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# Factors associated with attendance, engagement, and wellbeing change in an Arts on Prescription intervention

Dr Rachel C. Sumner<sup>1</sup>, Prof Diane M. Crone<sup>2</sup>, Dr Colin Baker<sup>3</sup>, Miss Samantha Hughes<sup>2</sup>,  
Dr Elizabeth A. Loughren<sup>2</sup> & Prof David V.B. James<sup>3</sup>

<sup>1</sup> School of Natural & Social Sciences, University of Gloucestershire

<sup>2</sup> School of Health and Social Care, University of Gloucestershire

<sup>3</sup> School of Sport and Exercise Science, University of Gloucestershire

## Corresponding Author:

Rachel C. Sumner

University of Gloucestershire

Francis Close Hall

Cheltenham

Gloucestershire

GL50 4AZ

01242714595

[rsumner@glos.ac.uk](mailto:rsumner@glos.ac.uk)

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## Background

Arts on Prescription interventions have grown in number in recent years with a corresponding evidence base in support. Despite the growth and presence of these interventions, there have been no evaluations to date as to what factors predict patient success within these referral schemes.

## Methods

Using the largest cohort of patient data to date in the field ( $N=1297$ ), we set out to understand those factors that are associated with attendance, programme engagement, and wellbeing change of patients. Factors associated with these outcomes were assessed using three binary logistic regression models.

## Results

Baseline wellbeing was associated with each outcome, with higher baseline wellbeing being associated with attendance and engagement, and lower baseline wellbeing associated with positive wellbeing change. Additionally, deprivation was associated with attendance, with those from the median deprivation quintile being more likely to attend.

## Conclusions

The role of baseline wellbeing in each outcome of these analyses is the most critical associative factor. Whilst those that are lower in wellbeing have more to gain from these interventions, they are also less likely to attend or engage, meaning they may need additional support in commencing these types of social prescribing interventions.

**Keywords:** Arts on prescription; General Practice; Mental health; Primary health care; Social prescribing; Wellbeing

## Introduction

Social prescribing in primary care has three identified goals to decrease the broad economic and social impact of increasing mental health care needs: increasing individual wellbeing, increasing community wellbeing, and increasing social participation (1, 2). Arts on prescription (AoP) is a type of social prescription that refers patients to participate in courses of art. These interventions have been growing in recent years and are prevalent in the UK, and the evidence base is developing in other countries such as Australia, Ireland, Canada, and across Scandinavia (3, 4). AoP is distinct from art therapy in that it is not facilitated by trained therapists, but by artists. The goal is to support patients to participate in a creative group and engage in “art for art’s sake”. These interventions have been associated with increases in quality of life, health, and wellbeing (5-7); however the evidence to date mostly comes from qualitative sources, (8-10), or small-scale quantitative or mixed-methods evaluations, (5, 11). Recent figures from the UK show that one AoP programme alone has resulted in a 37% reduction in GP visits, and a 27% reduction in hospital admissions for referred participants (12).

To date, perhaps due to the dearth of a sufficiently substantive dataset, there has been no exploration into the factors that are associated with attendance, engagement and subsequent wellbeing change. As AoP is becoming more common, it is important to ascertain whether or not there are particular factors that are associated with patient outcomes, so that those that may require more support in participating in these interventions can be identified. Moreover, it is important to understand whether such initiatives are successful for those most in need. The present study has used data from the largest cohort of an AoP intervention to date, analysing those factors that are associated with attendance, engagement, and wellbeing change from a scheme in the South West of England: Artlift.

## **Methods**

**Design** The present observational study, using data from an ongoing AoP intervention, sought to explore the potential associative factors with salient outcomes (e.g. attendance, engagement, wellbeing change). Data were collected from participants along the course of the intervention, from referral to post-participation feedback. The data captured were: socio-demographic (e.g. age, sex, occupation, postcode), clinical (e.g. reasons for referral), and evaluative outcome (e.g. attendance, engagement, baseline and follow-up wellbeing) variables. The present study has been conducted to expand the present knowledge concerning such interventions, to provide for the first time an understanding of those factors that may be associated with patient outcomes. The study methods were approved by the National Health Service Local Research Ethics Committee and the Gloucestershire Clinical Commissioning Group, R&D Reference: 08/GPCT01/SE.

## **Participants**

Participants were recruited to the present study through providing consent at point of referral. Data from anonymised referral forms and self-completed participant packs from patients referred to the scheme between 2009 and 2016 ( $N=1297$ ) were used. Referrals were made originally by primary care based general practitioners, however, as social prescribing has expanded, patients were referred from a variety of primary care professionals. Referrals were for courses of creative arts ranging from painting, to ceramics, playwriting, and mosaics. Self-completed participant packs were provided by the artists, attributed with an anonymous participant code, and submitted to the researchers in quarterly cycles. For more detailed accounts of the referral and intervention processes see Crone et al (5, 13).

## **Measures**

### **Participant sociodemographic and clinical characteristics**

Demographic data concerning the patients' age, sex, occupation, and postcode were collected from the anonymised referral form, completed by referring practitioners. Participants' occupation groups were collapsed to provide meaningful categories for analysis: retired, in work or education (part time or full time), or not working. Patient postcodes were used to derive Index of Multiple Deprivation (IMD) quintile using the latest available UK Government statistics (14). Participants were referred for any combination of seven distinct referral reasons. These were: reduce stress/anxiety/depression; improve self-esteem/confidence; improve social networks; help alleviate symptoms of chronic pain

or illness; distraction from behaviour related health issues; improve overall wellbeing; support following loss or major life change. As any individual could be (as was most frequently the case) referred for any combination of these reasons, it was not possible to collapse this variable into meaningful categories; they are, therefore, treated continuously as total number of referral reasons given.

### **Attendance**

Attendance was objectively assessed through reports from the artists that host the courses detailing the number of sessions attended, and accounting for sessions missed due to ill-health or other mitigating circumstances. Participants were classed as “attenders” if they had attended at least the first and last session of the course (either ten or, latterly, eight weeks). Those participants that did not attend at least these sessions were either rated as “partial-completers”, “non-completers”, or “non-attendees”; however, these groups were amalgamated as “non-attenders” for the purposes of this investigation. Although implementing an attendance cut-off is not generally recommended for primary care referral programmes, analyses of these groups suggests a good fit for this operationalisation, with 89.9% of non-attenders attending less than 50% of sessions, and 85.5% of attenders attending more than 50% of available sessions.

### **Engagement**

Engagement in the course of art was gauged by the artists themselves. They were asked to subjectively rate the degree of engagement in the artistic activities, and classified participants as “engaged”, “partially engaged”, or “non-engaged”. For the purposes of the present analyses, the binary categories were operationalised as “engaged” or “not engaged” (i.e. both “partially” and “non-engaged” groups).

### **Wellbeing**

To assess wellbeing of participants both pre- and post-intervention, the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) was used (15). This 14-item questionnaire captures several components of wellbeing; including affective-emotional, cognitive-evaluative, and psychological functioning dimensions. The scale has been validated, and is recommended for use at the population level (15, 16). The scale has a range of 14 to 70, and exhibited excellent reliability here in both pre ( $\alpha=.92$ ) and post ( $\alpha=.94$ ) measures. The WEMWBS was completed by the participants on the first and last session of their Artlift course, and a change score was calculated by subtracting the pre- from the post-measure. Participants were then grouped as “responders” (i.e.  $\geq 1$ -point change) or “non responders” (i.e.  $\leq 0$ -point change).

### **Data analysis**

Analyses were undertaken using SPSS version 23. Group differences for each of the binary outcomes were analysed using chi-square (two-tailed) for categorical data, or one-way ANOVA for comparisons with continuous outcomes. Three binary logistic regression analyses were carried out to identify associations with the three outcomes of attendance, engagement, and wellbeing change. Each regression model included age, sex, IMD quintile, occupation, and baseline wellbeing as independent variables. Baseline wellbeing was included as an independent variable in these models as, from a clinical point of view, it is important to understand whether an individual’s initial wellbeing is

associated with whether or not they attend or engage. Moreover, it was included due to its strong association with outcome wellbeing, where we observed marked bivariate differences between the wellbeing change groups (i.e. responders and non-responders). The final model, assessing wellbeing change, also included the binary category of engagement as an independent variable. Each model was assessed for goodness of fit (Hosmer & Lemeshow; Cox & Snell; Nagelkerke tests), with all showing acceptable fit for the data.

## Results

### Participant characteristics

#### Group differences

##### Attendance

In this subgroup, attenders were more often either retired or in work or education than non-attenders, where the majority were not working ( $\chi^2(2)=19.01, p<.001$ ). Non-attenders were significantly more likely to be referred for more reasons than those that attended ( $F(1, 1225)=19.87, p<.001$ ), however no differences emerged between the groups per specific reason. Non-attenders were also more likely to have lower initial wellbeing than those that attended ( $F(1,785)=12.89, 168 p<.001$ ).

##### Engagement

There was a significantly higher proportion of those that were not working in the non-engaged group, whereas the distribution of employment groups amongst the engaged was moderately more evenly distributed ( $\chi^2(2)=11.80, p=.002$ ). The engaged group tended to be slightly older ( $F(1, 768)=4.04, p=.045$ ), were referred for less reasons ( $F(1, 907)=10.03, p=.002$ ), and had higher baseline ( $F(1,793)=14.45, p<.001$ ) and follow-up ( $F(1, 565)=5.40, p=.021$ ) wellbeing than those that were not engaged.

##### Wellbeing change

The responders tended to be younger ( $F(1, 464)=10.74, p=.001$ ), started off with lower levels of wellbeing ( $F(1, 546)=22.96, p<.001$ ), and ended with higher wellbeing ( $F(1, 546)=62.88, p<.001$ ) than those that did not respond. 179 Associations with attendance, engagement, and wellbeing outcomes

The results of the three binary logistic regressions are presented in Table II, with odds ratio (OR), 95% confidence interval (CI) and statistical significance for each independent variable. The predicted outcomes for each model agreed well with the actual outcomes (77.4%-80.8%), however these were biased towards predicting the positive outcome in each model (i.e. attending, engaging, responding).

In the first model, in comparison to those in the IMD quintile of least deprivation, successful attendance was associated with being within the central IMD quintile (OR=1.902, CI=0.602-1.888,  $p=.041$ ) and higher baseline wellbeing (OR=1.030, CI=1.006-1.054,  $p=.012$ ), such that for every unit increase in baseline wellbeing the likelihood of attendance increased by 3%. For engagement,

only baseline wellbeing was significantly associated with increased likelihood of being engaged (OR=1.032, CI=1.007-1.057,  $p=.012$ ), with the likelihood of being engaged increasing by 3.2% for every unit increase in baseline wellbeing. Conversely, outcome wellbeing was associated with baseline wellbeing in the opposite direction (OR=0.961, CI=0.933-0.989,  $p=.007$ ), indicating that for every one-unit increase in baseline wellbeing, the likelihood of improved wellbeing after the intervention decreased by 3.9%. Applying the Bonferroni method to minimise risk of error, each variable within each model remained statistically significant, aside from IMD quintile in the Attendance model. Sensitivity analyses for the final model were conducted by increasing the threshold for wellbeing response to  $\geq 5$ -point change. This resulted in a more even split of “non-responders” ( $N=244$ , 44.6%) and “responders” ( $N=303$ , 55.4%), but did not change the overall outcome of the model, where baseline wellbeing remained the only significant variable (OR=0.944, 200 CI=0.920-0.969,  $p<.001$ ).

**Table I.** Characteristics of the whole participant group, and comparisons of these characteristics between subgroups based on outcomes.

Variable	Whole	Attendance		Engagement		Wellbeing		c		
	Sample N=1297	Attendees N=651 (51.7%)	Non-Attendees N=607 (48.3%)	Engaged N=701 (74.7%)	Non-Engaged N=238 (25.3%)	Responders N=418 (76.4%)	Non-responders N=129 (23.6%)			
Sex – female (%)	980 (77.3)	509 (78.7)	138 (21.3)	548 (79.1)	175 (75.8)	335 (80.7)	95 (74.2)			
Mean Age (SD)	51.1 (15.87)	51.9 (15.88)	49.3 (15.35)	51.8 (15.88)	49.0 (15.65)	*	49.7 (15.48)	55.2 (14.26)	**	
Occupation	Retired (%)	289 (28.5)	191 (34.3)	92 (21.6)	200 (33.8)	39 (20.6)	103 (29.0)	46 (40.4)		
	In work/education (%)	218 (21.5)	114 (20.5)	102 (16.8)	***	121 (20.5)	45 (23.8)	**	76 (21.4)	24 (21.1)
	Not working (%)	507 (50.0)	252 (45.2)	232 (54.5)	270 (45.7)	105 (55.6)	176 (49.6)	44 (38.6)		
IMD Quintile <sup>†</sup>	Highest (%)	155 (13.0)	64 (10.7)	90 (16.0)	66 (10.2)	28 (12.9)	41 (10.8)	14 (11.3)		
	High (%)	217 (18.3)	102 (17.0)	107 (19.1)	108 (16.7)	28 (12.9)	69 (18.2)	21 (16.9)		
	Middle (%)	278 (23.4)	144 (24.0)	123 (21.9)	159 (24.5)	45 (20.7)	93 (24.5)	30 (24.2)		
	Low (%)	237 (19.9)	128 (21.3)	105 (18.7)	140 (21.6)	47 (21.7)	74 (19.5)	26 (21.0)		
	Lowest (%)	302 (25.4)	162 (27.0)	136 (24.2)	175 (27.0)	69 (31.8)	102 (26.9)	33 (26.6)		
Number of referral reasons (SD)	3.7 (1.62)	3.5 (1.59)	3.9 (1.62)	***	3.5 (1.59)	3.9 (1.63)	**	3.4 (1.57)	3.38 (1.70)	
Mean baseline wellbeing <sup>‡</sup> (SD)	37.3 (1.62)	38.1 (9.79)	35.1 (8.69)	***	38.0 (9.57)	34.7 (9.59)	***	36.8 (9.06)	41.3 (10.59)	***
Mean outcome wellbeing <sup>‡</sup> (SD)	44.5 (9.99)	44.6 (9.85)	42.8 (12.93)		44.6 (9.79)	38.4 (13.65)	*	46.2 (8.87)	38.6 (11.15)	***

\*\*\* $p < .001$

\*\* $p < .010$

\* $p < .050$

† Index of Multiple Deprivation (IMD) Quintile - Categories range from “highest” level of deprivation to “lowest”

‡ Measured with the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

SD = standard deviation

a = Significance of group differences between attenders and non-

attenders b = Significance of group differences between engaged and non-engaged

c = Significance of group differences between responders and non-responders

**Table II.** Factors associated with attendance, engagement, and wellbeing.

		Attendance			Engagement			Wellbeing change		
		OR	95% CI	<i>p</i>	OR	95% CI	<i>p</i>	OR	95% CI	<i>p</i>
Sex	(Female)									
	Male	0.937	0.553-1.586	.808	0.793	0.465-1.354	.396	0.923	0.490-1.739	.804
Age		1.000	0.981-1.018	.962	0.996	0.976-1.015	.657	0.980	0.957-1.003	.087
Occupation	(Not working)									
	Retired	0.829	0.390-1.762	.626	0.787	0.349-1.777	.565	0.614	0.258-1.461	.270
	In work/education	0.868	0.438-1.717	.684	0.681	0.330-1.405	.298	1.076	0.478-2.420	.860
IMD Quintile <sup>†</sup>	Highest	0.780	0.399-1.526	.468	0.892	0.437-1.820	.753	0.902	0.351-2.315	.830
	High	1.830	0.936-3.580	.077	1.767	0.883-3.535	.107	1.408	0.626-3.168	.409
	Medium	2.080	1.092-3.963	<b>.026</b>	2.041	1.046-3.983	<b>.037</b>	1.161	0.566-2.384	.683
	Low	1.097	0.615-1.959	.754	1.191	0.641-2.210	.581	0.790	0.378-1.650	.531
	Lowest									
Support following loss or major life change		1.434	0.722-2.846	.303	1.311	0.644-2.665	.455	1.074	0.536-2.152	.840
Reduce stress/anxiety/depression		1.290	0.742-2.243	.366	1.164	0.651-2.081	.608	1.604	0.852-3.021	.143
Improve self-esteem/confidence		1.146	0.706-1.860	.581	1.300	0.778-2.174	.317	1.205	0.679-2.140	.524
Improve social networks		1.146	0.729-1.802	.554	1.431	0.883-2.320	.146	1.081	0.622-1.876	.783
Improve overall wellbeing		.608	0.370-1.000	.050	0.590	0.351-0.991	<b>.046</b>	0.814	0.416-1.595	.549
Distraction from behaviour related health issues		0.754	0.454-1.250	.273	0.747	0.440-1.269	.747	0.517	0.286-0.936	<b>.029</b>
Help alleviate symptoms of chronic pain or illness		0.878	0.532-1.451	.613	0.699	0.417-1.172	.174	0.606	0.331-1.111	.105
Baseline wellbeing <sup>‡</sup>		1.025	1.001-1.050	<b>.038</b>	1.028	1.002-1.054	<b>.031</b>	0.954	0.925-0.984	<b>.003</b>
Engagement								2.126	0.432-10.468	.354

OR = Odds Ratio

CI = Confidence Interval

<sup>†</sup> Index of Multiple Deprivation (IMD) Quintile - Categories range from “highest” level of deprivation to “lowest”

<sup>‡</sup> Measured with the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

## **Discussion**

### **Main finding of this study**

Arts on prescription (AoP) schemes are increasingly common, gaining popularity in the UK and internationally. The evidence base for the benefit of these interventions is developing (3, 12, 13, 18), however to date there has been no research investigating factors that are associated with intervention outcomes. The present study sought to determine whether sociodemographic or specific patient characteristics were associated with attendance, engagement or wellbeing change in a large AoP initiative from the UK. We found that each outcome was associated with baseline wellbeing, such that both attendance and engagement were associated with higher baseline wellbeing, but positive wellbeing change was associated with lower baseline wellbeing. Attendance was also associated with being from the median quintile of the IMD when compared to the more populous least deprived quintile, although this result did not withstand reduction in significance value.

### **What is already known on this topic and what this study adds**

Previous analyses of these data have shown that in those that attend and/or are engaged, Artlift has a beneficial effect on wellbeing (5, 13). The present study extends these findings to provide new information regarding those factors that may be associated with important patient outcomes in this large cohort. Present findings show that this beneficial effect is more likely in those that start-off with lower initial wellbeing, even though that same group are also less likely to attend or engage. This is important, as it suggests that those that have the most to gain are those that may be less likely to attend or engage with the activities. Implications for practice are therefore that these individuals should be offered more support at the point of referral, such as being provided taster or orientation sessions to aid in familiarisation; or the implementation of “buddy” approaches to provide specific social support between referral and uptake.

The observation of almost a quarter (23.6%) of the total sample either not improving, or actually decreasing, in wellbeing is not easily explained. The bivariate analyses show that those who are classed as non-responders still finish their course of Artlift with higher wellbeing than the responders start with ( $38.6 \pm 11.15$  versus  $35.8 \pm 9.06$ ). Clearly, knowing the initial levels of wellbeing as a part of the referral process to such interventions may be important to their efficacy. This being the first research that has investigated this phenomenon in a primary care referral setting, it is important to investigate whether this exists in other AoP cohorts elsewhere, and thus more research of this design is warranted. A recent review of art therapy has identified that not all participants will inevitably improve, and may experience a reduction in wellbeing as a result (10). It is suggested that some participants may experience anxiety or increased physical symptomology (such as pain), particularly if emotions are initiated and not resolved, or if the therapist is not sufficiently skilled to facilitate, or if the intervention is terminated too soon (10). Whilst art therapy is distinct from AoP, it does support the notion that not all individuals will respond equally well to these types of activities, substantiating the need to understand characteristics of those that do well and those that do not. It is important to acknowledge that the AoP interventions are not facilitated by trained therapists and in some cases (as is the case here), there are possibilities for participants to continue with the group art activities informally beyond the course of the intervention. This does raise important questions, however; and it is recommended that further investigation into the factors relating to decreases in wellbeing from AoP participation be undertaken.

The lack of other significant associations with the outcomes is not surprising considering the few group differences between the outcome subgroups. However, there are some that one may expect to be associated with overall outcome. For example, the mean number of referral reasons differs between attendance and engagement groups, with those that attend and those that engage both being referred for fewer reasons. This is curious given that referral reason is often an important associative factor in attendance seen in other types of primary care interventions such as physical activity (19). The operationalisation of the referral reasons herein as a continuous variable is problematic given that they can be grouped into distinct conceptual categories (i.e. “mental health”, “physical health”, “psychosocial”), and as such cannot be linear. In trying to reconcile these issues, we grouped the referral reasons into these categories only to find that over 83% of participants are referred for multiple category reasons; resulting in a variable with eight levels, and no overall differences to the logit models. Future studies should operationalise reason for referral in a more clinically meaningful manner. By providing information on physical and mental health symptoms that may impede attendance in such interventions, comparisons across referral intervention types may be made more readily. However, this may not always be possible given the holistic, social-ecological approach the social prescribing model often has in practice.

### **Limitations of this study**

This study draws on data collected in nearly 1300 individuals across a seven-year period and is the largest dataset of its kind to date, providing strong statistical power and an authoritative overview of the data for similar AoP schemes. This is the first time that this type of analysis has been applied to AoP data and provides valuable information about factors associated with patient outcomes. It is important to note that these associative factors cannot be viewed with causality, and it is recommended that future investigations replicate these methods with a control group to help determine causal effects. Moreover, the present participant population, whilst substantial in size, is not very diverse. The lack of diversity in socioeconomic positioning observed here, whilst typical for the region involved (14), is not typical of the UK as a whole, nor other countries where AoP are being utilised. It is also possible that there are other factors that are associated with the studied outcomes that have not been captured herein. It is a strength of this study that such a volume of data was collected, largely due to low participant burden, although this may have come at a cost of measurement of other variables associated with intervention efficacy, such as medical information documentation of conditions/symptoms that affect mobility, social engagement, or physical wellness to participate).

### **Conclusions**

AoP programmes are promoted as effective non-clinical primary care interventions for those that require support in improving general wellbeing, reducing medication, and decreasing primary care utilisation (3, 12, 18). Evaluations of this particular AoP intervention have provided the largest populations for this evidence (5, 13), and the present findings provide further information about those factors that drive the efficacy of the intervention: attendance and engagement; as well as those relating to positive wellbeing response. The overriding message of the present analyses is that baseline wellbeing is critical to each of these outcomes. What has not been determinable here is the second objective of AoP interventions: to facilitate and improve social inclusion within communities.

(1). Further, the mechanisms that drive wellbeing change within AoP are yet to be investigated, which

leaves questions as to what it is about AoP that drives change in wellbeing, and how these changes are then conferred to ameliorate health. Further exploration of AoP initiatives is clearly needed, with a need to evaluate more diverse populations, more associative factors, the exploration of change mechanisms, and to understand causation through the implementation of randomised controlled trials.

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**Competing interests:** There are none.

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