friendly SWEMWBS measure**

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34 Following discussion with a special interest group comprising people living with dementia
35 and other stakeholders, it was decided that a modified version of the SWEMWBS should be
36 used to obtain mental wellbeing data from attendees. These modifications focused on
37 words, phrasing and presentation, in order to deal with issues around validity of data from
38 reflective reporting, and to avoid causing distress arising from unclear interpretation, poor
39 memory, and condition prognosis. Additionally, given the short and medium term memory
40 difficulties associated with dementia, the need to recall across the past two weeks (as per
41 the original scale) was felt to require adjustment.
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50 Specifically, it was felt that SWEMWBS' wording and phrasing of items around happiness,
51 feeling worthwhile and looking to the future, could be confusing and/or inappropriate for
52 some people living with a progressive condition such as dementia. Therefore alternative
53 wording and phrasing was developed to be representative of the immediate moment,
54 rather than reflective across the past two weeks as per the original scale, e.g. 'I've been
55 feeling relaxed' was modified to 'I am feeling relaxed'. The original SWEMWBS response
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3 continuum of 'None of the time' through to 'All of the time' was replaced by a more
4 immediate/momentary continuum of 'Agree strongly' through to 'Disagree strongly'. To
5 help this continuum be more easily understood, simple, coloured 'smiley faces', were added
6 above the headings 'Agree strongly' (a green, happy face), 'Neither agree nor disagree' (a
7 yellow, neutral emotion face), and Disagree strongly (a red, sad face).
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13 The final list of items included in this modified version of the SWEMWBS was: I feel good
14 about the future; I can be helpful to other people; I am feeling relaxed; I can deal with
15 problems well; I can think clearly; I enjoy being with other people; I can make up my own
16 mind about things. The original SWEMWBS was used to obtain data from carers.
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21 **Case studies**

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23 In-depth case study work was also carried out by the evaluation team through research
24 interviews with project coordinators and delegates at five project locations to identify the
25 facilitators and challenges to delivering the project, and with people living with dementia
26 and their carers to explore their experiences of taking part in project activities. The five case
27 study sites comprised two care farms, a care home, a woodland activity centre, and a
28 community activity scheme designed to enable older people to live independently in their
29 own homes for as long as possible.
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38 Quantitative data were analysed using descriptive and comparative statistics, while
39 qualitative data were subject to a form of thematic analysis that might best be described as
40 'reflexive' (Braun and Clarke, 2020). Approval for the project was granted by a research
41 ethics committee at the University of Worcester. Informed consent was obtained from all
42 participants.
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48 **FINDINGS**

49 **Project delivery**

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52 A delegate training programme was delivered consisting of five individual days, each with a
53 different focus as follows: Day One – Thinking differently about dementia; Day Two – Risky
54 business; Day Three – Creating outdoor experiences; Day Four – Nature in mind; Day Five –
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3 Train the trainer. These days were delivered over a 20-month period on multiple occasions
4 in various locations in order to reach as many delegates as possible.
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8 A total of 64 delegates were involved in activities across 44 locations. 25 delegates left
9 during the project. Of these, five left their organisation and were replaced (this includes two
10 who went on maternity leave), five left and were not replaced, and 15 left the project for
11 unspecified reasons. 58 delegates took part in an evaluation of the training they received,
12 and activity information was received from delegates at 31 locations.
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18 913 activity sessions were held as part of this project, comprising 164 one-off sessions and
19 749 sessions that were held as part of 33 series of activities. 2490 activity attendances were
20 recorded by people living with dementia and 582 by carers.
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24 35 people with dementia and 15 carers who attended activities consented to be part of the
25 evaluation. 126 other people attended activities but were not part of the evaluation, either
26 because delegates did not try to recruit them to the evaluation or they declined to take
27 part. On average for the evaluation participants, the people with dementia were aged 81
28 years and 10 months (SD = 7 years and 3 months), 51% were female, and everyone was
29 White British. The average age of the participating carers was 74 years and 2 months (SD=11
30 years and 6 months), 80% were female and everyone was White British.
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37 A wide variety of activities were reported as part of the DAiAB evaluation, although not all
38 appeared to match the definition of 'nature-based' activities. For example, activities that did
39 not appear to be nature-based ranged from museum visits, ten pin bowling and dementia
40 friendly cinema sessions through to visiting a fete or taking a walk to the high street. In
41 terms of nature-based activities, some were held indoors such as making bird feeders,
42 animal visits to care homes, or flower arranging sessions, while outdoor sessions included
43 nature walks, farm and woodland activities, gardening and visits to the beach.
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51 **The impact of the training**

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54 Training evaluation forms were completed by 68 delegates. Most attended only part of the
55 training programme, with only 11 delegates attending all five training days. Of the 68
56 delegates, 58 gave consent for their completed forms to be included in the evaluation.
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59 Additional one-off training days were delivered for 64 delegates who had not attended
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3 initial training or who had joined the project after the training programme had been
4 completed. These days were not included in the evaluation because they adopted a format
5 that was substantially different from the core training programme.
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9 Dementia awareness among delegates was measured using the Dementia Knowledge
10 Assessment Scale (DKAS), a 27-item scale looking at what people know about the most
11 common forms of dementia. Any delegate who missed out more than two questions was
12 excluded from the analysis to avoid their scores skewing the results. Possible total scores for
13 the DKAS range from 0 to 54, and the project target for this impact was an average 10-point
14 improvement. After the first training day the DKAS scores improved across all delegates
15 evaluated. The average improvement was 7 points and was statistically significant
16 ($p=0.0003$). When considering the smaller group of delegates who completed the whole
17 five-day programme, the improvement in DKAS scores was also statistically significant
18 ($p=0.002$), and the average improvement was greater than the target increase at 13.2
19 points.
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23 Delegates were asked to rate themselves on a 1-10 scale in response to the following
24 statement: 'I am confident in using risk/benefit assessment in my own role to encourage
25 contact with nature and experience of the outdoors'. When considered across the whole
26 five-day training course there was a statistically significant improvement in average scores
27 from 7.1 to 9.1 ($p=0.004$).
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31 Delegate satisfaction was measured using the Generic Job Satisfaction Scale, where the
32 range of possible scores is 10-50. In order to maximise the sample size, the criteria for
33 inclusion was delegates who completed the measure and obtained a valid score on Day 1
34 and at least one other day. The latest day with a valid score was used for each delegate. This
35 resulted in a group of 23 delegates. For this group the mean satisfaction score decreased
36 slightly from 39.0 to 37.8, but this decrease was not statistically significant ($p=0.4$). It
37 should be noted that this score is contributed to by all aspects of the delegates' jobs – not
38 simply their involvement in this project. When looking at the responses for this group in
39 more detail, at the start of the course the areas rated less positively were those relating to
40 feeling valued, such as wages, receiving recognition, job security and management showing
41 concern. Almost all areas saw a decline, although as the responses were captured on
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3 different days for different delegates it is not easy to get a clear picture of the overall
4 impact.
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7 **The impact of taking part in activities**

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10 As can be seen from Table 1, there was a statistically significant improvement in mental
11 wellbeing for participants with dementia following attendance at a DAiAB activity session.
12 This was the case with between-subject analysis when all completed evaluations were
13 included, and also in terms of within-subject analysis when only those participants with both
14 a pre and post score for the same session were included.
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23 Table One here
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28 Similar improvements were seen for family carers following attendance at a DAiAB activity
29 session as can be seen from Table 2. As for people with dementia, this was the case with
30 between-subject analysis when all completed evaluations were included, and also when
31 within-subject analysis was conducted and only those with both a pre and post score for the
32 same session were included.
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41 Table Two here
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46 Participants with dementia were also asked how many days of the week they had done at
47 least 30 minutes of physical activity that was enough to raise their breathing rate. There
48 were some inconsistencies in how this information was collected. For example, some
49 participants were asked the question at the start, middle and end of a series of activities,
50 while others were asked immediately before and after a single activity session. However,
51 with this proviso, the findings as presented in Table 3 suggest that people were more active
52 following the DAiAB sessions. It is interesting to note that even with the sessions people
53 were still relatively inactive, with a mean of just two days a week. Sessions increased for
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3 (within-subject matched responses) participants' self-reported weekly activity levels by 0.5
4 days, to just over 2 days. This indicates that the DAiAB sessions were perceived by attendees
5 to be physically active, and formed an important proportion of participants' weekly physical
6 activity.
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11 For carers, Table 4 indicates that there was no significant change in physical activity levels
12 associated with taking part in project activities. However, they were more active overall,
13 being active an average of four days a week compared to two days for people with
14 dementia.
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22 Table four here
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28 The case study interviews with participants with dementia, family carers and delegates
29 highlighted the extent to which participants with dementia appeared to enjoy and benefit
30 from activity sessions that took place as part of the project. These impacts are reported here
31 under five headings: enjoyment of outdoor spaces, meaningful engagement in activities, the
32 social environment, improved wellbeing, identity and independence, and promoting choice.
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37 ***Enjoyment of outdoor spaces*** 38

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40 Interviews with participants and delegates highlighted how much people with dementia
41 enjoyed the activities that were organised during the project and identified a range of
42 benefits that they associated with taking part.
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46 *I enjoy that but, I enjoy my farm, mostly...this is the highlight of my week...I'd come*
47 *here 5 days. (Participant)*
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51 For some participants, being outdoors was in itself a large part of the experience.
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53 *Oh, I love outside. Outdoors is marvellous really. (Participant)*
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56 *Otherwise I think they're just—they're stuck in. The same sort of routine all day every*
57 *day, and there's no, yeah no I think it does—it's nice for them to get some fresh air.*
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3 *Different scenery, different people. I think it does them good. (Care home activity*
4 *coordinator)*
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8 **Engagement in meaningful activities**

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10 There was also a suggestion that the project was offering activities that were more
11 meaningful and personal for participants than those provided in other settings.
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15 *Activities are not created for the participants, they are what needs to happen at the*
16 *care farm on a daily basis to make sure it runs smoothly. People enjoy being outside,*
17 *feeling useful, and knowing that what they are doing has a purpose. (Delegate)*
18
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21 There were numerous accounts of how taking part in project activities promoted
22 engagement for participants.
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26 *Member C came alive at Exbury gardens remembering his wife's garden and saying*
27 *how proud he was of her. While on the boat trip he remembered their days boating*
28 *together. His wife and he enjoyed giggling on a 'date together' while I fuffed with all*
29 *the boring tasks around them, leaving them to be a couple again instead of being*
30 *carers. (Delegate)*
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36 *We have been amazed by the way a number of our 'farm workers' (participants) have*
37 *integrated and responded to the therapeutic environment we have created.*
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40 *Conversation has increased across the board, confidence and self-esteem appear to*
41 *have risen and we get a lot of smiles. (Delegate)*
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44 **Positive social environment**

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46 The social aspect of project activities was raised as an important benefit to those living with
47 dementia, by participants themselves, carers and delegates. It was felt by participants with
48 dementia that the atmosphere and support that they received whilst there was what 'made'
49 their visits for them.
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54 *I mean I just love—the people are nice, you get on with everyone you—I mean you*
55 *see here today, everyone is yarning and that...I mean the atmosphere is brilliant.*
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58 *(Attendee)*
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3 In some locations the social benefits that arose from the project appeared to extend beyond
4 the actual activities, whereby delegates became part of a wider support network for
5 participants.
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10 *It was our people who went to his home, who phoned him that evening, I phoned him*
11 *the following morning, we phoned his daughter, who kept phoning him to check he*
12 *was alright, we phoned his wife, just to make sure that there was this continuity, and*
13 *it's much more than a day-job, and that's what we believe that this is. It's holistic,*
14 *and you have to be, it's not a 9 to 5. (Delegate)*
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19 **Improving wellbeing**

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22 Many delegates spoke about the benefits of the project in terms of improving general
23 wellbeing and mood of participants.
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27 *We can see the looks on their faces. I see, the lady that's shaking and nervous and*
28 *doesn't really want to be there, and you know, within no time at all she's sat down*
29 *and she's enjoying the activity and she's chatting to someone next to her, and she's*
30 *fine. (Delegate)*
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35 Some delegates suggested that there were specific benefits for people living with dementia.
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38 *Something that struck me is that there's a real emotional connection to actually*
39 *being at the farm...what I'm basing that on is the feedback from the carers and the*
40 *volunteers, and what they've told us about the impact that being at the farm has had*
41 *and that people, erm some of the participants are remembering being at the farm*
42 *and saying "when are we going again?". Which is erm, which is huge for someone*
43 *with dementia because they don't—you know the memory, short-term erm recent*
44 *memory is horrendous. So, actually, you know that is where I'm thinking, "actually*
45 *that—that's having a massive impact, erm emotionally". Yeah for them to remember*
46 *it. (Delegate)*
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54 **Maintaining identity and independence**

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3 Delegates also suggested that it was important to support a sense of identity for
4 participants, partly by enabling them to continue using the skills they had developed over
5 their lives.
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10 *He was up here he was painting this wall, erm and we had someone else doing the*
11 *high bits and the low bits and he was doing all the middle bits and, at the end of it he*
12 *was covered in paint. And at the end of it he said "I love that". He said "I haven't*
13 *done that for years, I felt like a man". (Delegate)*
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17 This was reflected in a comment made by one carer.

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20 *He used to be a chef. And a lot of the time, they let him in the kitchen and he makes*
21 *soup so all the people who are there that day they all have soup and a bread roll for*
22 *lunch, that he's made and he comes home and says "oh best soup ever this week".*
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25
26 *(Carer)*
27

28 In many locations there was an emphasis on enabling participants to have a greater sense of
29 independence, which was appreciated by participants.
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33 *It's just the freedom that I have. (Attendee)*
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35 **Promoting choice**

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38 Many of the positive impacts of the project appeared to be based on a flexible approach
39 that recognised individual preferences and abilities.
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43 *I think no matter what we do at the care farm we're always flexible because*
44 *people...every person is different, aren't they? No matter what sort of illness or*
45 *disability they're living with they're a different...you know, they are their own*
46 *individual person. So, it's about being flexible to their likes and dislikes and their*
47 *needs and their abilities. (Delegate)*
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53 *What we have found works best is that we treat every person as an individual and we*
54 *work with them. We don't ask them to do things they are not interested in and we*
55 *always work alongside (Delegate)*
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59 Several examples were given of how this approach is put into practice.
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[Name] is amazing for her age, she has durable batteries. She loves physical work, particularly with the larger animals. She pushes wheelbarrows, mucks out stables, replaces the hay and straw bedding, carries buckets of water and leads the donkeys and alpacas for walks. She also enjoys a cuppa and a chat but her perfect day is to keep busy and be outside. (Delegate)

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[Name] is an ex-chef. He has Frontal Lobe Syndrome and had a stroke (right hand side) about 10 years ago. He uses a motorised buggy to get around as his mobility is limited. He loves to cook and most weeks we work with him to make soup, chutney, jam, pickles etc. Every two or three weeks we get him out of the kitchen and he helps water the flowers and veg and has helped with some painting. He loves to chat and we have some great conversations around the cooker or whilst peeling potatoes. (Delegate)

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In another location participants with dementia were encouraged to make their own choices and do what they can for themselves, whether that was a physical activity such as bowling, choosing their meal at lunchtime or helping to pay during an outing.

33 34 35 **Discussion**

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Our evaluation suggests that the Dementia Adventure in a Box project met or exceeded most of its indicator targets. For example, forty-four delegate locations were established, a total of 3072 people attended activities, a diverse range of activities were held, and there was a significant increase in wellbeing scores for both the people living with dementia and the carers who took part. There was also an increase in levels of physical activity associated with taking part in the project.

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For some other indicators the project came close to meeting its targets. 913 activities were held as part of the project against a target of 1152. Delegate Job Satisfaction was the one indicator that saw a noticeable decrease when measured before and after attending training, compared with the target of a 10-point improvement. This is a finding that merits further exploration.

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A wide range of activities were hosted as part of the project with 913 being recorded, which was slightly lower than the project target of 1152. Approximately 70% of these were nature-

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3 based. Over 90% of the nature-based activities occurred outdoors, while the remainder
4 entailed bringing the outdoors inside. A small number of activities did not appear to be
5 specifically nature-based, such as ten pin bowling or visits to museums. There was a notable
6 distinction between new activities for people living with dementia that were arranged as
7 part of the project and those that were already taking place but had not necessarily
8 included people living with dementia, but which people with dementia were encouraged to
9 attend as part of the project.

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12 Qualitative measures used in the research indicated a significant improvement in mental
13 wellbeing for participants with dementia and family carers following attendance at a DAiAB
14 activity session. There were also increased levels of physical activity for people with
15 dementia who participated in project sessions , but not for family carers.

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18 Research interviews with people living with dementia, family carers and project delegates
19 indicated that participants enjoyed activities based on connecting with nature. Being
20 outdoors appeared to be a major factor in the experience, along with taking part in activities
21 that were meaningful such as helping with essential tasks on a farm. The social aspect of
22 taking part was important for participants with dementia and for family carers.

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35 *He was sitting at home before, quite isolated or he'd just go out on his scooter and*
36 *drive around he wouldn't speak to anybody. (Carer)*
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39 A range of benefits were reported including improved mood, increased feelings of
40 independence and a reinforced sense of identity. The latter appeared to be linked to
41 involvement in activities linked to a previous occupation or interest, such as asking a
42 participant who had been a chef to help with food preparation. This was based on a person-
43 centred approach that accommodated individual life stories, preferences and abilities. For
44 example, one care farm attendee was asked to help with activities that matched her interest
45 in larger animals and her enjoyment of physical exercise.

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48 One participant even suggested that being involved in the project had improved his
49 memory.
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I seem to remember things like that I didn't before...I did used to forget things. But I think some of it could be the fact that because I wasn't doing much, as my son says to me like "if you don't use it you lose it". (Participant with dementia)

Overall, the findings of this research confirm previous evidence for the positive impact of connecting with nature for the wellbeing of people living with dementia (e.g. Natural England, 2016; Barrett et al. 2019; Mapes et al. 2016). We have presented new evidence for the importance of a person-centred approach based on individual preferences and abilities, which can be key to promoting engagement and reinforcing a sense of personal identity. This topic merits further research, including the specific biological benefits of connecting with nature (Wong et al. 2021; Ng et al. 2018).

CONCLUSION

This paper has reported on a successful project to pilot a social licence, which achieved the overarching outcome of giving people living with dementia opportunities and support to access the natural environment, leading to improved health and wellbeing. Whilst there will doubtless always be perceived challenges in getting people outdoors, this study has demonstrated that with the benefit of training, together with finding the right person-centred 'fit' with the outdoors, the solutions follow. Understanding and witnessing the benefit to people living with dementia and those that care for them is often the catalyst which is needed to help overcome perceived barriers. For someone living with dementia, simply being 'part of nature' is often enough but given the opportunity to engage in activities which have meaning, congruence and visible outcomes supports their identity, establishes their place in the world and provides a way for them to contribute to that world. Access to the outdoors is not a luxury; it is not a 'nice to have', it's a basic human right and one which has become increasingly important in light of restrictions that have emerged as a result of the COVID19 pandemic.

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