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**Which elements that are commonly included in social prescribing activities may best improve psychological wellbeing?**

**Karen McKenzie, Ryan Diston, Kara Murray**

**Corresponding Author**

Karen McKenzie, Department of Psychology, Northumbria University, City Campus, Newcastle upon Tyne, NE18ST, UK. Email: [k.mckenzie@northumbria.ac.uk](mailto:k.mckenzie@northumbria.ac.uk)

## **Key points**

- Nurses are increasingly becoming involved in social prescribing.
- Little is known about which individual elements of activities are most effective.
- An activity that involved the elements of interaction with animals, engagement in green spaces and social interaction increased positive mood and decreased negative mood.
- Improved mood was predicted by the amount of time participants spent in social interaction.

## **Abstract**

Background: Nurses are becoming increasingly involved in social prescribing – the use of non-medical interventions, such as the use of community resources. A broad range of activities can be prescribed, but little is known about which elements are most effective in improving emotional wellbeing.

Aim: This pilot study aimed to evaluate which elements of an activity were the best predictors of improved positive mood and decreased negative mood

Method: Fifty-one visitors to an inner-city farm completed a measure of positive and negative mood state on entry to and on leaving the farm. In addition, they recorded the time spent in different types of activity while there.

Results: The activity that participants spent most time engaged in was in the café, followed by interacting with the animals and spending time in the gardens. Significant increases in positive mood and decreases in negative mood were found on leaving the farm, as compared with entering. Time spent in the café was the only significant independent predictor of changes in positive mood.

Discussion: These results indicate that, regardless of what activities are engaged in, visiting the farm, on average, increased positive mood and reduced negative mood. Only café time significantly predicted change in positive mood, indicating that this was the main contributing factor towards the increase in PA after visiting the farm. Implications for nurses are discussed.

## **Introduction**

The use of non-medical interventions, such as the use of community resources is becoming increasingly common, for both preventing health issues and as a way of addressing existing conditions. While social prescribing was initially conducted by doctors, more recently this has been extended to include other clinical staff, including nurses (Chatterjee et al, 2018). The range of activities that have been prescribed is broad and may include nature-based activities, such as walking groups and green gyms, exercise prescriptions (e.g. dance, swimming) and activities that attempt to reduce isolation and link people with others in their local communities (Chatterjee et al, 2018; Leavell et al, 2019; Thomson et al, 2015).

A series of reviews have found somewhat mixed results of social prescribing activities, with some studies reporting a range of positive outcomes for participants, including improved mood and psychological well-being and reductions in negative mood, anxiety and depression, while others have not (e.g. Husk et al, 2020; Leavell et al, 2019; Pescheny et al, 2019; Thomson et al, 2015). Not all studies, however, have been found to have used robust methodologies (see Bickerdike et al, 2017; Chatterjee et al, 2018), and a complicating factor is that it is rare for referred patients to only receive a single therapeutic approach or to undergo an activity that only has a single element (Polley et al, 2017).

As an example, human-animal interaction (HAI), such as watching, petting, or playing with animals, human social interaction and visiting green spaces are commonly interconnected activities

that display a positive effect upon affective/emotional well-being. For example, a series of recent reviews have found that accessing green space can have a positive impact on the mental health of adults and children (Easdon et al 2019; McCormick, 2017; Wendelboe-Nelson et al 2019). Similarly, social relationships have been found to be important for the psychological wellbeing of the general population as well as for particular groups such as people with disabilities (Tough et al, 2017). This also seems to be the case for social interactions with those with whom we have more distant relationships (Sandstrom and Dunn, 2014). In addition, a literature review by Krause-Parello et al (2019) found that human–animal interactions had both psychological and physical benefits. Pet therapy, which uses such interactions for a therapeutic purpose, has been found in a recent meta-analysis to result in reduced anxiety and stress (Ein et al, 2018).

As can be seen all three aspects have been found to have benefits for psychological wellbeing and, as they are likely to co-occur (Beetz et al, 2012; Dadvand, 2016; Sugiyama, 2008), there may be an interaction effect between their benefits (Maller et al, 2009). This co-occurrence makes it difficult to know which aspects of a given intervention are most effective. The current research aims to investigate whether HAI, social interaction and being in green spaces interact to produce improved emotional wellbeing, and which element has the greatest contribution, in order to help inform nurses' decisions about which type of social prescribing activities may be most beneficial.

## **Method**

### **Design**

Ethics approval for the study was obtained from the first author's university ethics committee. An observational approach was used to investigate the overall effect of visiting an inner-city farm in the North-East of England and the interaction effect between HAI, green spaces and socialising upon emotional wellbeing. The farm offers visitors the opportunity to access garden grounds and to

observe, touch, feed and interact with animals, such as cows, sheep, pigs and pet smaller animals such as rabbits. The farm also has a café.

### **Participants**

Participants were 51 visitors (31 females, 20 males) to the farm, with a mean age of 25.6 years (SD = 6.6), who gave consent to take part.

### **Measures**

**Psychological wellbeing:** The mood of participants was measured by the Positive and Negative Affect Scale (PANAS: Watson et al, 1988), which is a valid and reliable measure of positive (PA) and negative mood (NA) states. A higher PA and lower NA score indicates better mood.

**Activities:** Participants completed a short measure of the activities they had taken part in during their visit to the farm and how long they spent on each activity (in minutes). This was designed for the purpose of the study. The activities on the measure included; 'Animal time' to indicate HAI (which encompassed watching, petting or interacting with the animals), 'Garden Time' to indicate time spent in green space (which included walking through and sitting down in the gardens), and 'Café Time' to indicate time spent in deliberate social interaction (which involved time spent in more formal socialising while eating or drinking in the farm café). Participants also provided basic demographic information (age and gender).

### **Procedure**

Visitors to the farm were provided with information about the study and invited to take part at the point they entered the farm. Those who agreed to take part in the study were asked to provide written consent and complete the PANAS (Watson et al, 1988), on entry to and on leaving the farm.

They were also asked to complete the measure of activities during the course of their visit to the farm. The completed measures were returned to the researcher at the point the participant left the farm. Participants created their own code, which they were asked to put on all of the measures. This

allowed their PANAS responses on entry to and exiting the farm to be matched and collated with their responses on the activity measure. Changes in mood following the visit to the farm were indicated by PA change and NA change scores (obtained by calculating the difference in participant's scores on entry to and on leaving the farm).

No identifying details were gathered. Multiple linear regression analyses were used to assess whether the factors (Animal Time, Café Time and Garden Time) significantly predicted PA Change and NA Change.

## **Results**

The activity that participants spent most time engaged in was in the café (M = 19.3 minutes, SD = 7.7), followed by interacting with the animals (M = 14.3, SD = 9.9) and spending time in the gardens (M = 8.7, SD = 8.9). A significant increase was found on PA scores on leaving the farm (M = 28.2, SD = 5.6) compared with entering (M = 33.3, SD = 7.6);  $t(50) = -5.6, p < .001$ . Similarly, a significant decrease was found in NA scores on entry to the farm (M = 12.7, SD = 3.4), compared to leaving (M = 10.8, SD = 1.7;  $t(50) = 3.9, p < .001$ ). These results indicate that, regardless of what activities are engaged in, visiting the farm, on average, increases positive mood and reduces negative mood.

The multiple linear regression for PA Change score was significant ( $F(3, 79) = 3.6, p < .001; R^2 = .19$ ). Only café time significantly predicted PA Change ( $\beta = .37, p = .002$ ), indicating that this was the main contributing factor towards the increase in PA after visiting the farm. This suggests that the time that participants reported as being spent in socialising while eating/drinking in the café independently predicted improved mood (as measured by the PANAS change scores).

None of the activity scores significantly predicted NA change and the model was not significant.

## **Discussion**

The study aimed to explore the individual contribution of elements that are commonly included as aspects of social prescribing interventions, HAI, visiting green spaces, and social interaction, on participants' positive and negative mood states. Visiting the farm, as an overall activity, significantly increased positive mood and decreased negative mood. Only time spent socialising in the café significantly independently predicted the change in positive mood and none of the individual activities significantly predicted the decrease in negative mood. The former result is consistent with previous research that also found a significant positive effect of social factors upon mood within green spaces (Dadvand, 2016; Sugiyama, 2008), although these studies also found that time spent in green spaces significantly predicted affective wellbeing.

Our results indicated that HAI and time spent in green spaces did not independently significantly predict change in positive or negative mood. If the beneficial effect of green spaces and HAI are influenced by their association with increased social interaction, as suggested by previous research (Beetz et al, 2012; Dadvand, 2016; Sugiyama, 2008) then HAI and visiting green spaces could be used to help promote social interaction for adults who are socially isolated or withdrawn.

The results may, however, have also been influenced by external factors such as the weather or season. The present study took place in the winter when there was less vegetation in the garden. As research has indicated that more green space is related to larger effects upon psychological wellbeing (Sugiyama, 2008), the reduced amount of vegetation could explain why time spent in the garden did not independently significantly predict positive or negative mood in the present study.

A limitation of the research was that the participants were general visitors to the farm, rather than being referred as part of a social prescribing initiative, however, the activity contained elements that are commonly part of social prescribing interventions and the results are likely to be applicable to clinically referred populations, although further research is needed to confirm this. A further limitation is that, while participants were prompted to include their main periods of social interaction under the category of 'café time' it is likely that they also engaged in some form of social

interaction during the 'garden' and 'animal' activities'. In addition, the research had a small sample size, which limits the generalisability of the results.

#### *Implications for nurses*

The study, while not without limitations, suggests that social interaction, was an important predictor of improved positive mood, consistent with previous research which suggests that social interaction may enhance the benefits of other elements of interventions. With their increasing role as social prescribers, nurses may wish to consider which interventions are likely to maximise the opportunities for social interaction, and thereby increased positive mood, for their patients.

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