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Social Tenants' Health: Evaluating the Effectiveness of Landlord Interventions

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Abstract

Objectives: To test whether a social landlord can improve health outcomes for older tenants and reduce their NHS usage by simple interventions.

Design: Randomised controlled trial.

Setting: Social housing in five London Boroughs.

Participants: 547 individuals over 50 years of age.

Intervention: Baseline and two follow-up assessments of individual's health and use of medical services undertaken by health professionals. In the treated groups, individuals were given health care and support at two different levels. 25 individuals had to be removed from the trial because early assessments revealed critical and untreated health issues.

Main outcome measures: Self-reported health and wellbeing ratings and NHS usage.

Conclusions: Even simple interventions to a targeted group (older and poorer people), can produce significant reductions in NHS usage. Significant reductions were found for 1) planned hospital usage; 2) nights in hospital; and 3) for emergency GP usage. Well-being scores improved in the most strongly treated group but these were not statistically significant. Perhaps the single most important finding was that the early health evaluations revealed that 4.5% of the total sample – not in the most deprived section of the population – had such severe health problems that significant and immediate intervention was required.

Keywords: randomised control trial, social housing, health interventions

JEL Classifications: I18; C93; R29

1. Introduction

There is overwhelming evidence that poor health is associated with low income at an individual level (Jones and Wildman, 2008; Benzeval, 2014). Since basic economics implies that people with low incomes live in neighbourhoods with low-cost housing, these neighbourhoods inevitably have concentrations of people with a range of income-related disadvantages such as poor health, disabilities and lower educational attainment (Cheshire *et al.*, 2014, Chapter 3). The Marmot Review (Marmot, 2010) focused attention on such inequalities highlighting, for example, that people living in the poorest neighbourhoods in England will on average die seven years earlier than people living in the richest, and will on average spend 17 more years disabled.

This sorting of low income people into low cost housing suggests a role for providers of low cost housing to be involved in community health interventions. Registered Social Landlords house some of the most vulnerable citizens, and have a unique level of access to people who may not be engaged with health and other public services through existing channels. There is to date no evidence of which we are aware that landlords may be able to play a part in interventions effectively to promote improved health and wellbeing for their tenants. This study therefore aimed to fill this gap and test the hypothesis that through the utilisation of their landlord status to gain access to tenants, higher rates of engagement could be obtained with vulnerable people to improve their health and well-being. To test the impacts of the interventions we used a randomised controlled trial.

The study focused on providing interventions for a group of people aged over-50 who lived in socially provided 'general needs accommodation' in London. An older demographic was selected since this group has the highest usage of NHS services and greatest health needs.

The key objective of this study was therefore:

- To test whether a social landlord, Family Mosaic, could improve the health and wellbeing of their over-50s general-needs tenant population with simple interventions.

The two services that were tested were:

1. A signposting service from the Neighbourhood Manager (a frontline staff member responsible for managing a group of properties).
2. An intensive handholding service from a specialised team of health and wellbeing support workers.

In the rest of this paper we first discuss the trial design and the interventions for each of the two treated groups. We then discuss the health outcomes measured, the sample and the process of randomisation. The process and set up of the study is presented in Section 3 and in Section 4 we describe the outcomes for the three groups: the control group and two treated groups. In the final section we discuss the implications of the study.

2. Methods

2.1 Trial Design

A parallel three-arm randomised control trial was used, with an even-split random allocation across three groups: a control group (Group 1), a lightly-treated, 'signposted' group (Group 2) and an intensively treated 'handholding' group (Group 3). Details of the interventions are described below.

The first stage for all participants was a base-line health check. At this initial stage some participants were identified as having conditions which posed an immediate threat to their health and wellbeing, even their life. This meant they could not risk being placed in either the control or signposted groups so they were removed from the study and placed in a sub-group 3b. This group was directed to their GP or hospital for treatment where necessary, but otherwise received the same services as those in Group 3. People placed in this group were excluded from the main analysis since they were non-randomly drawn from the treatment and control groups based on their severe health needs but the results, if they are included, are briefly noted in Section 3.4. Fifteen individuals were identified at the point of first assessment, and a further 10 either at, or before the 9 month assessment point. So in total 25 people – or some 4.5 percent of the population – were immediately identified on the basis of a simple health assessment as suffering serious, often life threatening conditions for which they were receiving no treatment.

2.2 Participants

The eligibility criteria for participants were set as:

- Aged 50 or more
- Living in a General Needs Family Mosaic property: that is ordinary social housing – not housing aimed at the elderly or physically disabled. Participants did not have to be the main tenant.
- Living in the borough of Hackney, Islington, Hammersmith and Fulham, Kensington and Chelsea or Haringey

Data on eligibility was gathered from Family Mosaic's central database of household data. Data on secondary household members is less comprehensive and so on occasions other eligible household members would be referred to us via the lead tenants that we approached. There was no restriction on multiple household members taking part in the study, although none did.

2.3 Interventions

As noted above two types of interventions were tested in this study:

The 'signposting' intervention (Group 2) was provided by the Neighbourhood Manager, the social housing provider's frontline staff member responsible for managing the properties and tenancies within a given patch. The intervention entailed the Neighbourhood Manager reviewing the assessments carried out (see Section 2.4) and identifying any needs from these. They would then refer participants to a suite of interventions available (see Appendix

1). Subsequent contact would then be on a quarterly basis either through a phone call or visit.

The 'handholding' intervention (Group 3) was delivered by a newly formed in-house team of Health and Wellbeing Support Workers. Support workers reviewed the baseline assessment and identified any potential needs or areas for intervention (see Appendix 2). Whilst the focus of the interventions remained largely similar to those received by Group 2 participants, the means of accessing the services differed. Participants were actively supported to engage with the relevant interventions, with support in doing so ranging from helping to make travel arrangements to actually accompanying participants to sessions to build their confidence in attending. Participants were visited and their needs assessed by their support worker on anything from a weekly to monthly basis depending on their level of need.

2.4 Outcomes

For the purposes of the analysis there were two assessments: a baseline assessment when they entered the study and a follow up at the end after 18 months. For internal purposes there was an additional assessment at the half way stage, after 9 months. It was at this stage that an additional 10 participants were identified who were withdrawn from the main study and placed into Group 3b¹.

The baseline assessments were carried out in participants' homes through a face-to-face interview. Due to problems in arranging meetings or getting access and the need to maintain participant goodwill, some of the 9 and 18 month assessments were also carried out by phone and post. On all occasions where there was an ambiguity in self-completed assessments a member of the Health and Wellbeing Team followed this up with the participant. The majority of the assessments were carried out by in-house trained health assessors.

The primary outcomes assessed are shown in Table 1. Other, secondary outcomes, looked at the impact of services on enabling people to better manage their back conditions and arthritis. There were also a set of questions around fuel poverty. Whilst primarily used as diagnostic tools for those in treatment groups, the outcomes were also assessed as part of the final analysis.

¹ Two each from the Control Group and Group 3 and 6 from Group 2.

Table 1: Primary outcome measures

Outcome group	Measures	Scale
Self-reported health outcomes	General health rating Average health rating (asked at beginning and end of survey, average of these taken)	5 point Likert scale 0-10 numeric scale
Mental wellbeing	ONS Wellbeing measure ² Short Warwick Edinburgh Mental Wellbeing Scale ³ Loneliness	0-10 numeric scale 0-10 numeric scale 0-10 numeric scale
NHS Usage	Planned GP appointments in last 6 months Emergency GP appointments in last 6 months Planned hospital appointments in last 6 months Accident and Emergency attendances in last 6 months Nights in Hospital in last 6 months	Frequency Frequency Frequency Frequency Frequency
Falls	Number of falls in last 6 months	Frequency
Self-reported activity and mobility ratings	Activity rating Mobility rating	0-10 numeric scale 0-10 numeric scale
Health Behaviours	Completion of breast cancer tests Completion of cervical cancer tests Completion of bowel cancer tests Smoking levels Alcohol consumption Completion of blood pressure test	Binary (yes/no) Binary (yes/no) Binary (yes/no) 5 point Likert scale 5 point Likert scale Binary (yes/no)

2.5 Sample size

The target sample size of 200 per group was calculated to be large enough to allow for a small effect size (0.25) to be picked up ($\alpha = 0.05$, power= 0.8) including an allowance for attrition. At an attrition rate of 20% the sample size would remain sufficiently large. In the event a final sample size of 547 was obtained of which 15 were immediately moved into Group 3b after the baseline health assessment. Of the remaining 532 participants, there were 186 in the control group (Group 1), 172 in the signposting group (Group 2) and 174 in the

² For further information see http://www.ons.gov.uk/ons/dcp171778_319478.pdf [accessed 16/09/2015]

³ For further information see <http://www.healthscotland.com/documents/1467.aspx> [accessed 16/09/2015]

handholding group (Group 3). A further 10 were moved to Group3b at the interim assessment (see Section 2.1).

2.6 Randomisation

The entire process of random number generation and assignment was carried out through an automated function in the data entry system. A restricted randomisation was used, with stratification by age (over and under 70) and gender. No blocking was used.

2.7 Blinding

Assessors were not told about the assignment group of participants, but those providing support (either the neighbourhood manager or support worker) necessarily were.

Towards the end of the study it was not always possible to maintain blind assessments since the assessors were in-house and so occasionally interacting with participants or aware of their cases. Due to demands on resources, support workers occasionally carried out assessments, but never of their own clients.

Furthermore, during the process of assessment, discussion of the participant's health sometimes resulted in a disclosure of treatment (for example, if a participant referred to their support worker). This was primarily an issue for those in Group 3, whereas for those in Group 2 and the control group the intervention difference was less marked.

2.8 Statistical methods

ANOVA/Mixed ANOVA was used to analyse the between-group differences in mean baseline outcomes and improvements in these outcomes during the trial. Non-parametric ANOVAs (Kruskal-Wallis) were also run on variables where there were outliers as a check on the ANOVA results. The results of the Mixed ANOVAs are reported except for those cases – in particular outcomes relating to NHS usage – where there was evidence of outliers and a contradiction with non-parametric results. In these cases non parametric Kruskal Wallis tests are reported.

When handling categorical dependent variables, Chi-Square analysis was used with Phi and Cramer's V as an estimate of effect size.

3 Results

3.1 Participants

Overall, 77% of the original sample⁴ was retained through to the point of final assessment. The main cause of sample attrition – 64 cases – was the inability to make contact with participants to conduct their final assessment, a further 25 opted out, 12 left Family Mosaic accommodation and 14 died. The highest attrition rates were amongst the control group (52), followed by group 2 (38) then group 3 (25). However, a Chi-Square Analysis did not

⁴ Excluding those moved to 3b

reveal any statistically significant differences in attrition rates between groups at the 5% level in terms of demography, gender or ethnicity.

3.2 Recruitment

Recruitment to the study began in January 2013 through a process of mail-outs, phone calls and door knocking. The first assessments were carried out in February 2013. Recruitment continued for a period of 12 months in order to achieve a sample size as close to the original target of 600 as possible. Recruitment ended in February 2014 despite the sample still being below the target so as to ensure the study could be completed within a 3 year time frame.

The trial continued for a period of 29 months, with all final assessments completed by May 2015. The intended assessment timeframe was 18 months but because of unexpected difficulties with final assessments, some had to be carried out beyond the 18 month period. In order to minimise retention problems and ensure access to participants some assessments were brought forward. As a result of these adjustments, on average each participant was in the study for a period of 606 days (approx. 20 months). However, those receiving an intervention received it for only 18 months. The duration of participation was even across groups, with Group 1 and 3 participants being in the study for an average of 605 days and Group 2 608 days.

3.3 Sample characteristics

Table 2 and shows individual participant health ratings from the baseline assessment and comparison health ratings taken from Census 2011 for the boroughs in the study and for London. Table 3 reports the Index of Multiple Deprivation (IMD 2007) for ward of residence, compared to borough of residence and London. As expected given the low income, social housing based sample, health and deprivation indicators were worse for each of the five boroughs in the study than they were for London as a whole. Participant's residential wards were more deprived than their Boroughs in Haringey, Hammersmith and Fulham, and Kensington and Chelsea. The mean IMD score for participants in both Hackney and Islington was slightly better than the mean for their boroughs. Similarly the health status of participants, although clearly worse than London as a whole, was not always obviously worse than that for their Boroughs although the differences were more marked in the two most prosperous Boroughs, Hammersmith and Fulham and Chelsea and Kensington. Thus our participants were drawn from populations exhibiting low but not the lowest IMD and on average had health measures below, but not an order of magnitude below London's. Our study was dealing with deprived individuals but not the most deprived.

Table 2: Health rating: Participants compared to borough and London means

Borough		General health rating		
		Good/very good	Fair	Bad/very bad
Hackney	Borough	82.9	11.1	6.0
	Participants	83.6	10.3	6.0
Haringey	Borough	83.2	10.8	6.0
	Participants	82.6	11.4	6.1
Hammersmith and Fulham	Borough	85.7	9.3	5.0
	Participants	80.6	12.9	6.5
Islington	Borough	82.4	11.6	6.0
Islington (Participants)	Participants	83.3	10.5	6.2
Kensington & Chelsea	Borough	86.3	8.7	5.0
	Participants	82.0	11.4	6.6
London Average		88.8	11.2	4.9

Participant health rating taken from baseline assessment data. Borough and London figures from responses to the question “In general, how would you rate your health?” from Census 2011.

Table 3: Index of multiple deprivation (IMD): Participants’ ward compared to borough & London

Borough	Index of Multiple Deprivation Score*		
	Participants’ ward mean	Difference from borough mean	Difference from London mean
Hackney	31.6	3.7	-6.41
Haringey	37.8	-6.7	-12.53
Hammersmith & Fulham	35.6	-11.2	-10.34
Islington	31.7	0.9	-6.46
Kensington & Chelsea	33.5	-10.1	-8.30

*IMD score is from IMD2007 and is ordered such that a lower score indicates more deprivation

3.4 Intervention and control group comparisons

Overall, analysis of the baseline data for participants identified no statistically significant differences across the groups.

Table 4: Participant demographics by groups

	Total (n)	Mean Age	Female	Black & Ethnic Minorities
Group 1	186	64	63%	65%
Group 2	172	65	70%	72%
Group 3	174	64	67%	67%
Between-group difference (p value)		0.771	0.854	0.348

A total of 94% of the original 532 participants identified themselves as suffering from one or more long-term health conditions, with on average each suffering from three (that is excluding the 15 transferred to group 3b after their initial assessment). On average participants rated their health 'fair'.

Table 5: Averages on key health variables by groups

	Group 1	Group 2	Group 3	Between groups difference (p value)
No. long-term health conditions	3.07	3.60	3.64	0.960
S.E.	(0.17)	(0.18)	(0.19)	
General health rating	3.56	3.07	3.20	0.462
S.E.	(0.08)	(0.08)	(0.07)	
SWEMWB rating (35= max)	24.45	24.70	25.06	0.625
S.E.	(0.39)	(0.45)	(0.42)	
ONS wellbeing rating (40= max)	22.51	22.70	22.63	0.933
S.E.	(0.38)	(0.43)	(0.42)	
Loneliness rating (5= not lonely)	3.58	3.55	3.61	0.890
S.E.	(0.09)	(0.09)	(0.09)	
Planned GP appointments*	3.52	4.22	3.98	0.226
S.E.	(0.28)	(0.35)	(0.34)	
Emergency GP appointments*	0.45	0.24	0.38	0.182
S.E.	(0.10)	(0.06)	(0.08)	
Planned hospital appointments*	1.98	2.59	3.18	0.253
S.E.	(0.25)	(0.35)	(0.61)	
A&E attendances*	0.38	0.40	0.27	0.500
S.E.	(0.08)	(0.09)	(0.07)	
Nights in hospital	0.94	1.19	0.85	0.286
S.E.	(0.27)	(0.41)	(0.32)	
Falls (in 6 months)*	0.65	0.55	0.32	0.533
S.E.	(0.14)	(0.09)	(0.06)	
Activity levels (10= highly active)	5.58	5.25	5.89	0.097
S.E.	(0.20)	(0.21)	(0.19)	
Mobility levels (10= highly mobile)	6.98	6.61	7.36	0.230
S.E.	(0.19)	(0.20)	(0.18)	

* Mean in past 6 months.

In a 6 month period all participants together had made a total of 2073 planned and 192 emergency visits to their GP, 1369 planned hospital appointments, 185 visits to A&E and spent 528 nights in hospital. The breakdown of participants' baseline health is shown in Table 5.

3.5 Numbers analysed

Analysis was undertaken on two separate datasets. An as-treated (AT) analysis was conducted for all 408 participants who completed their time in the study. An intention-to-treat (ITT) analysis was conducted on an imputed dataset for the 532 participants with a valid first assessment.

The ITT dataset was produced through multiple imputation, where missing data points were replaced with substituted values calculated through the expectation-maximisation (EM) algorithm. According to Blankers *et al* (2010) of the non-highly computing intensive methods, this gives amongst the most reliable estimates and, indeed, differs very little on their criteria from the most efficient of all methods for generating ITT data sets, multiple imputations from the Amelia II algorithm. A Little's test was conducted and there was no evidence to suggest that data was not Missing Completely At Random (Chi-Square = 48182.277, DF = 49747, p= 1.000). Some invalid data points were produced by the imputation (some slightly negative scores on the NHS usage for example) but on rounding to one decimal place virtually all negative values became zeros, and so this imputation was treated as valid. The numbers of cases in each group in the ITT and AT samples are shown in Table 6.

Table 6: Total numbers analysed by group for ITT and AT analysis

	Intention to Treat	As Treated
Group 1	186	133
Group 2	172	128
Group 3	174	147

The outcomes reported below are estimated on the basis of the ITT analysis since this avoids problems of non-random attrition from the sample. For purposes of comparison, the results of the AT analysis are reported in Section 3.6.

3.5 Final Outcomes

This section summarises the findings of comparisons between the baseline and final assessment scores for each group on a range of indicators. The more significant results for NHS usage are shown in Table 7.

Health ratings

On self-reported health ratings, two measures were used; a general health rating out of five and an average health rating (out of 10) which was taken at the beginning and end of the survey. This latter score was calculated by taking an average of the two responses to the question.

There was a general, albeit slight (within 1 decimal point), improvement in scores across the groups but the ANOVA analysis identified no significant difference between groups (general health, p= 0.674, average health p= 0.487).

Wellbeing indicators

Short Warwick Edinburgh Mental Wellbeing (SWEMWB) Scale: Whilst group 3 witnessed a slight improvement in their SWEMWB (+0.21), both groups 1 (-0.1) and 2 (-0.9) experienced a decline. ANOVA analysis revealed a substantial interaction between study group and time ($F_{(2, 529)} = 2.593$, $p = 0.076$, $n^2 = 0.01$). Post-hoc analysis identified significant differences between groups 2 and 3 ($p = 0.019$) with group 2's wellbeing being on average 1.5 (± 1.3) points lower.

ONS Wellbeing Scale: There was a general decline in ONS scores across the groups, but we found no significant differences between groups for the ONS wellbeing measures, ($F_{(2,525)} = 1.029$, $p = 0.358$, $n^2 = 0.004$).

Loneliness and connections to community: There were slight but not statistically significant improvements in loneliness scores, but reductions in scores on connection to community were witnessed across all groups. The measures used for loneliness and social isolation are however less reliable indicators of wellbeing as they are not validated measures. ANOVA analysis revealed no significant differences for loneliness ($F_{(2,525)} = 0.717$, $p = 0.489$, $n^2 = 0.003$) or social isolation ($F_{(2,525)} = 1.10$, $p = 0.334$, $n^2 = 0.004$).

NHS usage

Analysis of the difference in usage of individual NHS services revealed three significant results. A Kruskal-Wallis test revealed significant differences for emergency GP visits, planned hospital appointments and nights in hospital. The overall findings are reported in Table 7 and the p-values for pairwise comparisons of outcomes with significant differences in Table 8.

Table 7: Baseline and Final Change in NHS Usage per Person and Kruskal-Wallis tests

	<i>Planned GP visits (% change)</i>	<i>Emergency GP visits (% change)</i>	<i>Planned Hospital appointment (% change)</i>	<i>A&E attendances (% change)</i>	<i>Nights in Hospital (% change)</i>
Group 1	4.28	22.62	11.11	-13.16	17.14
Group 2	4.68	129.16	-3.47	-17.50	-33.66
Group 3	-10.97	-15.15	-38.99	2.13	-61.49
<i>Kruskal-Wallis independent samples tests for differences between groups in change in NHS usage</i>					
<i>H statistic</i>	1.598	5.704	10.746	1.175	7.655
<i>p-value</i>	0.450	0.058	0.005	0.556	0.022

Table 8: Planned hospital appointments: Kruskal-Wallis p-values for pairwise comparisons (outcomes with significant differences in Table 7)

Group comparison	Emergency GP visits	Planned hospital	Nights in hospital
G2-G1 p-value	0.128	0.404	0.007
G3-G1 p-value	0.379	0.001	0.570
G2-G1 p-value	0.018	0.024	0.442

Group 3 reduced their usage of GPs for emergency visits by 15.1 percent (10 appointments) against Group 2's 124 percent increased usage (52 appointments). This reduction was statistically significant ($p= 0.045$). The control group increased their visits by 23 percent (19 appointments) but this was not significantly different to Group 3. Group 2's usage was also not significantly different from that of the control group

On planned hospital appointments, Group 3's usage reduced (by 39%, 216 appointments or 1.24 per person) while Group 1's usage increased (by 11%, 41 appointments, 0.22 per person). This difference is significant ($p= 0.004$). Group 3 also reduced their usage by much more than group 2 (where planned appointments fell by only 3.5%, 16 appointments or 0.09 per person). Again the difference between Group 3 and Group 2 is significant ($p=0.065$)

Number of nights in hospital fell for Group 2 (by 33.7% or 68 nights in total) while Group 1 increased their usage (by 17.1% or 30 nights), the difference being significant ($p=0.022$). Although nights spent in hospital by Group 3 also fell (by 61.5% or 91 nights) the difference between Group 1 and Group 2 is non-significant, due to a high variance in the number of nights within Group 3 (20.217).

Absolute differences in outcomes on the other measures – number of falls per person, activity and mobility and preventative behaviour such as screening test – were negligible and no differences between groups were significant. Nor were there any significant differences in outcomes for those in fuel poverty compared to those who were not.

As-treated analysis

An as-treated analysis was also carried out for comparison. Within the as-treated analysis the only outcome where significant differences were identified between the groups was for planned hospital appointments ($F_{(2, 391)}= 5.366$, $p= 0.05$) and SWEMWB scores ($F_{(2, 391)}= 3.790$, $p= 0.023$) although the signs and absolute values for other measures of NHS usage were similar to the ITT results.

3.4 Group 3b

In some ways the finding that in a randomly selected sample of social housing tenants aged over 50, some 4.5 percent had urgent – in most cases life-threatening but untreated health problems - is both the most interesting and most disturbing finding revealed by the whole study. All 25 in this group either had no GP or had no contact with any external medical help except for emergency visits to A&E. Examples were a case of sickle cell anaemia who was not registered with a GP but went to A&E when taken seriously ill or a recluse with serious heart problems who although registered with a GP only left the house once a week for basic shopping.

As Table 9 reveals there was an absolute improvement on every single measure following their assignments to the most intensively treated group, although these differences are not significant given the small sample size. ⁵ There were improvements on wellbeing scores,

⁵ An alternative approach is simply to redo the analysis adding all the participants assigned to Group 3b to an enlarged Group 3 – a Group containing all those provided with the most intensive

self-reported health and activity/ mobility ratings and reductions in all forms of NHS usage. As for the intensively treated group, Group 3, the most notable change in NHS usage was in planned hospital appointments, with a net reduction of 58 across the 25 Group 3 participants. Other notable changes included the improvements in wellbeing, particularly on the ONS rating (increased average score by 7 ± 1.9).

Table 9: Mean differences for Group 3b

	Average change in scores (over 18 months)	Standard Error
General health	0.4	0.2
Planned GP appointments	-1.2	1.3
Emergency GP appointments	-0.5	0.2
Planned hospital appointments	-2.2	1.9
A&E attendances	-0.4	0.2
Nights in hospital	-0.9	0.9
ONS score	6.6	1.9
SWEMWB score	1.0	1.6
Loneliness score	0.2	0.5
Community connection score	0.3	0.2
Falls score	-0.5	0.7
Activity score	1.1	0.7
Mobility score	1.0	0.9

3.5 Supplementary Analysis

Interventions

The impact of different types of services and interventions was also assessed. The only significant results appear interestingly perverse. Holding group and other interventions constant, significant interactions were identified between information provision (such as the timetable for activities or healthy eating advice) and planned GP appointments. Those receiving information increased their GP attendances by an average of 2 visits within a 6 month period ($B= 1.88$, $p= 0.027$).

Significant interactions were also identified between attendance at activities (both those run by Family Mosaic and those available in the local community) and self-reported health ratings, with those attending activities reporting slightly lower levels of general health in their second assessment ($B= -0.369$, $p= 0.005$).

intervention. This has the effect of increasing the significance of the differences in outcomes where there were already statistically significant differences but does not generate any additional significant outcomes.

Both these apparently perverse results, however, are consistent with the observation discussed below in relation to ‘harms’ that raising expectations seemed to cause negative effects if those expectations could not be met.

Harms

The only significant adverse effect identified was for Group 2 on their SWEMWB score. Feedback from staff delivering the service for this Group (who received only ‘signposting’) highlighted the difficulties in delivering health and wellbeing interventions, both in terms of time available and the limited involvement entailed. Signposting in isolation was judged not to be enough to translate into actual action, with a resultant sense that participants may have felt frustrated by becoming aware of services which could potentially be helpful, but not feeling confident or able to actually take advantage of them.

Qualitative analysis of the reflections gathered from participants at the end of the study support this hypothesis, with the main difficulty and negative experience of participants being that they had difficulties in attending activities (mainly due to timing or location) and that more support would have been beneficial. By contrast, this was infrequently mentioned by those in group 3, suggesting that having a support worker helped to overcome these issues.

4 Conclusions

The study’s participants were drawn from the tenants aged over 50 living – apparently successfully – in decent social housing provided by a housing association with a substantial waiting list. A randomised controlled trial found that quite minor health interventions involving guidance from support workers generated improvements on a range of outcomes, and significant ones for the most intensively treated group related to NHS usage. On standard costings, using national values, the difference in NHS usage between the control group and intensively supported group implies annual savings of £757.50p per person (DoH, 2014: Table 1). In contrast, there was no evidence of a positive effect from the signposting intervention: even some indication that this intervention might have a negative impact on wellbeing.

As was discussed in section 2.2 the participants’ status on the Index of Multiple Deprivation or health indicators was below that of the London average and in most – but not all cases – below that of their borough averages. Although disadvantaged, however, they were far from representing the most vulnerable in society. Nevertheless a baseline health assessment revealed that 4.5 percent of them needed immediate health interventions. In many cases the participants with urgent health needs were not registered with a GP nor on the radar of other support services. Some just attended A & E when they had a health crisis; others were reclusive. This finding suggests not only a lack of co-ordination in health provision but the possibility of a useful role for social landlords to exploit the advantage of access their position gives them to act as agencies for improving the health of their tenants while saving significant National Health Service resources. This warrants further investigation.

A limitation of the study was the inability to access NHS patient data. Records had originally been expected to be provided in anonymised form but re-organisation of NHS records at the time of the study made this impossible, making it necessary to rely on self-reporting of hospital usage. There may also be concerns of sample selection, with those with greater subjective health needs being more likely to participate. This may be reflected in the difference between the responses to the initial scoping survey of 360 over 50s residents, where only 71% ($\pm 4.97\%$) reported one or more long term health conditions, compared to 92% ($\pm 2.27\%$) of the study sample. On other measures the sample was representative of the broader over 50s general-needs London tenant population making the generalizability of the findings strong.

Other studies (for example, Bardsley *et al.*, 2013; or Elkan *et al.*, 2001) have indicated the challenges in identifying significant changes in health when evaluating community-based interventions for older people, particularly during periods of service innovation. Our study is consistent with this conclusion: there were improvements in health outcomes for the most intensively treated group but these were not statistically significant although reduced NHS usage was.

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Appendix 1: Group 2 Interventions on Offer

1. Sign post to GP or other health service.
2. Sign post to community groups/social activity (non- FM)
3. Signpost to Social and Financial inclusion team -welfare rights
4. Signpost to Social and Financial inclusion team –employment team
5. Signpost to Social and Financial inclusion team –social inclusion
6. Refer to gas team/boiler repair/energy advice/draft proofing
7. Refer to handyman service
8. Refer to Housing Options team
9. Report repair
10. Advice around home safety, including warmth/condensation and slips, trips and falls hazards
11. Advice and support around areas of general health (Diabetes, blood pressure, BMI), back pain and mobility or mental health
12. Provide direct minor assistance around home e.g. change light bulbs
13. Complete grant application

Appendix 2: Group 3 Interventions on Offer

1. Support access to GP or other health service:
 - a) GP
 - b) IAPT
 - c) Occupational therapy
 - d) Physiotherapy
 - e) Other acute or community hospital service
 - f) Other NHS mental health service
 - g) Other health related service (provided by community or third sector organisation)
2. Support access to community groups/social activity (non- FM)
3. Support access to Social and Financial inclusion team -welfare rights
4. Support access to Social and Financial inclusion team –employment team
5. Support access to Social and Financial inclusion team –social inclusion
6. Refer to gas team/boiler repair/energy advice/draft proofing
7. Refer to handyman service
8. Refer to Housing Options team
9. Report repair
10. Advice around home safety, Inc. warmth/condensation and slips, trips and falls hazards
11. Advice and support around areas of general health (Diabetes, blood pressure, BMI), back pain and mobility or mental health
12. Provide direct minor assistance around home e.g. change light bulbs



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