

Comparative Study of Outcomes for Older People with Long Term Conditions Attending Day Care Services Delivered by Paid Staff or by Volunteers

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Abstract

Background Day care services can support older people living with multiple long term conditions (LTCs), to age in place, but little research on outcomes of Day Care attendance.

Aims The aims of this comparative study were to determine outcomes for older people with LTCs attending day care services run entirely by paid staff or predominantly volunteers

Methods Newly referred older people with LTCs to nine day care services in North West of England and North Wales were invited to participate in this longitudinal study with data being collected at baseline attendance and at 6 and 12 weeks. Demographic information was collected and the EQ-5D-3L and De Jong Loneliness 6 item questionnaire were completed at each time point.

RESULTS 94 older people (64% female), age range 65 - 99 years (mean 82 years) were recruited. The mean number of LTCs was 4.3 (range 2-9) and 52% people lived alone. More than a third (36%) lived in one of the 20% most deprived local authorities in England and Wales. The outcomes in this exploratory study over 12 weeks appeared to be similar for paid, blended (paid staff and volunteers) and for volunteer led service, with those attending volunteer led services were significantly more likely to report fewer health problems in follow-up (OR=3.45, 95% CI 1.01-12.8, P=0.04).

CONCLUSIONS This study suggests that Day Care Services for older people with long term conditions provide benefits in terms of self-rated physical and emotional well-being. Older people attending paid staff services were more likely to have greater number of LTCs associated with a higher symptom burden. However, at baseline there was no difference in self-reported health by service type. This study suggests that Day Care Services provided by volunteers can provide comparable outcomes. Following the Covid-19 pandemic, it is increasingly urgent to support older people with long term conditions who have lost physical and cognitive function during lockdown and to maintain and improve their function. Our study suggests that volunteers may be able to complement the care provided by paid staff freeing up resources and enabling increasing numbers of people to be supported.

Background

Day Care services can support older people living at home with multiple long-term conditions (LTCs), to age in place and to live independently (Clark, 2001, Lecovich & Biderman, 2012, Manthorpe & Moriarty 2014, Schmitt, Sands & Wise, 2010). There is a paucity of research regarding day care services and their role in supporting people with LTCs. Day care is often discussed in the literature in association with the respite provided for carers of older people rather than outcomes that attendance at day care services may have on older people themselves and indeed few day care services routinely use outcomes measures.

Internationally the number of people aged over 60 years is expected to increase by 56% by 2030 (UN, 2019). Across Europe the oldest old (over 85 years) population are projected to increase from 5.4% of the population in 2016 to 12.7% by 2030 (Eurostat, October 2017). In the UK, a reduction in the proportion of males who smoke and hold high risk occupations is resulting in the life expectancy gap between men and women narrowing (ONS, 2017). LTCs are lifelong incurable conditions requiring drugs or treatment for symptom management (Goodwin, Curry & Naylor 2010). Multiple LTCs are associated with higher healthcare costs (Barnett, Mercer & Norbury, 2012) and more than a third of people aged over 75 in the UK take four or more medicines (Specialist Pharmacy Service, 2015). In the UK, people with multiple LTCs e.g. heart disease, diabetes, respiratory disease, are high users of health services (Foster, 2006, Lamb, 2014). There is evidence that at age of 70, expenditure outside traditional health systems, such as social care, increases (Oliver, Foot & Humphries 2014).

Older People are more like to experience loneliness due to bereavement, increased impairment, declining health or decreased independence (Hagan, 2020). In the UK, loneliness has been highlighted as a public health issue (Collins & Wrigley, 2014) for all age groups. The term loneliness is often used interchangeably with that of social isolation however loneliness can be experienced by those with social networks. Therefore, loneliness is considered to be a mismatch between the person's desire or expectation in the number and quality of connections with others and the actual connections in their day to day lives. Weiss (1973) suggests that loneliness has social and emotional dimensions. It is categorised as unpleasant and unchosen, dominated by feelings of disconnection, confinement and fears of dependency (Kitzmuller, Clancy & Vaismoradi 2018). An integrative review (Gardiner, Geldenhuys, Gott, 2018) investigating interventions reported common features of services successfully reducing loneliness included the adaptability of the service, community development approaches and productive engagement.

Amidst the backdrop of austerity in the UK, adult social care funding has reduced 17% since 2009/10 (Quilter-Pinner and Snelling, 2017). In response many local authorities have increased user fees or co-payments for care services (Yeandle, 2016). Older People at greatest risk of loneliness are those with less income, living in socially deprived areas and lack of access to care or social activities (Greer 2016). In the UK age is associated with an increased chance of exclusion (Kneale, 2012). In examining the relationships between neighbourhood characteristics, personal attributes and level of social exclusion later in life Prattely, Burfel, Marshall (2020) reported that ageing in place and stronger attachments to neighbourhood was associated with lower levels of social exclusion. The COVID-19 pandemic and strategies to shield people with LTCs (Age UK, 2020) has highlighted the role non-health organisations in supporting people who are isolated to maintain their wellbeing, with many relying on volunteers. The Caring for our Future White Paper (HM Government, 2012) enables local authorities to relinquish the delivery of adult day care services to private, public or voluntary sector organisations. The configuration of the services is varied and care may be delivered by either a paid workforce, volunteers or a combination of both.

A lack of a standardised definitions of day care services made it difficult to determine effectiveness (Fields, Anderson, Dabelko-Schoeny, et al (2014) and understanding what works, for whom and in what circumstances within day care settings (Dabelko-Schoeny & King, 2012). Due to the paucity of research

in day care settings little is known about those attending day care and subsequent outcomes (Manthorpe & Moriarty 2014, Ollerana, Manthorpe, Tinker et al 2018). The aim of this study was to determine outcomes of day care attendance for older people with multiple LTCs attending services provided by paid staff (local authority and independent organisation), voluntary services (delivered entirely by volunteers) and blended services (a small number of paid staff supported by volunteers) and to examine any differences in outcomes by service type.

Methods

Settings and Recruitment

This study was carried out in North West of England and North Wales with nine Day Care Services; two centres employed paid staff only; five were a blended service of some paid staff with a number of volunteers and two were managed and run solely by volunteers; inclusion Criteria for the study were aged 65 years and older, more than one LTC, living at home, able to give informed consent and an expected prognosis of at least 3 months. Exclusion criteria were cognitive impairment which would limit being able to give consent and complete questionnaires; unable to understand written / spoken English and an estimated prognosis of less than 3 months. Day centre managers / Leaders were invited to inform all eligible new referrals regarding the study and to provide written details of what the study entailed with those interested invited to contact the researcher. Baseline interviews at recruitment were conducted at the day centre or participant's home. Full ethical approval was obtained (Research Ethics committee 000967).

Baseline data collected from participants included demographic data including age, gender, ethnicity, marital status, residential status, carer status, number and type of LTCs. EQ-5D-3L and the De Jong Loneliness 6 item questionnaire (De Jong Giervald, 2006) were administered at baseline, and again 6 weeks and 12 weeks later. Follow up data was collected by post, telephone or occasionally face to face if participants had difficulty with completion.

Measures Used

The EQ-5D-3L is widely used to measure health related quality of life and is validated for older people (Kaambwa B, Gill L, McCaffrey N, 2015). The 5 item questionnaire includes following domains: mobility; self care; usual activities; pain/discomfort and anxiety/ depression (Konerding, Elkhuisen & Faubel et al 2014) and a visual analogue scale. Each domain has three levels of response - no problems, some/moderate problems and extreme problems (Euroqol, 2017).

The De Jong Giervald Loneliness Scale is a 6 item measure and does not use the term loneliness to avoid any associated stigma (De Jong Giervald, 2006). The scale addresses Social and Emotional Loneliness with Social Loneliness associated with reduced social networks and individual resources, and emotional loneliness relating to the absence of intimate relationships such as partner or close other (De Jong Giervald, 2006). A total score of 0 means that there is no evidence of loneliness and score of 6 indicating intense loneliness.

The Charleson Morbidity Index (Charleson et al, 1987) was utilised to capture the number and types of LTCs.

The EQ5D3L was used under license. The De Jong Giervald Loneliness Scale and The Charleson Morbidity Index are available for clinical and academic use.

Statistical analysis

Univariate analysis was conducted in order to describe differences in the baseline characteristics of the groups of clients using a particular type of day care service (paid, blended, voluntary). The significance of association between baseline attributes/outcome scores and membership of service-type and location groups was tested by the chi-square test for categorical variables and the t-test/one-way ANOVA for continuous measures.

Differences in mean scores between the client groups at each time point (baseline, 6 weeks, 12 weeks) were investigated using the t-test or a one-way ANOVA. Repeated-measures two-way analysis of variance was used to test for between-group differences in changing scores over time.

Univariate logistic models were run in order to estimate the effect of type and location of service on the likelihood of 'any improvement' in outcome (a reduction in loneliness score, decrease in number of reported EQ5 problems, increase in VAS global health rating) from baseline to final follow-up. Odds Ratios, 95% confidence intervals and associated p-values are reported.

For all analyses a conventional criterion of statistical significance ($P < 0.05$) was used.

All data were analysed using SPSS for Windows 22.0.

Results

Composition of the group of service-users

Ninety Four participants (64%female) , age range 65 to 99 years (mean age 82 years) from nine centres were recruited to the study and completed baseline measures. Table 1 provides a description of each day care centre. All those who the day care service manager / leader believed were eligible and wished to contact the researcher agreed to participate. The number of LTCs ranged from two to nine (mean of 4.3 LTCs). The most commonly reported LTCs were arthritis, heart disease, early to moderate dementia, stroke and mental health issues. Thirty two percent were married, 56% widowed, and 12% either separated, divorced or never married and 52% of participants lived alone. Over a third (37%) identified a carer who was a family member living with them;

27% had a carer who was a family member living elsewhere. More than a third (36%) of the sample lived in one of the 20% most deprived local authorities in England and Wales. On average older people travelled 3 miles to attend the day services, (range 0.1 mile to 20 miles in a rural area). 73 participants (78%) completed follow-up at 6 week and 12 weeks. (Table 2 lists reasons for attrition by service type).

Baseline characteristics of service-users, and type and location of service

Table 3 reports the demographic profile of the older people attending day care services delivered by paid staff, paid and voluntary staff ('blended') and voluntary staff only.

Blended service participants were significantly older (mean age 84.7 vs 80.6, $P=0.04$). All participants described their ethnicity as white. A significantly higher proportion of the paid service group lived in one of the most socially deprived neighbourhoods 56% compared to 27% of participants attending other services, ($P=0.02$). Those attending voluntary services had a significantly greater distance to travel (mean 5.8 versus 2.2 miles) ($P=0.001$). A significantly lower proportion of those attending blended day care services responded positively to the De Jong item relating to having "plenty of people to rely on when having problems" (13% compared to 37% of all other participants, $P=0.04$). The number of LTCs reported at baseline was comparable across all service types (paid staff mean 4.4, blended 4, voluntary 4.7, $P=0.39$).

Service type, location and change in EQ-5D-3L self-reported health status

The proportions of older people of the three service-types (paid, blended, voluntary) reporting individual health problems on the EQ-5D-3L, along with mean number of problems and VAS score, are reported in Table 4. A significantly higher proportion of participants attending paid day care services reported a self-care problem at 6-week follow-up (46%, compared to 32% of blended service clients and only 10% of voluntary service users, $P=0.02$). However, there were no other statistically significant differences between the clients attending different services, at any time-point or in change in proportions/scores over time in terms of self-reported health status.

When comparing services, the mean number of problems reported by older people attending voluntary day care services declined between baseline and 12 weeks, whilst those attending blended and paid services increased. For the two domains of mobility and self-care, the proportion of participants reporting problems on these domains declined in those attending voluntary services but increased at blended and paid services between baseline and twelve weeks.

Anxiety and depression domains revealed a decline in both paid and voluntary services between baseline and 12 weeks. There was a small increase in anxiety and depression levels at blended services between baseline and 12 weeks. Pain was reported as increased between baseline and 12 weeks in paid and voluntary services. The mean VAS score for all services reported positive change in health and well-being from baseline to twelve weeks.

Service type, location and change in reported loneliness

Statistical significant differences were not reported in loneliness (Table 5). However, the change in mean total loneliness between baseline and 12 weeks reduced in Blended services and Voluntary services but increased in those attending Paid Staff services. In order to examine this further, the mean scores for emotional loneliness and social loneliness were compared by service group. The results for total loneliness showed the mean score for those attending Voluntary and Blended services reduced over 12 weeks, whilst the mean score for those attending Paid Staff services increased. However, when the social loneliness group means across the three services were analysed from baseline to 12 weeks, it could be seen that the group mean score reduced across all services. Therefore, the lack of reduced loneliness for those attending the Paid staff services appeared to be connected to levels of emotional loneliness rather than social loneliness

Likelihood of 'any improvement' in outcome

Table 6 illustrates the likelihood of improved outcomes for people attending blended services or voluntary services when compared with paid staff services. Older people attending a voluntary service were over twice as likely to experience a reduction in De Jong loneliness score between baseline and their final follow-up. Those receiving a service delivered by voluntary staff also had an increased likelihood of reporting reduced loneliness. Older people attending a 'blended' service had a raised likelihood of experiencing a reduction in the number of reported EQ5 health problems. The voluntary service group had a statistically significant increase in the likelihood of reporting fewer health problems over follow-up. In terms of reporting an improvement in the global health rating (VAS) from baseline, those attending voluntary services had a reduced likelihood however, users of blended services had raised odds of reporting a higher VAS rating

Discussion

To our knowledge this is the first study to aim to determine outcomes of day care attendance across different service types. Characteristics of people attending day care services are rarely reported (Orellana, Manthorpe & Tinker, 2020, Manthorpe & Moriarty 2014).

The mean number of LTCs reported by participants was comparable across service types. Participants from paid staff services had met a needs threshold assessment in order to attend, and it could be expected that the number of LTCs would be higher than for blended or volunteer led services. At paid staff services the most common LTCs reported included early stage dementia, and stroke, compared to voluntary services where diabetes and gastric conditions were the most common. This suggested that older people attending paid staff services may have met the threshold due to personal care needs associated with stroke and early to moderate dementia and also may have a higher symptom burden and be more likely to decline more quickly.

The proportion of people living in deprived areas was also highest among those participants attending paid staff services ($p = 0.02$). Evidence from longitudinal research in the UK has established that those aged 80 years and above, with poor self-rated health predicted higher levels of exclusion and older people living in the most deprived neighbourhoods had the highest levels of social exclusion (Prattley, Burfel, Marshall et al, 2020, Ferrangina et al, 2013). It is known that general health outcomes are worse for people living in more deprived neighbourhoods (Barnett, Mercer & Norbury, 2012). However, it is interesting to note that, at baseline there was no difference in self-reported health including mobility and self-care by service type. Further analysis of confounding factors did not reveal an association due to socio-economic differences between services users.

Baseline data provided insights into issues regarding access for older people using day care services. The distance travelled varied significantly between services with those attending Voluntary services travelling further than those attending Paid staff and Blended services travelled the greatest distance ($p = 0.001$).

Loneliness is considered to be a mismatch between the quantity and quality of a person's relationships and their desire or expectation for relationships (Peplau and Perlman, 1982). Loneliness consists of two elements, social loneliness and emotional loneliness (Weiss, 1973). Day care provides an opportunity for people to socialise and this study demonstrated a reduction in loneliness during the first twelve weeks of attending day care.

This study suggests that outcomes for day care services for older people attending day care services were positive regardless of whether this was provision by a paid service, blended model or a service delivered by volunteers. There is a lack of evidence as to the efficacy of volunteer delivered services (Cattan, Kime, Bagnall (2011)). Volunteer-based services, many delivered by those who have retired, have expanded and provide support within home and day care services (Yeandle, 2016). Economic and financial pressures on public services mean that the perception of volunteering may be discussed in relation to the reduction of long term costs (Naylor, Mundle & Weeks et al) rather than benefits to service users.

The COVID pandemic has highlighted the role of volunteers within the community (Bhagra, Patel, Chon, 2020, Tierney & Mahtani, 2020) and the need for access to local amenities and support networks to maintain health and reduce levels of loneliness. Loneliness as a consequence of poor social environment can have strong negative impact on wellbeing (Cornwell & Waite, 2009). A previous review of effective interventions to reduce loneliness revealed the components of successful interventions included adaptability, community development approaches and productive engagement (Gardiner, Geldenhuys, Gott, 2018). The results of this study suggests that further investigation is required regarding volunteer delivered day care services for older people living in the community. The consequences of less activity and deconditioning due to restricted access during COVID to community networks presents future challenges in supporting older people in the community (Bhagra, Patel, Chon (2020). The role that volunteers have within local communities link to the concepts of adaptability and community approaches, which are highlighted as components of successful interventions for reducing loneliness (Gardiner, Geldenhuys, Gott, 2018).

We acknowledge that this study lacked diversity with regards to ethnicity. In the areas where blended and volunteer lead services were located, the numbers of Black Asian and Minority ethnic (BAME) living in the area was low. However, for Paid staff services the BAME population was close to the national average however older people from BAME groups were absent from services. This raises the question whether the lack of BAME people attending day care services is due to barriers for people accessing the service or as Manthorpe & Moriarty, (2014) previously suggested that day care services may not market themselves effectively to BAME groups.

Strengths And Limitations Of The Study

To our knowledge this longitudinal study is the first to attempt to investigate outcomes for older people who have multiple LTCs attending day care by comparing outcomes across service type. It provides a unique insight into the types of people using different services types and in various socio-economic areas. Day care service managers / leaders acted as gatekeepers providing new referrals with information regarding the study and we did not have ethical approval to collect any data on those who declined to receive information regarding the study. This is as an exploratory study and the number of participants in some services were low. We did not have ethical approval to contact those who did not continue attending day care services and have no knowledge whether their experiences of day care services were different.

Conclusion

The findings address gaps in current knowledge with regards to the nature of LTCs in older people attending day care services and subsequent outcomes within different service models. Although older people attending paid care services were those meeting a needs threshold, our findings reveal that older people attending day care services provided by blended and voluntary services report comparable numbers of LTCs as those attending paid staff services, but the extent to which they were compromised physically and emotionally by LTC may not have been elicited fully by the measures used. At baseline, there were no differences in health related quality of life as measured by EQ-5D-3L across different types of service. Our findings are relevant particularly post Covid-19 when it is known that for many older people physical, emotional and cognitive function have been compromised during lockdown. Volunteer led services may be able to help provide a sustainable service with improved outcomes for increasing numbers of older people with LTCs living within our communities.

Statement Of Declaration

Ethics Approval and Consent to Participate

Full ethical approval was obtained (Research Ethics committee 000967) by the University of Liverpool.

Consent for Publication

The data collected in this study was done so following informed consent given by the participant and consent forms are available. All participants consented for their data to be used in future publications.

Availability of data materials

All data generated or analysed during this study are included in this published article

Competing interests

The authors declare that they have no competing interests.

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Authors Contributions

MLW developed idea for study; CL carried out the study and data collection and writing of paper; CS conducted the statistical analysis; MLW, CL, CS and CD wrote the paper

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Tables

Table 1
– Description of Day Care Settings

Name	Service Type	Provider	Operational Times /Cost	Accept participants from Urban / Rural	Facilities	Activities	Index of Multiple Deprivation	Deciles
Sunflower	Paid	Statutory	7 days per week 9 am – 4 pm £94 per week 15 spaces per day	Urban	Purpose built centre with adjoining areas linked to re-ablement service with inpatient beds. Day centre room within a suite of shared rooms (large multipurpose room, small consulting room and large therapies room with exercise equipment). Service provider owns building. Lunch takes place in adjoining area provided by same organisation or participants eat out (lunch additional cost to participants).	Quiz, cognitive games, arts & crafts, music excursions, visits from community groups.	29	1
Snowdrop	Paid	Independent	5 days per week 9:30– 5 pm £25 per day 15 spaces per day	Urban	Purpose built community / day service with adjoining large hall used for community groups, a therapy room, a café and craft lounge. The centre is run by the independent company that also runs day care. Service provider owns building. Lunch takes places in the main hall where the day care attendees eat with just over 50 people attending for a lunch club. Lunch provided by	Quiz, cognitive games, chair based exercise, arts & crafts, dance & movement sessions.	1355	1
Beech	Blended	National Charity	4 days per week 10am – 3:30 pm £16 per day 20 spaces per day	Urban & Rural	Day care take place in a lounge in a multi functional centre with a multipurpose room for exercises and a small room for hairdressing. Lunch takes place in a large hall, where day care attendees eat with people attending a lunch club. There is a kitchen specifically for the day centre and lunch club. The centre also has a drop in café for the wider community and a church. The centre that runs the day care manages the building. Cost of lunch included in price for day care.	Cognitive games, quiz, music, craft, chair based exercise.	1331	1
Birch A	Blended	National Charity	2 days per week, 10am – 2:30 pm £12.50 per day	Urban & Rural	Day care takes place in a large multi-purpose room within community housing accommodation. Food is provided in a café/bistro. The facilities and food are not provided by the same Charity that provides day care. Lunch price included in price for day care.	Quiz, cognitive games, board games, chair based exercise, singing, arts & crafts, visits from community groups, talks given local groups.	6304	2
Birch B	Blended	National Charity	2 days per week, 10am – 2:30 pm £12.50 per day 15 spaces per day	Urban & Rural	Day care takes place in a large multi-purpose room within community housing accommodation. Food is provided in a café/bistro. The facilities and food are not provided by the same Charity that provides day care. Lunch price included in price for day care.	Quiz, cognitive games, board games, chair based exercise, singing, arts & crafts, visits from community groups, talks given local groups.	28845	2

Name	Service Type	Provider	Operational Times /Cost	Accept participants from Urban / Rural	Facilities	Activities	Index of Multiple Deprivation	Deciles
Blackthorn	Blended	National Charity	2 days per week, 10am-2:30 pm £25 per day 25 spaces per day	Urban & Rural	Day care take places in two rooms rented in a social club with participants given access to the snooker room. The Charity that provides the day care does not own the facilities or provide and prepare the food. Cost of lunch included in the price of day care.	Quiz, cognitive games, board games, chair based exercise, arts & crafts, music, singing.	19098	6
Ash	Blended	Regional Charity	1 day per week 10am – 2:30 pm £15 per day 15 spaces per day		Day care takes place in a room within a multi-use community centre, with other groups using the rooms on other days. The centre does not own the buildings it uses however the Charity does prepare and supply the meals that are delivered each day, ready made by the Charity. Lunch is included in the price of day care.	Quiz, cognitive games, board games, chair based exercise, singing, dancing, arts & crafts.	8813	3
Lily	Voluntary	Local Voluntary Group	4 days per week, £3.70 per day 9am – 2 pm 30 spaces per day	Urban	Day care takes place in a large hall within a community centre with a kitchen adjacent to the room. The day care volunteers prepare and serve the food. The service does not own the centre and pays rent to the local council. The cost of lunch is included in the day care service.	Quiz, cognitive games, board games, chair based exercise, singing, arts & crafts, visits from community groups.	3994	2
Poppy	Voluntary	Local Voluntary Group	1 weekly session & 1 fortnightly session - £8 10am-3:30 pm 15 spaces per day	Rural	Day care takes place in a small number of rooms adjacent to the church. The food is prepared on site by a Paid cook, supported by volunteers. There is a dining room, a small lounge area and an activity room. Lunch included in day care price	Chair based exercise, art & crafts, cognitive games, talks by local people literature, poetry, history.	1340	8

Table 2
Recruitment and Completion by Service Type with reasons for attrition.

Service Type	Baseline	+ 6wks	+ 12 wks	Reasons for Attrition				
				Left Service	Illness	Relocated to Relatives or Nursing Home	Death	Other
Paid	37	28	27	1	2	2	1	3
Blended	31	25	27	1	2		1	
Voluntary	26	20	19	5	1		1	

Table 3
Baseline characteristics and outcome scores of clients using different types of service.

	TYPE OF SERVICE			P
	PAID	BLENDED	VOLUNTARY	
<i>Column percentages</i>	% (n/N)	% (n/N)	% (n/N)	
Gender				
Male	35 (13/37)	29 (9/31)	46 (12/26)	0.40
Female	65 (24/37)	71 (22/31)	54 (14/26)	
Age group				
Mean age	80.9	84.7	80.4	0.04
Marital Status				
Currently Married	27 (10/37)	22 (7/31)	50 (13/26)	0.11
Separated or Divorced	16 (6/37)	10 (3/31)	0	
Widowed	54 (20/37)	68 (21/31)	46 (12/26)	
Never Married	3 (1/37)	0	4 (1/26)	
Social Deprivation				
Living in one of 20% most deprived LSOAs in Eng or Wales	56 (20/36)	24 (7/29)	30 (7/23)	0.02
Mean distance between home and centre	2.0	2.11	5.84	0.001
Living Arrangements				
Partner present no children	16 (6/37)	23 (7/31)	38 (10/26)	0.22
Children are present but no partner	19 (7/37)	19 (6/31)	12 (3/26)	
Partner and children are present	8 (3/37)	0	12 (3/26)	
I live alone	57 (21/37)	58 (18/31)	38 (10/26)	
Carer Status				
I have a carer who is a family member that lives with me	41 (15/37)	29 (9/31)	39 (10/26)	0.25
I have a carer who lives with me but is not a family member	3 (1/37)	0	0	
I have a carer who is a family member that does not live with me	27 (10/37)	32 (10/31)	8 (2/26)	
I have a carer who is not a family member and does not live with me	0	3 (1/31)	8 (2/26)	
I do not have a carer	30 (11/37)	36 (11/31)	46 (12/26)	
Educational Status				
I hold no educational or vocational qualifications	64 (23/36)	36 (11/31)	58 (15/26)	0.13
I have educational or vocational qualifications but not a University degree	33 (12/36)	54 (17/31)	31 (8/26)	
I hold a University degree or above	3 (1/36)	10 (3/31)	11 (3/26)	
Long-term conditions				
Mean no of LTCs reported	4.4	4.0	4.7	0.39
Sensory Loss – Sight	62 (23/37)	74 (23/31)	50 (13/26)	0.17
Sensory Loss - Hearing	28 (10/36)	36 (11/31)	39 (10/26)	0.65
EQ-5D-3L				
Reported problem with Mobility	76 (28/37)	81 (25/31)	73 (19/26)	0.79
Reported problem with Self Care	30 (11/37)	23 (7/31)	42 (11/26)	0.27
Reported problem with Usual Activities	70 (26/37)	71 (22/31)	69 (18/26)	0.99
Reported problem with Pain/Discomfort	41 (15/37)	52 (16/31)	54 (14/26)	0.51
Reported problem with Anxiety or Depression	49 (18/37)	33 (10/30)	50 (13/26)	0.35

	TYPE OF SERVICE			
Mean VAS score	68	66	72	0.22
Mean number of EQ5 problems	2.6	3.1	2.7	0.22
De Jong SL sub-scale: Reporting 'more or less' or 'no'...				
There are plenty of people I can rely on when I have problems	35 (13/37)	13 (4/30)	40 (10/25)	0.04
Mean EL score	1.2	1.3	1.1	0.77
Mean SL score	0.78	0.42	0.88	0.21
Mean overall loneliness score	2.0	1.7	2.0	0.68

Table 4
Paid, blended and voluntary service users reporting individual EQ5 problems at baseline and follow-up

		Baseline (P = 37,B = 31,V = 26)	6 week (P = 28,B = 25,V = 20)	12 week (P = 27,B = 27,V = 19)	P
		%	%	%	
Mobility	Paid	75.7	75.0	77.8	0.79
	Blended	80.6	76.0	85.2	
	Voluntary	73.1	65.0	68.4	
	P	0.79	0.67	0.40	
Self-care	Paid	29.7	46.4	40.7	0.57
	Blended	22.6	32.0	29.6	
	Voluntary	42.3	10.0	26.3	
	P	0.27	0.02	0.53	
Usual activities	Paid	70.3	75.0	85.2	0.90
	Blended	71.0	80.0	74.1	
	Voluntary	69.2	60.0	73.7	
	P	0.99	0.31	0.53	
Pain/discomfort	Paid	40.5	46.4	44.4	0.66
	Blended	51.6	48.0	48.1	
	Voluntary	53.8	50.0	68.4	
	P	0.51	0.97	0.24	
Anxiety/depression	Paid	48.6	46.4	33.3	0.32
	Blended	33.3	40.0	37.0	
	Voluntary	50.0	40.0	15.8	
	P	0.35	0.86	0.27	
Mean no of EQ5 problems	Paid	2.6	2.9	2.8	0.75
	Blended	2.6	2.8	2.7	
	Voluntary	2.9	2.3	2.5	
	P	0.73	0.27	0.80	
Mean VAS score	Paid	68.3	71.7	74.2	0.65
	Blended	66.3	74.1	71.9	
	Voluntary	72.3	75.8	76.8	
	P	0.55	0.72	0.68	

Table 5. Baseline and follow-up De Jong loneliness (total, emotional, social) scores for paid, blended and voluntary service-users.

	Total Loneliness score at baseline (P=37; B=31; V=26)	Total Loneliness score at 6 weeks (P=27; B=25; V=19)	Total Loneliness score at 12 weeks (P=25; B=28; V=18)	
	Mean	Mean	Mean	P
Paid	2.03	2.11	2.80	0.72
Blended	1.71	1.24	1.29	
Voluntary	2.00	1.79	1.65	
P	0.68	0.13	0.15	

	EL score at baseline (P=37; B=31; V=26)	EL score at 6 weeks (P=27; B=25; V=19)	EL score at 12 weeks (P=25; B=28; V=18)	
	Mean	Mean	Mean	P
Paid	1.24	1.44	1.48	0.47
Blended	1.29	0.96	1.07	
Voluntary	1.12	1.16	0.94	
P	0.77	0.22	0.22	

	SL score at baseline (P=37; B=31; V=26)	SL score at 6 weeks (P=28; B=25; V=19)	SL score at 12 weeks (P=25; B=28; V=18)	
	Mean	Mean	Mean	P
Paid	0.78	0.64	0.52	0.91
Blended	0.42	0.28	0.21	
Voluntary	0.88	0.74	0.44	
P	0.21	0.26	0.32	

Table 6: Likelihood of 'any improvement' in outcome between paid staff services and services with volunteers

Service compared with Paid Staff Services	Outcome	Odds Ratio	Confidence Interval at 95%	P-value
Blended service	Reduction in loneliness score	2.01	0.65-6.22	0.23
	Reduction in number of EQ5 health problems			
	Reporting increase in EQ5 VAS score	1.46	0.5-4.24	0.48
		2.0	0.64-6.29	0.24
Voluntary Service	Reduction in loneliness score	2.46	0.74-8.26	0.14
	Reduction in number of EQ5 health problems			
	Reporting increase in EQ5 - VAS score	3.45	1.01-12.8	0.04
		0.67	0.21-2.17	0.50