**Day centres for older people: a systematically conducted scoping review of literature about their benefits, purposes and how they are perceived**

# Supporting material

**SHADED ONES ARE ENGLAND / UK DC=day centre**

***Significant*=statistically *significant* OP=older people**

# Table S1: Evidence table: literature about day centres or attenders

| Author/date,  Country  Publication | Aims  *Day centre model* | Theoretical framework / conceptual model | Sampling | Research design & data collection | Study details (data collected, measurements, analysis) | Findings relevant to review | Limitations |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PERCEPTIONS** | | | | | | | |
| Fitzpatrick and McCabe (2008)  Canada  Peer-reviewed journal *Activities, Adaptation and Aging* | To discuss challenges senior centres will face in maintaining and designing programs that address services and activities suitable for more active adult groups such as the baby boomers.  *Senior centre (Multipurpose model*) | None | N/A | **Literature review**  Non-exhaustive. Dates and search strategy not specified. | Discusses challenges for senior centres with reference to baby boomers. | Fitzpatrick and McCabe found limited literature in this area. Relevant to this review, they concluded that day centres ‘*are already a traditional part of our culture and are widely recognized and respected’* (p211). | More a discussion than a review of literature.  Dates and search strategy not specified. |
| Hostetler (2011)  US  Peer-reviewed journal  *Journal of Aging Studies* | To explore how senior centre employees conceptualise their work and organisational mission.  *Senior centres* | None. | Part of larger qualitative assessment of services aiming to identify matches & mismatches between current services and anticipated goals/needs of younger OP aged 55-65.  --------------------------------------------  Interviewed: 30:  23 **DC directors (managers**), or senior staff, and 7 regional, national or umbrella service providing organisations; 4 interviews were with 2 participants.  Participant observation in 1 centre. | **Qualitative**  **Interviews**.  **Observation** over 2 years (incl. 3 further interviews with staff & 1 with director) | Unstructured interviews explored:  - if/how concepts of community and individual/consumer choice were used to describe work and shape service provision  - goals & visions for DCs & how day-today operations reflect these.  Interviewees asked about services offered, attenders, relationships and referrals between organisations, whether there were unmet needs for resources/services and ‘wish lists’ for the future.  DC activities & visitor tours observed, staff meetings attended and written materials read (e.g. newsletters). In this phase, interviewees were asked about purpose of their work & motivations/goals guiding it.  Themes identified based on commonly-used words. | Marketing had become important in an environment of individual choice in which the future needs/preferences of younger OP who are healthier and more active than previous cohorts of same age group.  Managers and their senior staff believed that DCs suffered from an image problem which meant they may fail to attract younger and more active OP without more activities, space, transport, volunteers and staff. They recognised the potential risks of focusing their attention on this group at the expense of oldest attenders with highest needs when such centres have traditionally been cross-generational.  Wish lists for new activities often included the type of activity that may appeal to younger OP.  It was noted that DCs were for OP without personal care support needs or dementia which is counter to a mission of serving the whole community.  **Was a small amount of criticism of DCs concerned their role in giving OP ‘*the choice to remain (potentially isolated) in their own homes*’ (p171).** | US context differs from that in England. |
| MaloneBeach and Langeland (2011)  US  Peer-reviewed journal *Journal of gerontological social work* | To investigate baby boomers’ vision of their retirement, any services they expected to use and any preferred alternatives.  *Senior centres.* | None. | **Randomly selected** from registered voters in 1 county.  --------------------------------------------  225 people aged  50-59 (225)  29% response rate. (Sample 800 – 40 undeliverable; 2.1% of total number of voters). | **Qualitative**  **Survey**  **(postal)** | Respondents completed a 24 item survey asking people:  - to imagine their changing needs as they aged and state what services would improve their satisfaction with leisure activities - to identify which services (selected from a given list) they expected to use. Survey specifically asked about perceptions of their local ‘senior center’ (image of it and service offerings, fees and funding, clientele). | Senior centres were perceived, firstly, as a place for social engagement and, secondly, as a place for activities. 29% (67) reported enjoying group activities and 68% (153) said they would be happy to use one. Almost all (44%, n=99 of 49%, n=110) those worried about future caring responsibilities said they would use services that supported them as carers, such as senior centres.  Preference expressed for multi-purpose (not segregated) centres.  Civic engagement was of great interest, with 31% already volunteering and 96% expecting their civic engagement to increase after retirement.  MalneBearch & Langeland’s interpretation: Declining use of DCs not due to negative perceptions or decreasing interest, but because ageing baby boomers are not joining as fast as attenders are leaving due to lack of needs. Clear preference for non-segregated centres and desire for continuity suggests promotion of multipurpose/community centres. | Respondents possibly not representative (very high education) - rural area with industrial town hiring well-educated people.  Funded by evaluation budget of providers of services. (unspecified) to OP and a university grant, survey wording may have been positively biased. |
| Sale (2005)  England  Sector press | Looks at how day centres may need to re-invent themselves in order to survive. | N/A | N/A | Opinion piece | Discusses reinvention of day centres and considers what makes a good day centre. | Notes that views about DCs are very polarised in professionals and individuals.  Includes a case study of an 88 year old woman who had previously been active. Five years earlier, she had reluctantly started to attend a DC on the advice of her doctors. Her initial negativity was replaced with enthusiasm after only 3 weekly visits, and she went on to attend twice a week. She recounted a visit to her aunt’s residential home which, she believed, had resulted in her negative view of DCs. This account suggests, albeit anecdotally, that changed individual circumstances may result in changes to perceptions of DCs. | Discussion relates to all client groups, not just older people. |
| **ATTENDERS’ CHARACTERISTICS** | | | | | | | |
| Al-Dosseri *et al*. (2014)  Bahrain  Peer-reviewed journal *Bahrain medical bulletin* | To estimate the prevalence of depression among elderly attending day care centres.  Day Care Centre | None | **All 7 DCs in Bahrain**  **--------------------------------------------**  **Attenders** (254) ≥60  Mean age: 65.5 | **Quantitative**  **Interview (validated scale)**  2010 | Socio-demographic and health data collected.  Geriatric Depression Scale (GDS-15) - shorter version – administered.  Statistical analysis carried out. | **Depression was prevalent among attenders.** On the GDS, 41.7% (n=106) scored as depressed. Within this group ***significant*** risk factors for depression were being female, living with a partner or being illiterate. People who were widowed or lived alone had a higher level of depression than others.  People with chronic disease had lower levels of depression than those without.  Being female, illiterate and living with a partner were important predictors of depression. | Almost half of all attenders in country participated, but findings cannot be generalised to all attenders.  Bias may have resulted from interviewing by different doctors. |
| Boen *et al*. (2010)  Norway  Peer-reviewed journal *Scandinavian journal of public health* | To determine what were the socio-demographic, psychosocial and health characteristics of people who used senior centres compared with people who did not.  *Senior Centre.* | None | **Randomly selected** from Norwegian Population Register in 2 Oslo districts.  **--------------------------------------------**  **Older people** (2,387) – attenders and non-attenders living in the community (numbers of each not given).  111 of 4,000 excluded as lived in institutions, survey sent to 3,889.  Of 3,889, 166 had unclear living arrangements & were withdrawn. Of remaining 3,723, 2,934 of 3,723 returned survey (64%). 7 removed as incomplete. | **Quantitative**  **Survey (postal)** | Data collected:  - Psychological ailments (Hopkins Symptom Checklist (HSCL-10) measuring anxiety & depression) - Psychosocial: social support (Oslo-3 Social Support Scale (OSS-3).  - Health & QoL: health now; how satisfied with life. Diagnoses of diabetes, chronic lung disease, osteoporosis, musculo-skeletal ailments, coronary infarction, angina, stroke & cancer.  - Knowledge of DCs.  If a regular user, ‘now & then’ user or non-user of DCs: - Reasons for not using DCs - Frequency of different activities (watching TV, reading, walking, travelling cultural activities, visiting others).  Socio-demographic (incl. income & education) & psychosocial goals.  Goals for health and satisfaction.  Statistical analysis undertaken. | Statistical analysis controlling for different variables showed the highest groups of users were the oldest men and women (≥80), single women aged 70-79, women with a diagnosis of osteoporosis, and men (aged 70-79) and women (aged 65-79) with a memory impairment. Usage declined with increased education, income and social support, but this was a tendency **not a** ***significant*** indicator.  People aged ≥80 were the most common attenders. DC attendance increased with age and particular health problems, a group with more health problems and less income than younger groups.  (Characteristics of the two groups are not presented separately, only comparisons.)  Although social support was measured, this was not reported on separately, but used to create a profile of day centre attenders compared with non-attenders. | Despite high response rate & large sample size representative of DCs’ target groups, non-responders may have been the most needy and older women who were poorly represented. - highest non-response rates at older ages ≥80s (43%), 70-79 (37%).  Sample characteristics given by gender and area - not known how many attended DCs. |
| Iecovich and Carmel (2011)  Israel  Peer-reviewed journal: *Journal of Applied Gerontology* | To identify individual predisposing, enabling, and need characteristics that differentiate between users and nonusers of day care centres for frail older persons  Day care centres | Andersen’s behavioural model | National stratified sample + convenience sample of DC users.  --------------------------------------------  **333 OP: -** 81 DC attenders  - 252 non DC attenders (20% of whom had cognitive impairment).  All recipients of home or day care under Long-Term Care Insurance.  Only significant difference between groups: convenience sample was younger (79 compared with 89).  Mean age 80.7 (attenders), 86 (non-attenders) | **Quantitative**  **Interview (face-to-face)** | Socio-demographic and other data collected were grouped according to Anderson’s model:  Predisposing factors: age, gender, marital status, years of residence in Israel, education.  Enabling factors: economic status, size of family network, frequency of contact with family members, living arrangements and if had a homecare worker  Need factors: ADLs, IADLS and self-rated health.  Statistical analysis were undertaken. | DC attenders were *significantly* more likely to be younger or unmarried, live alone, less education, lived longer in the country, better functional status, better self-reported health and larger family networks than non-attenders but less contact with them.  People with smaller family networks were significantly less likely to attend a DC. Receiving home care significantly decreased the likelihood of DC attendance DC [but the sample was mainly HC recipients]. 71% of DC attenders also had home care. People with more IADL limitations were less likely to attend a DC than those with less IADL limitations.  Iecovich and Carmel interpret this as suggesting that DCs serve socially vulnerable OP but only moderately frail OP (who can **still enjoy social activity) rather than OP with poorer function and health as per their aim.** | Non-random sampling. |
| Judge *et al*. (2010)  UK (Scotland)  Peer-reviewed journal *Journal of Policy and Practice in Intellectual Disabilities* | To gather participants' views on 'retirement' at 65 and to explore their experiences of broader daytime activity.  *Local authority day centres for people with learning disabilities <65* | None. | Convenience (identified via community learning disability service)  --------------------------------------------  16 long-term *attenders* of DCs, aged 41-64, with mild to moderate learning disabilities and would be expected to 'retire' (i.e. cease to attend, be 'discharged') when they reached the age of 65. | Qualitative  Interview (face to face) | Participants asked for some information about their current routine, then invited to talk as widely about their experiences and about the feelings, attitudes, and beliefs related to these.  An interpretative phenomenological approach was used to analyse data. | Participants highly valued their DCs as the social hub of their communities. DCs were places they could be occupied, active, eat lunch and meet their friends (other attenders and staff). They were of the view that they would be isolated and lack purpose if they didn't attend their DC. There was a strong desire for continuity and a lack of understanding as to why they didn't get a choice about whether to continue attending once they reached 65. Participants were concerned about losing full membership of their community and the consequences of this. They also valued their independence and autonomy.  *Included hers as people with learning disabilities are living to older ages - usually considered to have reached old age around the age of 50 due to a tendency to develop health problems at younger ages.* | Small sample, but in-depth.  Generalisability limited (semi-rural) particularly if different systems operate.  Already ‘retired’ people ≥65 omitted; participants were anticipating retirement, not experiencing it.  Being interviewed in DC may have influenced some responses, but was most convenient location for them. |
| Manthorpe and Moriarty (2014)  England  Peer-reviewed journal *Health and Social Care in the Community* | To identify what is known about how congregate day care or day centres will meet the challenges posed by the Equality Act 2010 in supporting older people who are lesbian, gay, bisexual and transgender, or from minority ethnic groups. | Equality | N/A | Scoping review of UK literature  No date restrictions imposed.  Carried out May 2013. | Searched:  - Databases: AgeInfo, Embase, Medline, PsycINFO, Social Care Online, Web of Science. - Publication platform: Ingenta Connect. - Older people's sites. | There is a lack of UK research about all aspects of congregate day services. Gaps include who DCs help, how and under what circumstances.  OP appear to value the opportunities provided by DCs. DCs promote positive outcomes and support people’s health, nutritional, social and daily living.  Few evaluations identified; some may have been published as grey literature & others remained unpublished with service providers. Few UK studies acknowledged the over-representation of women.  Manthorpe & Moriarty: 1) - highlighted the difficulties associated with collecting evidence on an undefined ‘intervention’ or series of non-standard interventions, 2) - emphasised the centrality of cost-effectiveness. | Perspective of access to services from an equalities perspective |
| Pardasani (2010)  US  Peer-reviewed journal *Activities, Adaptation and Aging* | To document the characteristics of current senior centre participants and examine the factors that influence participation decisions among older adults.  *Senior centre* | None | **Purposive**  Mailing list of 3,500 consumers provided by the local ‘Area Agency on Aging’ (NWICA).  --------------------------------------------  **Older people** (1,283)  **- 56%** attenders (722)  **-** 44% non-attenders (563).  Response rate: 36% | **Quantitative**  **Survey (postal)** | Survey (developed by Pardasani with an advisory group) of 26 questions (21 multiple choice, 5 open-ended). Option for face-to-face assistance to complete it offered.  Data collected: demographic characteristics; nature, pattern and degree of participation in DCs among users; reasons for participation/non-participation.  Survey also acted as a needs assessment tool for NWICA.  Descriptive statistics & statistical analysis. | DC still have an important place in continuum of care, but will need to adapt to survive – particularly those which are publicly funded as funding and attendance are linked.  Predictors of attendance: age, gender, income, living arrangements, mobility, carer/grandparent responsibilities.  Majority of attenders were white, lived alone and had low incomes. Attenders less likely to be disabled (if older) and not to be informal carers. Less likely to attend: BME older people, employed or married people, those with higher incomes and frail people with disabilities. There was a curvilinear relationship between age & attendance (i.e. attendance increases with age, drops off *significant*ly with increasing frailty).  Pardasani noted greying of participant pool and potential for attracting baby boomer generation (e.g. by offering volunteering opportunities which younger older people are keen on. | US context differs from that in England. |
| Santangelo *et al*. (2012)  Italy  Peer-reviewed journal  *Archives of Gerontology and Geriatrics* | To determine the health conditions of OP attending one DC by recording their medical history and evaluating their cognitive and affective states, and levels of autonomy and ability to self-care.  *Elderly Health Observation Day Centre* | None  (aim was to evaluate health with a view to creating similar DCs in every district in the area) | No account of how individuals were recruited and what proportion of overall numbers of attenders were represented.  -------------------------------------------- **Attenders** (42) of 1 DC**.**  Mean age: 73.6.  50% lived alone; 50% with a family members, usually spouse. | **Quantitative**  **Questionnaire** (administration unspecified) | 2-part questionnaire:  - gathered detailed medical history  - evaluated cognitive & affective spheres, and levels of autonomy & self-sufficiency using: – Mini-Mental State Examination (MMSE) - Geriatric Depression Scale (GDS)  - ADLs, IADLs, and the physical performance test (PPT)  Descriptive statistics. | Comorbidities were prevalent (73.7% had these). 62% took 4 or more medications. Despite this, 55% were fully independent in ADLs and IADLs, 33% were slightly dependent and only 12% highly dependent. 50% of sample were cognitively impaired, although 23.17% only mildly. Sensory impairments: 40.5% visual; 45.1% hearing. Very common: osteoarthritis (92.8%), hypertension (61.8%), cardiovascular disease (47.5%), diabetes (26.2%).  Fewer were depressed at 6 month follow-up compared with baseline (54.8% down to 47.5%). | No recruitment details.  No account of how medical histories were taken or whether these were verified was provided - relevant since a quarter of participants were more than mildly cognitively impaired. |
| Savard *et al*. (2009)  Canada  Peer-reviewed journal  *Journal of Aging and Health* | To examine factors related to regularity of adult day centre attendance among older people with functional limitations.  *Adult Day Care* | Enhanced Andersen Behavioural Model (i.e. predisoposing characteristics & need factors), to include aspects of service delivery | System of Integrated Care for Older Persons (SIPA), evaluated a model of integrated services for frail OP Jun 1999 - Mch 2001, recruiting 1,230 participants through 2 service providers.  --------------------------------------------  **Attenders** (101) of 5 DCs in 1 big city.  Aged ≤65 needing ADL/IADL assistance and living in the community, and who attended day centres attended a DC for 6-month period during the larger study. | **Quantitative**  **Sub-set of** **questionnaire data collected** **by interview** as **part of a larger study** (SIPA) between May-Nov 2000. | Questionnaires, including one to primary carers, administered by interview collected characteristics of OP and carers.  Data on attendance for 6 month period.  Statistical analyses of data. | More regular attendance (as a proportion of scheduled days) by OP with functional limitations was *significant*ly associated with: - receiving ADL/IADL assistance on DC attendance days - attending for a whole day not than half a day - participating less in prevention & health promotion activities once at DC - having a carer experiencing a higher level of burden (where *no* cognitive impairment) or lower level of burden (where cognitive impairment)  - not having worked, or having a carer who had not worked, in health care sector (the only *significant* predisposing factor associated with attendance which Savard *et al* speculated may indicate university education is associated with lower DC attendance.)  Context for study: attendance rates of 4/5 DCs in study 64-85% (average 73%). | Not random sample, although broadly representative but catchment area more ethnically diverse.  Reliable comparison hindered by lack of standardised group activity classification.  Spousal carers (associated with higher attendance) over-represented.  33% cognitively impaired –but findings separated. |
| **OUTCOMES** | | | | | | | |
| Aday, Kehoe and Farney (2006)  US  Peer-reviewed journal  *Journal of Women & Aging* | To examine how friendships made within and extending outside day centres, and activities participated in, influenced the health and wellbeing of older women living alone.  *Multipurpose senior centre*. | None | **Purposive**  Selected from the original 734 whose data had been collected by the NISC survey.  -----------------------------------------  **Female older attenders** (415) who had participated for at least 1 year in activities at multi-purpose DCs and lived alone (274) or with a spouse (171).  Mean age: 74  No differences between groups in self-assessed health status, health status cf 1 yr before, frequency of doctor visits, chronic health conditions or no. of medications used, or in depression status. | **Quantitative**  (case control)  **Secondary analysis of data** drawn from a comprehensive 2002-03 survey carried out by the National Institute of Senior Centers (NISC) (type of survey unspecified). | Data collected about: - Life satisfaction: 8 choices in response to question about how everyday life has changed since participating in DC education & health promotion activities (incl. emotional wellbeing e.g. worry less about future, feel less lonely)  - Impact of DC on mental health: ‘Coming to the center makes my mental health’ (much better, a little better, no different, worse).” - Geriatric Depression Scale – short version. - Social support network & its strength measured by questions about perceived & actual emotional & instrumental support (e.g. depend on friends etc) - Opportunities for strengthening social ties with new friends measured by 8 questions about specific activities (e.g. go out to eat, go shopping together). - DC activity participation (seen as central to developing networks) – checklist completed (educational, life skills, arts/recreation, health promotion, support groups, and volunteer activities).  Comments stressing importance of DC friendships captured qualitatively. | DCs may act as locations in which women, particularly those living alone, may develop supportive social networks which impact positively on their mental wellbeing.  67.3% perceived that their mental health had considerably improved since going to the DC. Greater improvements for those living alone (for 71%, mental health had very much improved) than those living with a spouse.  Emotional wellbeing: 50% of whole sample laughed more than before, 47% felt less lonely, 43% felt more satisfied with life.  Those living alone less likely to be depressed if had friends they perceived they could rely on.  *Significant*ly greater improvement in life satisfaction for women living alone than married; with *significant*ly greater improvements in 5 of 8 life satisfaction measures: felt less lonely, laugh more, worry less about future, have more energy and cope with stress better.  Of those living alone: 89% had developed close friendships – with an average of 12.48 special friends each; 84% felt emotionally supported by these friends; 53% reported confiding in new friends; - 84% felt that their new friends would help them if they were in need (e.g. transport, shopping).  Having friends gave people a sense of belonging. For some, they were ‘substitute family members' (p68). Some said that such companionship protected them from loneliness and isolation. Some, who were housebound, said they would go to the DC more often were transport available.  Women reported enjoyed the companionship they found at the centres (e.g. 'the joy of simple conversation' p68). Developing a strong social support network was more important for the emotional wellbeing of women living alone than for married women. Both groups were similar in terms of friendship formation, perceptions of support and emotional depth to friendships made.  94% attended weekly. Living alone stayed longer (3.4 cf 3.1 hrs). | Non-random selected sample means limited generalisability, but large sample size counteracts this to an extent.  Cross-sectional: does not consider how friendship patterns may have shifted over time.  Method of data collection unspecified. |
| Bilotta *et al*. (2010)  Italy  Peer-reviewed journal *European Journal of Ageing* | To find out whether attending a day centre was associated with quality of life in community-dwelling older people with depression.  *Day Care Centre* | None | **Purposive**  Selected from 643 assessed during 4 month period at 1 geriatric unit. 5 of 154 eligible unwilling (87% participation)  --------------------------------------------  **Older people (**149)  - at least once weekly attenders (17)  - non-attenders (132) All ≥70 with diagnosed depression, and without dementia, severe sensory impairment, personality disorder or psychosis.  Mean age: 82  Groups similar in age, functional & emotional status, comorbidity and social conditions e.g. living alone, no. of visiting relatives). | **Quantitative**  **Interview**  2008 | Comprehensive geriatric assessment including:  - ADL/IADL status - balance & gait: Performance-Oriented Mobility Assessment (POMA)  - cognitive status: Mini Mental State Examination (MMSE) - emotional status: 30-item Geriatric Depression Scale (GDS) - morbidity: Cumulative Illness Rating Scales (CIRS-m and CIRS-s)  Subjective health-related QoL: European Quality of Life Visual Analogue Scale (EuroQol VAS)  Objective determinants of QoL used for analysis: clinical, functional & emotional status, mobility and cognitive function.  Statistical analysis comparing attenders with non-attenders. | Found associations between DC attendance and higher QoL in depressed OP living in the community compared with non-attenders. QoL was even higher with higher weekly attendance.  None of non-attenders had ever attended DCs which Bilotta *et al* interpreted as suggesting that depressed OP tend not to drop out of DCs.  Bilotta *et al* believe the findings are ‘of a reasonable magnitude' (p33) taking into account the similar prevalences of depression and dementia and that most DC attendees have dementia. | Small number of attenders (11% of sample).  More of a medical model (incl nurses, OTs, physio) despite similar purpose to UK non-medical model.  Causality cannot be determined by cross-sectional study. |
| **Caiels, Forder and Malley (2010)**  **England**  UK  Social care research Group | To develop and validate an approach to measuring the impact of low-level services on service users, specifically day care centres. | Cost-effectiveness based on valued consequences | **Random selection**  137 DCs providers from list of 497 provided by  31 of 150 LAs who responded to survey.  (100 randomly selected; 37 added to meet target for distribution of 5,000 individual recruitment packs – mean 37 per provider).  --------------------------------------------  **Older attenders (961)** low level preventive DCs. All ≥65 and with sufficient cognitive function to consent and participate in face-to-face interview.  19% response rate (of 5,000 recruitment packs).  Mean age: 81  Interview: 262 consented, 38 dropped out (moved, unavailable, ill, poor cognition, died, hospitalised, inadequate English) leaving 224. | **Quantitative**  (Validation and testing reliability of an impact measure**)**  **Self-completion questionnaire**  (961)  **Interview (**224) which included a validated scale | Tool to measure impact of a service in terms of valued consequences/outcomes (social care-related quality of life) in 9 domains was tested and validated (ASCOT).  Questionnaire: individual characteristics & need, outcomes. Those consenting were interviewed to test reliability/ validity of questionnaire (collected same data & additional outcomes questions, demographics & dependency measures - EQ5D validated scale - health outcomes (mobility, self-care, usual activities, pain/ discomfort, anxiety/ depression); a single (global) QoL measure using a -point scale; ADLs & IADLs; a single (global) health measure using 5 point scale.  Statistical analysis undertaken.  Tool included intangible aspects likely to be affected by DCs (e.g. having a good social life, being meaningfully occupied & feeling in control) and tangible aspects (personal cleanliness, home cleanliness & comfort, safety, meals and nutrition) as well as anxiety, dignity & respect. People rated their QoL/wellbeing in these 9 domains, both current and hypothetical (expected in absence of DC). Research-based importance weights used to calculate a score showing impact. | **DCs impacted positively in all 9 domains:** - greatest impact was for outcomes associated with social contact (61% of respondents) - next greatest benefits were for meals and home cleanliness & comfort (40%) (‘*This may be due to reducing the tasks associated with food preparation and personal cleanliness that would otherwise take place at home*’ (p37).  Attenders benefiting most were those either attending >3 times a week, living alone, receiving Pension Credit (lower income) or with higher ADL needs (but not *very* high ADL needs i.e. 5 ADLs). The higher needs, the greater the outcomes improvement, except at the highest need levels.  DCs were cost-effective if guidance used by NICE to judge cost-effectiveness of health services relative to outcomes is applied. Attendance at DCs improved outcomes at a cost equivalent to just under £25,000 per annum per 0.1 unit improvement (ASCOT scale of 0-1) per attender on average. There was a 92% probability that DCs were cost-effective at a £30,000 per ASCOT threshold.  61% very satisfied with support received from DC, 31% quite satisfied, 5% neither satisfied nor dissatisfied, 3% quite/very dissatisfied.  80% always happy the way care workers treat them, 16% usually happy, 3% sometimes happy.  62% said that those offering support/assistance at DC always did the things they wanted done, 29% nearly always, 9% sometimes, 1% never.  77% said that those offering support/assistance always do a good job, 20% usually, 2% sometimes, 1% never.  63% rated relationship with people offering support/assistance as excellent, 32% good, 5% okay.  72% attended the DC as much as they wanted, 26% would like attend more, 1% visited more than they wanted to. | Risk of bias in sample as administered by DC providers but whether sample was representative could not be established as no national data on DC users available. |
| Dabelko-Schoeny and King (2010)  US  Peer-reviewed journal  *Journal of Gerontological Social Work* | This study aimed to reveal the impact of ADS from the perspective of the participant to identify new areas for outcomes research in ADS.  *Adult Day Health Service* | None. | **Purposive**  **--------------------------------------------**  **Attenders** (28) with little/no cognitive impairment – 90 days after enrolment – in 4 day health centres.  4 of 32 interviews excluded due to inaudible recordings (3) & too great cognitive impairment (1). | **Qualitative**  **Interviews**  2005-06 | Semi-structured interviews gathered descriptions of the ways in which attendance made a difference to their lives (incl. their favourite thing about going to the DC). MMSE administered after interview to determine cognitive status.  Grounded theory approach taken to analysis. Categories identified & grouped into themes using theoretical coding.  A conceptual model was developed. | Attending a DC had made a difference to 25 respondents’ lives; 3 enjoyed attending, but said it had made no difference to their lives.  The most impactful experiences were: - social connections with other attenders - participation and/or enjoyment of activities and being able to access the services provided (arts, games, exercise, learning new things and physio/occupational therapy).  Second most impactful were relationships with staff that empowered attenders (e.g. by acknowledging attenders’ feelings, giving them choices and helping them to learn new skills.)  These experiences improved perceived psychosocial wellbeing (reduced social isolation and feelings of depression & anxiety) and perceived dependency & burden on carers (carer did not have to worry about them, and this improved their relationship).  Social connections with other attenders ranged from simply having people to talk to or making new friends. Sitting at shared tables during informal and formal activities was an important chance to make connections. Having people to talk with also helped people to gain better perspective of their own abilities.  Dabelko-Schoeny & King argued that: 1) **-** experiences appeared to be influenced positively by the fact that services were delivered in a group setting, 2) - findings suggest that psychosocial wellbeing can be better targeted by individual care planning & activity programming. | Acknowledged positive bias, but effect of this was mitigated by re-stating responses in interviews, monitoring recordings & regular de-briefs.  Acknowledged weakness: single not repeat interviews, but efforts were made to reach data saturation by continuing to interview until multiple views, descriptions etc had been collected.  Socially desirable responses may have been given. |
| Fawcett (2014)  Australia  Peer-reviewed journal *British Journal of Social Work* | To explore the relationship between day centre attendance, increased resilience and improved health and psycho-social outcomes.  *Day Clubs* | None | **Exploratory study** - cross-section across region.  --------------------------------------------  **Attenders** (80) of different day clubs | **Mixed methods**  **Validated scales**  **Interviews** | Variety of validated scales to measure outcomes. Most unspecified; Geriatric Depression Scale used.  Interview content unspecified.  1 year follow-up carried out with 12.5% (n=10). | Attendance promoted wellbeing through improvements in resilience & mental health. A *strong relationship* between DC attendance and improved depression and resilience scores was found. The longer people attended, the more resilient and ‘mentally buoyant’ they became. All participants showed gains, people who benefited more: lived alone, mobility impaired, younger (≤70), attended for longer (more often or over longer period). People in 2 DCs were attenders on some days and volunteers on others.  89% felt more stimulated; 87% experienced a greater sense of contentment & 69% greater confidence; 81% made new friends.  Attendance ‘encouraged the undertaking of additional activities and engagement with family and community networks outside the club.’ (p843): 56% undertook more outside activities than previously. Participants reported valuing ways that DCs enabled them to exercise self-direction and promote self-confidence’ (p843).  Fawcett speculated that: 1) - DCs appeared to have a role in reducing hospital admissions related to socially related health crises/ineffective health monitoring & in delaying institutionalisation for socio-health reasons, 2) - that those feeling no benefits would be most likely to stop attending. Drop-out rates were low. Tried to contact former attenders to discover reasons; this was impracticable.  At 1 year follow-up, findings showed continued positive impact in confidence, the ability to undertake more activities, greater feelings of security and reduced social isolation. | Very little reported about method, timescales and analysis (article based on unpublished report). |
| Fitzpatrick *et al*. (2005)  Canada  Peer-reviewed journal  *Social Work in Health Care* | To examine the influence of social support (friendship, caregiving and advice) on mental and physical health.  *Senior Centre* | Social networks | **Purposive** – DCs selected based on comparable activity programmes and functional ability of attenders.  - OP - inclusion based on participation in 4 activities: volunteering, lunch, card playing & dance.  ---------------------------------------  **Older attenders** (186 ) of 2 large senior centres, 55% of whom volunteered there.  186 represented 81% of OP invited and approx. 90% of all attenders.  Mean age: 72.5 (9 aged 47-62) | **Quantitative**  **Self-administered questionnaire** including validated scales  2003 | Questionnaire developed for study collected data about wellbeing, social support & health, length of attendance, participation in activities, demographics.  Modified versions of scales used: - Psychological General Wellbeing Schedule (PGWB) (subjective) - Medical Outcomes Study Social Support Survey (social support & self-rated health)  ‘Caregiving’ included help with chores if ill, prepare meals if unable to, take to GP, share private fears with, give hugs.  Statistical techniques were used to establish influence of social support on mental & physical health, some of which may not normally be considered within ‘social support’. | Participating in activities, volunteering and eating together at DCs promoted socialisation. Social support obtained at DCs benefits attenders’ mental and physical health. Attenders starting a new activity perceived better health & social support from friendships. Despite 68% of participants reporting having at least 3 friends at DC, social support from friendship was *not* one of the factors that *significant*ly affected health. Fitzpatrick *et al* reported being surprised by this.  Attenders living alone perceived less support from friendship, were less happy with their life and felt their life was not full of interesting things compared with attenders living with someone.  Those eating lunch at DC (31%) perceived less support from friendship & poorer physical health than people who did not, but it was not known if this was their only activity at the DC.  Attenders who volunteered perceived better physical health & social support and more support from advice (at a personal level, e.g. confiding about problems, advice about crisis) than non-volunteers.  Fitzpatrick *et al* speculated that people who lived alone - who reported life to be less interesting – may seek socialisation and support from peers and staff by attending DCs - ‘the senior centre scene may represent the only meeting place for isolated and lonely people’ [p34]. | Only addressed 3 aspects of social support (friendship, caring & advice).  Caregiving variable may have been confounded with having a spouse or social support outside the DC. |
| Fulbright (2010)  US  Peer-reviewed journal: *Journal of Psychiatric and Mental Health Nursing* | To determine the role that senior citizen centres play in decreasing depression in community-dwelling older persons.  *Senior centre* | Social Cognitive Theory (self-efficacy component) | **Convenience**  -----------------------------------  **257 attenders** of 9 senior centres.  All were aged ≥55, with minimal or no cognitive impairment and did not take antidepressant medication. | **Quantitative**  **Questionnaire** | Questionnaire collected demographic data (age, living arrangements, marital status, gender), length of time and reason for attending DC (meals, activities, friends/support), impact of attending the centre on everyday life (better, no change, worse), friendships (new DC friends & their reliability at DCs when in need of assistance, friends outside DCs & their reliability when in need of assistance.  Validated screening tool used to measure depression - 15-point Geriatric Depression Scale. | DCs are places at which social networks can be developed. Attending a DCimpacted positively on individuals and was said to deter depression. Of the factors noted to be linked with less reported depressive symptoms were perceived life improvement, making friends who could be relied on and making close friends, with the latter being the most *significant*. Having friends at DCs *significantly* lowered the odds of reporting depressive symptoms.  75% (n=193) perceived that attending a DC had improved their lives. Life had not changed for 23% (n=59) and was worse for 0.8% (n=2). Improvement was largely attributed to increased social support (by 80%). Of the 14% (n=36) showing symptoms of depression, 55.6% (n=20) said that life had improved since attending the DC.  Most (69%, n=178) had started attending a DC for social support, a reason slightly more common among widows/ers (74%) than married people (69%) and was lower among those divorced/never married (59%). The meals had attracted 18% (n=47) and activities 12% (n=32). 88.2% (n = 178) of respondents who started attending for social support, 87.5% (n = 32) of those attracted by the activities and 74.5% of those attracted by the meals (n = 47) did not self-report depressive symptoms using the Geriatric Depression Scale (GDS-15).  Depression was less reported by people having made close friendships at the DC compared with those who hadn’t. 94% (n=241) had made close friends, most of whom (88%, n=212) experienced low depressive symptoms. 85% (n=217) said they could rely on these new friends. Of the few (6%, n=15) who had not made close friends, around half did and half did not report depressive symptoms. Although no data about length of attendance were reported, Fulbright concluded that ‘the effect of attending the senior centre for periods long enough to make close friends reduced the numbers of older persons screening for depression by 4–5%’ [p390].  93% (n=241) of participants reporting having friends outside the DC and 92% said they could rely on them. | Non random sampling limits generalisability of findings.  Self-reported data.  Possibly over-claims the impact on depression of attending DCs since the study’s cross-sectional nature means that cause and effect cannot be established, although outcomes of making friends and life improvement.  The findings, particularly with respect to outcomes for men were said to be important, however, only levels of depressive symptoms for men (41% of participants, n=100) were reported separately. |
| Iecovich and Biderman (2012)  Israel  Peer-reviewed journal *International Psychogeriatrics* | To investigate whether attenders reported reduced loneliness.  2012  *Day Care Centre (social model)* | **Social needs theory**  **Andersen et al’s behavioral model** | **Purposive.**  Recruited through 13 DCs serving approx. 1,000 physically frail and cognitively intact OP.  GPs identified a cognitively intact non-user for each attender. If non-user reluctant or unavailable, GP was asked to provide another name.  -----------------------------------------  **Older people ≥60** (817) - all frail with no cognitive impairment. - 417 attenders  - 400 non-attenders  Groups matched by age (within 5 years), gender & GP, ADL and IADL status.  Attenders: further 165 refused, 75 not members of a specific health insurance organisation and unspecified number had language barriers, cognitive impairments or unavailable (around 60% of whole sample of attenders).  Of non-attenders approached, 111 refused, 65 unavailable, 7 had died. No suitable match was found for 17. | **Quasi-experimental** (cross-sectional, case-control)  **Interviews** administering scales (incl. validated)  **2009-10** | Structured, face-to-face interviews:  - Loneliness (social & emotional): de Jong Gierveld Loneliness Scale (incl 11 items)  - IADLs: Fillenbaum’s measure  - ADLs: Katz *et al*'s instrument  - Self-rated health: 1-6 rating scale  - Comorbidity: if suffer from 14 major medical conditions (1 point for each)  - Day care use: number of times attended per week (1-6) & length of time (months) attended  - Economic status: 7 categories of income & perceived economic status (Likert scale of 1-5). | Differences in loneliness between attenders and non-attenders who were frail and not cognitively impaired were *not significant*, although loneliness was reported slightly more by attenders (moderate to severe loneliness: 79.3% of attenders, 76.3% of non-attenders).  Frequency and length of DC attendance were *not* *significant*ly associated with levels of loneliness.  *Significant* factors in explaining loneliness in DC attenders were older age, poorer perceived economic status, self-rated health and IADL function and living in Israel for fewer years.  These factors were also *significant* across the whole sample for which additional significant factors were having fewer children and living in smaller households.  Despite finding that DCs did not exert a significant influence on levels of loneliness, Iecovich & Biderman speculated that their findings suggest that DCs may actually impact positively on loneliness if one bears in mind the differing predisposing factors, enabling factors and need between attenders and non-attenders, since those who attend may have been motivated to do so to alleviate their loneliness. | Causal relationships cannot be established by a cross-sectional study.  Sample may not be representative of attenders across the country. |
| Iecovich and Biderman (2013a)  Israel  Peer-reviewed journal  *The Journal of Applied Gerontology* | To explore and examine the reasons for use and non-use of day centres  2013a (reasons)  *Day Care Centre (social model)* | None. | **[See Iecovich & Biderman 2012]**  **--------------------------------------------**  **Older people** ≥ 60 (819) - 417 attenders  - 402 non-attenders  All frail with no cognitive impairment.  Groups matched by age (within 5 years), gender & GP, ADL and IADL status. | **[See Iecovich & Biderman 2012]** | Structured face-to-face interviews: - Reasons for non-use: list of 20 reasons in 6 categories: awareness of service (3 items), accessibility barriers (4 items), current attenders’ characteristics (4 items), DC’s characteristics (4 items), 'no need for such a service'(3 items), personal difficulties (3 items). List based on interviews with 2 DC directors who provided reasons low DC attendance.  - Reasons for use: list of 10 agree/disagree statements: 4 categories: promotes wellbeing (4 items), provides social benefits (2 items), meets needs (2 items), serves as respite for caregivers (2 items).  - Also IADLs, ADLs, self-rated health, co-morbidity, DC use and income (actual and perceived)  **[see Iecovich & Biderman 2012]**  Statistical analysis undertaken. | Most non-attenders (90%) reported ≥4 reasons for non-attendance rather than one main one. Almost all (97.2%) non-attenders reported being aware of the services. Most (84.7%) knew what it offered. Non-attenders reported their main reasons for not attending DCs as not needing such a service (90%) and preferring to stay at home (88%). Other reasons included finding it difficult to see disabled people, perceptions that only miserable people use DCs, uninteresting activities and problems with accessing them. Non-attenders did not identify with people who attended.  Almost all attenders reported doing so to improve their life, mood, health and wellbeing, for social benefits, to feel less lonely and increase their friendship circles, as respite for their family and because the service met their needs. Half said they did so to reduce the burden on their family.  Iecovich and Biderman suggest that non-attendance may be partly due to perceptions of DCs as being a service for people from lower classes (most attenders had low education levels) and partly due to social networks still being in place and, therefore, their ‘need’was not for a socially-based service. | List of reasons did not allow for OP to provide additional, unanticipated reasons.  Sample may not be representative of attenders across the country.  Generalisation may be restricted to social models of DC.  Undertaking interview at DC may have affected responses positively. |
| Iecovich and Biderman (2013b)  Israel  Peer-reviewed journal *Ageing & Society* | To examine the extent to which attenders experience higher levels of quality of life than non-attenders  *Day Care Centre (social model)* |  | [**See Iecovich & Biderman 2012]**  **----------**  **Older people ≥60** (817) - 417 attenders  - 400 non-attenders  All frail with no cognitive impairment.  Groups matched by age (within 5 years), gender & GP, ADL and IADL status. | **[See Iecovich & Biderman 2012]**  Interviews | Structured interviews:  - Quality of life: WHO Quality of Life Scale (subjective & validated) 4 domains:  - physical health (e.g. extent that physical pain prevents from doing what need to do; how much medical treatment needed to function in daily life);  - mental health (e.g how much enjoy life; to what extent life feels meaningful);  - social relationships (e.g. satisfaction with personal relationships; 1 item on satisfaction with sex life excluded due to refusal to answer);  - environment (e.g. how safe feel in daily life, how healthy is physical environment).  Measure included 2 items relating to general health status (how rate QoL; satisfaction with health).  Data about ADL, IADL, self-rated health and economic status (actual and perceived) - **[See Iecovich & Biderman 2012].** | Attenders experienced *significant*ly higher levels of emotional, physical and overall quality of life (QoL) than non-attenders, but there was no *significant* difference in environmental quality of life between attenders and non-attenders.  A higher level of wellbeing was *significant*ly connected with social benefits, needs being met and DC attendance acting as respite for family carers.  Most variables explaining higher QoL were subjective not objective (i.e. self-rated health, perceived economic status instead of actual morbidity or income, number of weekly visits, length of visit).  Iecovich & Biderman suggest that interventions to change attitudes and address feelings would be best offered by DCs to promote QoL. | Sample may not be representative of attenders across the country.  Generalisation may be restricted to social models of DC.  Causality cannot be determined by a cross-sectional study. |
| Iecovich and Biderman (2013c)  Israel  Peer-reviewed journal *Gerontologist* | To examine the extent to which users and non-users differ in frequency of use of out-patient health services (visits to specialists) and in-patient health services (number of hospital admissions, length of hospitalisations, and visits to emergency departments).  *Day Care Centre (social model)* | **Medical offset** (use of one service reduces use of another) | **[See Iecovich & Biderman 2012]**  **----------**  Older people ≥60 (800): - **400 attenders** of 13 day centres - 400 non-attenders.  Groups matched by age, gender, functional status and GP, but socio-economic characteristics were ***significant***ly different. | **[See Iecovich & Biderman 2012]**  Interviews.  Health service use data provided by health care organisation participants were members of. | Health care service use data drawn from the central computerised data held by the health care organisation that participants belonged to: - total visits to specialists (e.g. cardiologist, neurologist) - number of admissions to hospital and total bed days  - number of visits to hospital A&E departments.  Structured interviews: - IADLs, ADLs, self-rated health, co-morbidity, DC use and income (actual and perceived)  **[see Iecovich & Biderman 2012]**  Statistical analysis undertaken. | No *significant* difference in use of heath care services between attenders and non-attenders was found. Use was related to morbidity rather than attendance at DCs.  No offset effect was found between DC attendance and hospital/specialist usage. Day centres did not meet people’s actual health needs. Iecovich & Biderman report this finding to be surprising given research positive evidence concerning psychosocial interventions and medical offset.  Iecovich & Biderman suggest that there may be a role for health services (including rehabilitation) to be offered within DCs, particularly given that attenders are a more vulnerable group than non-attenders (unmarried, lived alone, lower economic status). Israeli DCs generally conform to the ‘social model’, only providing health promotion programs to a limited extent. | Use of primary care may be more suitable measure of medical offset for a social model of DC with proven psychosocial benefits.  Cross-sectional study – causation cannot be determined. |
| Ishibashi and Ikegami (2010)  Japan  Peer-reviewed journal  *BMC Health Services Research* | To establish the validity of the policy to encourage the use of day care services and to contain the use of home help services by observing decline in functional status as measured by eligibility level.  *Day Care.* | None. | **Selected from a dataset,** held by municipal government, of records of 834 people ≥65 who had applied for long-term care insurance (LTCI) for first time Apr 2007-Oct 2008 & were confirmed eligible for level 1, accounting for 88.6% of all those certified level 1.  Of 340 who had started using services within 3 months of certification, 102 used day care and 139 home help.  --------------------------------------------  **Older people** (241) (102 **attenders** & 139 home help users) with lowest level of LTCI eligibility: 1 (1-3 = IADL disability).  Groups similar in gender and economic status, but attenders older by nearly 5 years. | **Quantitative – prospective longitudinal**  **Data collected from municipality maintaining database every 6 months for an average of 18 months.** | Service use was tracked and participants’ reassessment (eligibility level data) was collected 6 monthly over 19 months.  Socio-demographic characteristics (gender, age, and economic status as indicated by level of premiums).  Information regarding the relationship of the primary caregiver and time spent providing care were obtained from the care plans drawn up at the start of service use.  Statistical analysis was carried out. | Functional status of new day care users with low needs (level 1: DC being attended as a preventive service) was more likely to decline *significantly* over 18 months than that of new home help users. Of DC attenders, 37% had declined to level 4 compared with 21% of home help recipients (excluding 0.8% died and 0.8% moved away). Rates of decline were similar regardless of number of days attending DC.  Although this appears to suggest that home help is more effective in maintaining functional status than day centres, Ishibashi & Ikegami proposed that the most likely reason for this was their older age. They were older than home help recipients (over half the sample was aged over 80).  People with a co-residing primary carer were more likely to attend a DC whereas people with no primary carer, or where the primary carer did not co-reside, were more likely to choose home help.  *Only people using either day care or home help were included. People using both were excluded (n=23).* | Rate of take up of day care was lower than national average whereas take up of home help was higher in area study took place. |
| Kelly (2017)  Canada  Peer-reviewed journal  *The Gerontologist* | To explore the impact of attenders’ extended time living in the community and 100-day rates on A&E attendance, acute care hospitalisation and days in hospital.  *Adult day services* | None. | **Selected from a dataset.**  812 **a**ttenders and 5,445 non-attenders (n=6,257) who were aged ≥65 at the time of newly enrolling in the provider’s ‘home health’ programme over a 2-year period (1st July 2012 to 30th June 2014) and were in the programme for ≥90 days.  These people were monitored up to 30 September 2014 (follow-up date).  Original sample, excluding those exceeding monthly service hourly limit (n=47) or who used respite (n=159) was 7,184 and those who did not have a spousal or adult child primary carer (n=927). | **Quasi-experimental**  Retrospective analysis of administrative data held by one provider of services (including adult day services and in-home services). | Administrative date from provider’s hospital (no. A&E attendances, admissions and days of hospital stay) over the 180-day period (6 months) prior to service enrolment were obtained for each of the 6,257.  Using administrative data from assessments (socio-demographic, health, behaviour, carer burden and participant/carer views concerning whether participant would be better off in long-term care, statistical analyses were carried out to ascertain propensity scores (based on hospital and assessment data) which were used to match each attender with a similar non-attender. Further statistical analyses carried of matched pairs. | Before matching analysis: Over the 180-day period prior to programme enrolment, future attenders had fewer A&E attendances, hospital admissions and hospital days than future non-attenders.  Matched pair analysis: Attenders spent *significantly* fewer days in hospital than non-attenders and hospital stays were *significantly* shorter than among non-attenders. Rates, but not numbers, of A&E attendance and hospital admission were also *significantly* lower among attenders. Attenders’ also remained in the community for significantly longer.  Attenders averaged 1.7 days a week and 8.6 months at day centres. Kelly *et al.* speculated that their greater exposure to health care professionals meant that health problems would be noticed before becoming acute.  The attender group had fewer women, were less likely to live alone and more likely to have a burdened spousal carer, were slightly younger (average 81.6 compared with 83.8 years), more clinically stable and more able to manage their personal care without help. Dementia was more present in attenders (31.8%) than in non-attenders (17.4% of unmatched non-attenders). | Canadian day centres are designed for reasonably functional older people who are well-supported and living in the community.  Having excluded people without a spousal or adult child carers may have limited the generalisability of the findings. |
| Kelly *et al*. (2016)  Canada  Peer-reviewed journal  *Journal of Applied Gerontology* | To investigate centre attendance ‘dosage’ on time to institutionalisation  *Adult day services* | None. | **Selected from a dataset.** 1,477 attenders and 14,535 non-attenders (n=16,012) aged ≥65 who had enrolled in the provider’s ‘home health’ programme over a 4-year period (1st Jan 2009 to 31st Dec 2012), whose administrative records were complete and whose care was not managed by carers (i.e. not ‘very high needs’): | **Quasi-experimental**  Retrospective analysis of administrative data held by one provider of services (including adult day services and in-home services). | Participants were grouped into 4 levels of attendance ‘dosage’ deemed likely to impact on institutionalisation. Analysis of total days and hours of attendance undertaken to ensure categories reflected both frequency and duration of attendance. Dosage categories were: High (equivalent of at least 96 days over 12 months i.e. average 1.8 days weekly – includes attenders average 3.5 days/week for 9 months and average 1.05 days/week over 16 months; n=513), Moderate (those whose attendance fell in between Low and High, n=434), Low (equivalent of a maximum of 18 days over 12 months/maximum average of 0.35 days weekly, n=530) and None (n=14,535).  Two models were created, one included all groups, one only attenders. Using administrative data from assessments (socio-demographic, health, behaviour), family income and participant/carer views concerning whether participant would be better off in long-term care, statistical analyses were carried out to investigate group differences and isolate the impact of attendance. Differences were controlled for. | Those in the High attendance group remained in the community for longest, followed by those in the Moderate group, then the Low group (i.e. effect increases systematically with consistency of attendance). Risk of institutionalisation decreased *significantly* with High and Moderate attendance (equivalent to at least of 0.35 days/week over 12 months).  Time at home converged for the Low and None groups at one year and at three years for the Moderate and None groups. In the High group, higher numbers of months receiving home health services increased institutionalisation risk; risk was *significantly* mitigated by attendance.  Proportions of people with dementia was low in all groups, but higher among attenders (High 11%, Moderate 13%, Low 18%, None 9%) who also had higher risk of institutionalisation due to carer burden. Non-attenders were older (49% of non-attenders aged ≥85 compared with 36% of attenders; 32% of attenders aged 65-78 compared with 24% of non-attenders) and more likely to be female, married and with less education and to have attended A&E or had a hospital admission in the 90-day period prior to scheme enrolment.  Attenders were more likely to have spousal primary carer, no carer burden and higher income. Carer burden was slightly lower among attenders’ carers than those of non-attenders. | Differing lengths of time remaining in community may have been due to between-group individual differences.  Even when group differences, it is impossible to completely isolate service impact although this evidence is strong. It is possible that it was the combined effects of day centres with other in-home services that produced this impact.  Findings may be more generalisable to a social and emotional model of day centre which is the model this provider operated. |
| Kuzuya *et al*. (2006)  Japan  Peer-reviewed journal *Geriatrics & Gerontology International* | To examine the effect of day care service on the mortality of community-dwelling older people eligible for the long-term care insurance (LTCI) programme.  *Day Care & Day Rehabilitation.* | None | 1,875 OP recruited to Nagoya Longitudinal Study of the Frail Elderly NLS-FE, a study of frail, community-dwelling, dependent people ≥65+ who were eligible for long-term care insurance which determines levels of care provided by applying eligibility criteria, lived in Nagoya city and in receipt of services from the Nagoya City Health Care Service Foundation for OP.  --------------------------------------------  1,673 of OP in receipt of services: **attenders** (726); **non-attenders** (947)  89% of original sample (missing data for 202).  Groups matched for demographics, health status & medications.  42% of attenders and 30% of non-attenders (35% overall) had dementia. | **Longitudinal - prospective cohort study** (Nagoya Longitudinal Study of the Frail Elderly - NLS-FE).  Comprehensive in-home assessments by trained nurses baseline and 6 and 12 months.  At 3 month intervals, data were collected, in interviews,  about any events participants experienced including admission to hospital, long-term care admission and mortality | Assessments:  - Geriatric Depression Scale short version (GDS-15) (24%, n=391 did not complete due to cognitive impairment)  - ADLs – Barthel Index  (Data collected from another person where substantial cognitive impairment)  - Interviews (service use)  - Care management records: diagnosed conditions in Charlson Comorbidity Index, prescribed medications.  Statistical analysis of data was conducted comparing differences between DC attenders and non-attenders. | **DC** attendance was associated with significantly reduced mortality, at 21 months. Day care attendance was found to be protective against mortality for OP with lower ADL impairment, fewer comorbidities, depression but without dementia, and significantly protective for those aged 65-74.  DC use was associated with a 32-39% decrease in mortality across attenders regardless of demographic or health characteristics.  13% of attenders (n=94) died compared with 18% (n=174) of non-attenders.  When attendance was ≥2 weekly, mortality was significantly lower in attenders than non-attenders, at 44% (2 times a week) and 63% (≥3 times a week).  Attending a DC once a week did not reduce mortality.  There was lower mortality among attenders who also had a home-visiting nurse. 32% of DC attenders received home help and 40% home-visiting nurse services.  Mortality was higher among those with severe cognitive impairment who were unable to complete the GDS (26% vs 13%).  Kuzuya *et al* suggested that being in receipt of more than one service was protective of mortality in frail OP and noted that the reasons behind DCs’ beneficial impact are unknown. | Not randomised sample.  42% of attenders had dementia, but findings were presented separately for those with and without cognitive impairment.  Mortality in severely cognitively impaired people was not presented separately for attenders and non-attenders.  Characteristics of survivors and the dead not given.  Findings may not be generalisable to other populations due to differing cultural attitudes and access to DCs. |
| Kuzuya *et al*. (2012)  Japan  Peer-reviewed journal *Journal of the American Geriatrics Society* | To examine whether use of day care services influenced placement in long term care over 3 years.  *Day Care & Day Rehabilitation.* | None | **[As Kuzuya 2006]**  1,875 OP recruited to Nagoya Longitudinal Study of the Frail Elderly NLS-FE).  --------------------------------------------  **OP in receipt of services** (1,739)  **attenders** (774), **non-attenders** (965)  Enrolled 1 Dec 2003 - 31 Jan 2004.  93% of original sample (missing data for 136).  1,442 had carers.  Groups matched for demographics, health status & medications. | **[See Kuzuya 2006]**  Comprehensive in-home assessments by trained nurses at baseline and 6,12, 24 and 36 months.  At 3 month intervals, data were collected, in interviews, about any events participants experienced including admission to hospital, long-term care admission and mortality. | Assessments:  - Geriatric Depression Scale short version (GDS-15) (24%, n=412 did not complete due to cognitive impairment)  - ADLs – Barthel Index  - Zarit Caregiver Burden Interview (20%, n=289 of carers did not complete the ZBI.)  (Data collected from another person where substantial cognitive impairment)  - Interviews (service use)  Care management records: diagnosed conditions in Charlson Comorbidity Index, prescribed medications.  Statistical analysis of long-term care placement and predictors of this over 36 months was conducted. | Use of DCs was found to be a *significant* predictor of a move to residential care over 36 months, as are dementia, age & carer burden: once weekly attendance was *not significantly* associated with such moves, but attendance for 2 or more days a week *was*.  Significantly more attenders (19%, n=143) had moved into residential care at 36 month follow-up than non-attenders (8%, n=74).  Participants (all) *without* severe cognitive impairment were less likely (11%, n=150) to move into residential care than those with (16%, n=67 movers) 24% (n=412) of the whole sample was severely cognitively impaired.  Dementia was more prevalent in attenders (44.2%) than non-attenders (22%), with cognitive impairment being severe in 24% of the whole sample.  Hospitalisation rates during 36 month follow-up were similar between attenders (43%) and non-attenders (41%).  Attenders used nursing and home-help services more than non-attenders.  Kuzuya *et al* noted that this finding conflicts with their 2006 finding that DC attendance (≥2 weekly) reduces mortality at 21 months.  *Note: Not excluded because one-third of overall sample had dementia [see Kuzuya et al 2006. Included despite high proportion of attenders with cognitive impairment (44%) because findings presented separately for those with and without dementia.* | Sample not random.  Cause and effect between attendance and residential care moves could not be established, nor reasons for these. Users of formal services likely to have higher needs than non-users, and those with greater needs may attend more often. Outcome of such needs may prevail over positive effects of attendance.  Findings may not be generalisable - differing cultural attitudes and access to centres. |
| Murphy *et al*. (2017)  Ireland (but study about Wales, UK)  Peer-reviewed journal  *Health and Social Care in the Community* | To identify effect of attendance of a purpose-built integrated centre on functional mobility, prescribed medication and wellbeing (psychological and physical)  *Adult day care centre – integrated care (pilot) (rehabilitative model)* | None. | **30 new attenders of centre** (27 remained after 9 months)  33 non-attenders on a community nursing caseload  Inclusion criteria: aged ≥18, willing and able to give informed consent, fit enough to undergo assessment (psychologically and physically), attending centre or seeing nursing team at least once weekly for ≥10 months.  Mean age:  - attenders 77.8 years - control group 82.67 years  Groups significantly different in age, mental health, functional mobility. | **Quasi-experimental** (pre- and post-test)  Assessments at baseline, 4 and 9 months.  (Nov 2010-Sep 2013) | Functional mobility (Barthel’s Index).  Psychological and physical wellbeing (SF-12).  Some socio-demographic data.  Individually-tailored multi-disciplinary therapeutic packages including (e.g.) ADL assistance (toileting, hair, washing), occupational and physiotherapy, other nursing, social work interventions and activities (e.g. music groups, singing, raffles, cooking, craft, gardening). GP visited weekly. Specialist support brought in as necessary (e.g. dieticians, podiatrists audiologists). Transport and lunch were provided. | Attendance was usually weekly (7 hours each day) resulted in a small, but insignificant change in attenders while non-attenders declined.  Attenders experienced a small, but insignificant, improvement in physical wellbeing. There was no significant change in functional mobility and no change in psychological wellbeing among attenders. Numbers of medications increased in both groups. | Groups were not closely matched (age, functional mobility and mental wellbeing).  Support was individually-designed meaning not possible to isolate impactful factors.  Bias may have been present as attenders were volunteers.  Small sample meant only large differences could be detected. |
| Ron (2007)  Israel  Peer-reviewed journal *International Psychogeriatrics* | To compare two groups of women receiving care insurance services (at home or at day centres) and to assess which demonstrated higher self-esteem.  *Day Centres.* | Self-esteem affected by several intra- and inter-personal factors including mastery of life and circumstances (e.g. social networks)  and self-evaluation (e.g. state of health & ADLs). | **Non-random sampling** (class and convenience sampling) to ensure equal representation of various characteristic existing the older population (age, years of education, subjective perception of functional abilities).  **--------------------------------------------**  **Attenders** (150); home care recipients (150) – all women and eligible for care insurance.  Apart from living arrangements, no ***significant*** demographic differences between groups or differences between levels of social/family support received. | **Quantitative**  **Questionnaires administered by interview** | Demographic data.  Subjective function perception: 10 item scale 'SELF'  Satisfaction with service & carers: Falck's scale of 13 statements relates to both service & carers which measures expressive and instrumental satisfaction on a scale of 1-3.  Family support: 2 tools examining sources of support over past 2 weeks, grouping these into sources (family, professional, general).  Self-esteem: 2 tools - Pearson's 7 item sense of mastery of life and circumstances self-report and a self-evaluation questionnaire (both Likert scales)  Statistical analysis. | Regular attendance contributed positively to self-esteem in women who are functionally limited (in sense of mastery & self-evaluation).  Self-esteem, sense of mastery over their life and self-evaluation were all ***significant***ly higher among recipients of care & support at DCs than at home.  Around 70% of variance in self-esteem was explained by: type of service (c.47%), marital status (c.13%) and subjective perception of functional status (10%). Also contributing were satisfaction with service and family/ social support, demographics and self-evaluated health.  Attenders ***significant***ly more satisfied with ‘expressive’ aspects of care provided suggesting that DC staff offered better emotional support than home care services. Staff maintained contact with attendees when were unable to attend the centre.  Attendees reported feeling less lonely, enjoying company & improved general wellbeing.  Ron argued that: 1)- higher self-esteem may be due to structure that attending a DC provides, sense of purpose gained from creativity, sense of belonging, involvement & social ties with other members & staff. , 2)- 47% of difference in satisfaction contributing to overall self-esteem was explained by the services’ differing style and character. Care & support at DCs was not on a 1:1 basis, tended to be focused on group activity, & was usually provided by more highly-trained staff. Constraints of time felt less than for home care., 3)- possible explanations for low DC attendance in Israel may include prohibitive cost, personality and security of home. | Correlation with self-esteem does not equate to service impact.  Over-representation of minority ethnic group compared with population (52% of sample; around 10% of Israeli population (Africans/Asians). |
| Schmitt *et al*. (2010)  US  Peer-reviewed journal  *The Gerontologist* | To assess the association between Adult Day Health Center (ADHC) participation and health-related quality of life.  *Adult Day Health Centre (ADHC)* | None | **Convenience sample** recruited via social workers / primary care providers.  *Attenders*: 75 of 127 referred enrolled - 34 did not meet criteria, 13 refused, 5 unable to schedule interview).  *Non attenders*: 79 of 143 referred enrolled - 49 did not meet criteria, 13 refused, 2 unable to schedule interview.  --------------------------------------------  **Older people -** functionally limited, community-dwellers aged ≥55.| - 57 **newly-enrolled** **attenders** of 16 ADHCs ≥2 days a week completed 12 months (75%) - 67 **non-attenders** who would have met eligibility criteria for ADHC if referred and had not attended a DC or ADHC in the previous 6 months completed 12 months (85%).  Groups matched by age, ethnicity, medical conditions, depression, cognition, immigration history, education, income, marital status. ***Significant***ly *more* non-attenders lived alone. | **Quantitative** (case-control)  2 months (prospective)  - baseline, 6 mths, 12 months  (Jan 2001-Apr 2004) | Medical Outcomes Survey Form 36 (SF-36) used to assess at enrolment, 6 and 12 months - multi-dimensional Health Related Quality of Life (HRQoL) instrument covering:  - physical functioning (extent to which health-related problems limit moderate or vigorous physic activities) - role physical (extent to which physical health problems affect functioning in daily activities) - social functioning (extent to which physical & emotional health problems interfere with social activities) - role emotional (extent to which emotional problems limit type and amount of regular daily activities) - mental health (lengths of time experiencing various mood states).  ADLs - PSMS.  Mini-mental Status Examination  Geriatric Depression Scale (15)  Also collected: - Socio-demographic data - Service use - including hours of home care - Medical conditions | ADHC attendance may enhance OP’s QoL. QoL may be a key measure to inform care planning, programme improvement and policy development.  Attenders experienced *significant*ly enhanced health-related quality of life in two domains after 12 months whereas these declined in non-attenders. Attenders’ daily lives were *significant*ly less restricted by their physical or emotional health than non-attenders (role physical and role emotional). Improvements could not explained by changes to physical or cognitive function or by levels of depression.  No *significant* differences were found, either in-group or between groups, in physical function, social function or mental health after 12 months. | Staffing very different from England: multidisciplinary team including nursing, OT, speech therapy, dietician, counselling, social services.` |
| Shahbazi *et al*. (2016)  Iran  Peer-reviewed journal  *Journal of rehabilitation* | To assess the effects of the day centre package on attenders’ disability at one centre  *Adult day care centre – integrated care  (bio-psychosocial model)* | None | 92 older people aged ≥60 **- 46 centre attenders of one centre** - 46 non-attenders (matched for disability level) recruited by snowballing (who would receive the service after the study)  After 6 months attrition of 6 leaving: - 41 attenders - 45 non-attenders  Mean age: 68.53 years (range 60-85).  No significant differences between groups (age, sex, education, other socio-demographics characteristics). | **Quasi-experimental** (case-control)  Assessments carried out at 4 time pints: baseline and 2, 4 and 6 months thereafter.  Assessors trained by research team. Different groups assessed cases and controls but checks were undertaken for bias. | World Health Organization Disability Assessment Schedule 2 (WHO DAS II). A 36-item schedule assessing disability in 6 domains: understanding and communication, getting around, self-care, getting along with people, life activities and participation.  Service package included rehabilitation services (occupational and speech therapy), educational courses (life skills, healthy lifestyle, self-care programmes), nutrition counselling, providing assistive devices, cognitive enhancement techniques, psycho-social interventions (e.g. art therapy, individual/group therapy) and recreational activities. Attendance: 6.5 hours daily including lunch.  Statistical analysis of assessment data. | Findings showed that this bio-psychosocial model of service provision decreased attender disability and improved functioning compared with a control group whose disability increased over six-months.  Within-individual and between-group scores changed significantly. Greatest change was experienced in the domain getting around, followed by getting along with people.  Self-care disability decreased, but not significantly, which was expected since ‘people who use day services are typically less dependent and can more or less take care of themselves’ (p723).  Highest mean disability scores at start were in getting around and life activity. | Small sample size.  Resources meant a longer study was not possible meaning positive effects after a longer period could not be determined. |
| Weintraub and Killian (2007)  US  Peer-reviewed journal:  *Journal of Applied Gerontology* | To examine the perceptions of participants of adult day services about how intergenerational programming impacted on their *emotional* wellbeing.  *Adult day service* |  | **Convenience**  -----------------------------------  **13 attenders** of a day service for frail OP in an intergenerational centre that provided activities for OP, and pre-school child care.  Aged 65-90 without diagnosis of cognitive impairment, they were core, regular DC attenders. | **Qualitative**  **Interview** (face to face) | Participants were asked about their experiences of having co-located children.  Socio-demographic data was collected, including contact and proximity to children/grandchildren.  The point of data saturation was reportedly reached and thematic analysis undertaken. | All participants had contact with the children. Some had low levels of interaction (n=7); others were actively engaged (n=6) (e.g. reading to them weekly, watching singing/dancing). ‘Contact’ group enjoyed having children around but did not engage due to poor health or because they had not been invited to/did not feel their help was needed. ‘Engaged’ group tended to have selected the centre because it was intergenerational (those in ‘contact’ group had other reasons). ‘Engaged’ reported feeling more positive about the children and gaining more enjoyment than ‘contact’.  Levels of engagement changed over study period. One engaged participant reduced it due to progressing dementia and one ‘contact’ participant increased his contact, perhaps due to participation in the study heightening his awareness. For both groups, having choice about levels of contact was perceived as important for emotional wellbeing and helped attenders to feel respected. That children were well-mannered, enthusiastic and energetic also helped them to feel respected and energised, which they perceived impacted positively on their emotional wellbeing. Also impacting on ‘engaged’ emotional wellbeing were feelings of being needed by the children, simply enjoying being around them, feeling that they acted as substitute for family particularly since the DC encouraged children to call OP grandma/grandpa. Familial bond was felt by many with distant or no family. ‘Engaged’ participants also reported feeling calmer. ‘Contact’ reported their emotional needs as met by peers and DC staff; they did not feel the need to engage with children.  Engagement with children was described as ‘volunteer efforts’ [p382].  Conclusion: intergenerational programmes 1) had a positive impact on OP’s emotional wellbeing, 2) offered the opportunity to develop close relationships. | Very small sample limits generalisation, although representative of attenders & levels of involvement with children.  Self-reported cognitive status. |
| Weintraub and Killian (2009)  Peer-reviewed journal: *Journal of Intergenerational Relationships*  **[See Weintraub & Killian 2007]** | To examine the perceptions of participants of adult day services about how intergenerational programming impacted on their *physical* wellbeing. | By positively impacting cognitive health, intergenerational programming may mediate the relationship between cognitive health and general health | **[See Weintraub & Killian 2007]** | **[See Weintraub & Killian 2007]** | **[See Weintraub & Killian 2007]** | [See Weintraub & Killian 2007]  ‘Engaged’ tended to perceive that intergenerational activities positively impacted on their physical wellbeing more than ‘contact’ group. Both groups perceived benefit from intergenerational contact which helped maintain their levels of physical activity. Others felt their involvement was limited by their own physical limitations; one engaged participant experienced heightened awareness of her frailty. Another engaged participant viewed physical movement involved as therapeutic and helping him to recover from heart surgery. Although not a physical wellbeing outcome, an engaged participant was reported to feel that he gained a sense of accomplishment from interacting with the children.  **Conclusion: intergenerational activities, which are often perceived by OP to have a positive impact on physical wellbeing, can be a low-cost supplement to usual activities with peers.** | [**See Weintraub & Killian 2007]** |
| Wittich, Murphy and Mulrooney (2014)  Canada  Peer-reviewed journal *British Journal of Visual Impairment* | To report on the impact of a day centre for people with sight loss on the holistic health of OP with visual impairment.  *Day centre was located in a rehabilitation centre*.  Staffing: staff, vols, students) | None | **All people newly referred** between Sep 2011 - Aug 2012, people took part.  --------------------------------------------  **Attenders** (30)  33 referred – 3 stopped attending within 1 month.  20/30 completed follow-up at 1 year. | **Programme evaluation** (longitudinal)  Baseline, at 6 months, at 12 months.  Validated measures | Aimed to establish whether centre was fulfilling aim: to maintain or improve people's biological, psychological or social health while delaying or avoiding institutionalisation.  Measures: administered verbally (with audio amplification through a Pocket Talker, if needed) by DC staff or research assistants, all trained in test administration:  - Hearing Handicap Inventory for the Elderly  -Visual Function Questionnaire  - Geriatric Depression Scale  - Friendship Scale and Life Space Questionnaire  - Timed Up and Go Test  - Activity-Specific Balance Confidence  - Montreal Cognitive Assessment.  Measures. | 15.8% categorised themselves as socially isolated. 10.5% had low social support.  Participation in post rehabilitation and group activities (e.g. cognitive stimulation, exercise, arts & crafts, discussion and psychosocial) supervised by an interdisciplinary team (occupational therapist, registered nurse, special-care counsellor, social worker and nurse's aide) may support independent living, and that attendance at the day centre itself partially reflects the accomplishment of the centre to support the physiological and psychological wellbeing of its attenders.  Of 30 initial participants, 19 **remained living independently in community** after one year, 1 moved into residential care, and 10 were lost to poor health, moving away, feeling too young/lack of interest. They concluded that that attendance and participation in the rehabilitative activities partially reflects accomplishment of DC to support attenders’ physiological & psychological wellbeing.  Carrying out hearing screening improved links with a support programme for people who were deaf or hard of hearing. Screening was introduced as part of a programme evaluation. | - High attrition at 1 year (33%)  - No control group  - Staffing very different from England |
| **ROLE OF DAY CENTRES FOR INDIVIDUALS / EXPERIENCES** | | | | | | | |
| Del Aguila, Cox and Lee (2006)  Australia  Peer-reviewed journal *Australasian Journal on Ageing* | To investigate service (day care and home care) use and non-use as a function of the interrelationship between characteristics of the individual, network and physical environment of the residence and residential location (neighbourhood). | Functional interdependence framework | Not stated.  ----------  **Applicants** (40) and  **non-applicants** (40) for day care – all community-dwelling, none of whom already used formal services.  Mean age: - applicants 77 - non-applicants 76.  Groups matched on age, gender, mental status & physical functioning, but not education or economic status.  (Also 52 applicants & 52 non-applicants for home care | **Quantitative**  Not stated. | Based on a literature review and research with OP, a Functional Interdependence Profile was developed and verified for the study. It included behavioural, cognitive and affective indicators of participants, their residence and locality.  - Behavioural items: objective question format.  - Cognitive & affective items:  'I think' or 'I feel' statements. - Iowa Self-Assessment Inventory subscales - to assess cognitive status & physical health.  Statistical analysis carried out to determine differences between applicants and non-applicants. | Service use/non-use results from the interrelationship between functional capacity and capacity of informal networks.  OP apply to attend DCs when their informal network is no longer sufficient to meet their needs and their physical home environment is no longer suitable for their (functional) needs. Thus, DCs replace, rather than supplement, informal networks.  The transition from being an OP who is managing to accommodate limited functional capacity with support of a narrow informal network to needing replacement services can occur suddenly, brought on by bereavement or changing family living arrangements or other circumstances.  *- Supplementary* service: builds on informal support, delivered at home. - *Replacement* service: replaces informal support; delivered in formal setting. | No details given about identification or recruitment of participants or how questionnaire was administered.  Cognitive status of participants not detailed, but was controlled for in analysis. |
| Ingvaldsen and Balandin (2011)  Norway  Peer-reviewed journal  *Journal of Applied Research in Intellectual Disabilities* | To identify senior centre attenders' views of the barriers and solutions regarding the inclusion of older people with learning disabilities in community senior centres.  *Senior Centre* | None. | **Purposive –** DCs without attenders with a learning disability; 2 local authority & 2 non-profit; covering broad socio-economic groups.  **--------------------------------------------**  **Attenders** (30) of 4 DCs (6-12 from each DC) without a learning disability. | **Qualitative**  Focus groups | Participants were asked about their understanding of people with a learning disability, how they felt about this group attending their DC, what would need to be done for them to access it and what they thought prevented them from doing so.  Data analysed thematically using grounded theory approach after which participants checked and verified analysis. | Participants agreed that ‘visiting’ a DC was important for improvement and maintenance of health. Most (70%) ‘visited’ weekly as well as volunteering there (e.g. in kitchen). ‘Visit’ was undefined.  DCs were felt to be more than a meeting place. For some, particularly those living alone (70%, n=21), DC felt like a second home. Many agreed that attendance had contributed to being able to remain at home. They perceived that their health was maintained (e.g. reducing loneliness & isolation) by activities provided. Social contact & feeling included were key benefits. It was important to feel included & to belong to a group.  However, despite that DCs were for healthy people to support them stay healthy, it was raised that some OP may need to overcome an attitudinal barrier before attending one or the first time as some regarded DCs as synonymous with receiving welfare or going to a welfare centre.  Most believed that people with a learning disability (LD) may similarly benefit and may find their lives enriched if they attend and/or volunteer at DCs. A minority were of the view that OP with LD should be welcomed, but supported separately due to their potential need for extra support. They raised financial matters needing consideration, e.g. need for increased staffing & training. Some felt that current attenders would need information about new people with LD to be able to welcome them appropriately. | Small study in 1 area - cannot be generalised, but highlights interesting areas. |
| Lund and Englesrud (2008)  Norway  Peer-reviewed journal *Ageing and Society* | To examine older people’s attitudes towards their own ageing and towards people who are older or frailer than themselves.  *Senior Centre.* | That the cultural & societal contexts of the communal setting are a useful lens for analysing & understanding the perceptions & behaviour of OP. | DC selected in consultation with one of the main organisations that run DCs (Norwegian Health Association).  --------------------------------------------  Attenders of 1 senior centre.  Participants were drawn from the 2,339 registered community dwelling ‘users’ & volunteers aged≥ 60; all lived locally.  No. of ‘registered users who visit the centre’ more than twice a year increased from c.500 in 2003 to 636 in 2004. | **Qualitative** **(ethnographic)**  **Observation** | Communal activities and interactions between attenders of centre were observed. Researcher (Lund) volunteered at DC, participating in activities, serving meals etc, and asking questions.  Each day, 20-70 seniors ‘visited’ the DC, some for a specific purpose (e.g. hairdresser, French course, to eat or meet people) while others ‘visited’ and talked with the same people every day.  Field notes were written and categorised into observation, theory and methodology. These were interpreted to identify themes which were then discussed with second author. | Tension observed between attitudes & behaviours towards older & frailer people. OP both wanted to participate in activities they valued, knowing that DC helped them to thrive (i.e. maintain good health and subjective well-being), at the same time as creating distance from frailer attenders who they perceived as a threat – a reminder that they, too, were growing older.  Some people conceptualised DC as being something undesirable, for people who were old, isolated and ill, with whom they didn’t identify themselves. A few holding this view visited DC after personal recommendation subsequently changing their view to a more positive one. One person continued to visit (she was also ‘visiting’ another DC) as she considered her visits helped those she didn’t identify with. Some regulars distanced themselves from frailty by commenting on aspects of old age (e.g. such as a shuffling walk, a bent back) and some felt a need to explain their presence (e.g. for hairdressing).  Volunteering at DC helped people to feel useful which was important for them. Some volunteers recognised their own ageing but were not keen on identifying themselves as belonging to the same ‘group’ as frailer people and created distance by referring to such people as ‘they’ or ‘them’. 70% of attenders also volunteered at same DC.  Staffing: 3.5 permanent posts (manager, a cook, 2 assistants). Volunteers: At least 40 OP, from once-a-month to almost daily, undertaking many tasks e.g. managing the cafe, office work, welcoming new people, organising bridge or computer groups. | Attendance may be of a different style to an English DC, on a more drop-in basis, although some people did ‘visit’ daily. |
| Marhankova (2014)  Czech Republic  Peer-reviewed journal *Ageing & Society* | (Aim of paper below; aim of study not cited).  To evaluate critically the idea of active ageing and highlight the role of gender by focusing on transition to retirement and initial involvement with in day centres. | Successful / active ageing | Large DC in capital with approx.1,000 regular participants.  DC in smaller town c.60 regular members, chosen randomly for comparison.  --------------------------------------------  **Day centres** (2 observed).  **Interviewed: attenders** (34); e**mployees** (13)  Documentation produced by DCs.  Mean age:62 | **Qualitative (ethnographic)**  **Observation**  **Interviews**  2006-09 | Participant observation:  DC1: At least 2 hours observation a day on at least 2 days a week and active participation as a volunteer.  DC2: daily operation observed intensively throughout 1 week.  Above included informal conversations, recorded in field notes.  In-depth interviews were recorded & transcribed.  Thematic analysis carried out. | For women, DCs offered the opportunity to focus on themselves in retirement after many years spent focusing on other people’s needs. (Retirement also offered men opportunity to focus on what had neglected – but opposite way round).  DCs, possibly unintentionally, appeared to focus on women through décor and gendered activities (language classes, arts/craft (pottery, painting, sewing), exercise (relaxation e.g. yoga & belly dancing) – except for chess. Non-regular activities aimed implicitly at women: lectures (e.g. ‘how to be healthy and not gain weight’; ‘thanks to a healthy diet we shed extra kilos’). Men were, therefore, passively excluded & often seen as ‘interlopers’. Women tended to increase their attendance whereas men tended to appear once, except for those enrolled on language/IT courses). Men also behaved differently to women – often disruptively – with efforts to include them often failing.  Conclusion: although women are main DC attenders, men should not be seen as not engaging in active ageing activities. | DC model targets healthy, independent OP - resemble social clubs than DCs.  Data collected differently in sites.  With average age of 62, attenders were baby boomers DCs will wish to attract: lessons may be important.  Arbitrary judgement that activities were female-focused. |
| Salari, Brown and Eaton (2006)  US  Peer-reviewed journal  *Journal of Aging Studies* | To gain more systematic evidence regarding the operation of territorial claims in three different senior centres.  *Multipurpose Senior Centres* | Altman’s concept of territoriality | 3 diverse multipurpose senior centres.  -------------------------------------------  **Attenders** (approx. 300 observed; 30 interviewed) across 3 DCs – 10 per centre) | **Qualitative**  Observation in dining areas (120 hours) and interviews (30) | Observation: behaviour.  Interviews: activities, social relationships (friendships, disputes, peer and staff interactions) and wellbeing.  Interview and field note data were analysed thematically.  The point of data saturation was reported to have been reached in interviews. | (Original goal: to examine whether environments and behaviours were age appropriate or infantilising for participants. Territorial behaviours were so striking that these were examined.)  Short descriptions of buildings & facilities of each to set scene: 1. Food centre shared with community centre (90 daily attenders).  2. Dance centre (57-77 daily attenders). 3. Diverse centre (42-176 daily attenders).  Noted building design challenges with reference to spatial behaviour. Dining rooms tended to serve as ‘private’ spaces for established groups and ‘public’ spaces for new attendees (outsiders). Treating what is private space to some as public space may cause conflict.  Territorial behaviour (e.g. saving seats in dining areas, strong sense of table identity) observed in two DCs. Although this benefited people already in friendship cliques by reinforcing their social bond, it excluded others, including new attenders. This was observed more in centres without attender involvement. Salari *et al* argued that an overall sense of ownership within centre, by means of involvement in its running, may negate the need for small scale displays of resource ownership such as seat saving which is unwelcoming and may discourage people from returning after a first visit.  Attendees of one centre said that friendships formed around the various activity groups (e.g. ceramic, exercise classes) and that groups socialised outside the centre. This was centre with least territoriality & culture of seat ownership & table membership.  Frames DCs as public ‘third places’ (i.e. not work or home) and highlights importance of physical, organisational and social environments to how welcoming or excluding a DC is. | Very small samples. |
| **RELATIONSHIPS WITH SOCIAL CARE, HEALTH & COMMUNITY SERVICES / ROLE IN SYSTEM** | | | | | | | |
| Cabin and Fahs (2011)  US  Peer-reviewed journal  *Home Health Care Management & Practice* | To create a model of primary individual and neighbourhood-level variables for predicting depression among older Americans. | N/A | Brookdale Demonstration Project Initiative database  --------------------------------------------  **DC attenders** (1,870) | **Quantitative**  **Secondary analysis of data** collected by interview for the Brookdale Demonstration Project Initiative on Healthy Urban Aging (BDI)  2008 | 24-page survey administered by interviewers in 6 languages. Included the Patient Health Questionnaire, Version 9 (PHQ9) Depression Scale.  Statistical analysis of data to identify predictors of depression. | DCs may support the prevention agenda, by identifying hearing and vision impairments (*significant*ly associated with falls), screening for depression, and perhaps offering evidence-based falls prevention programmes and depression treatment in collaboration with primary care or community health centre as well as referring to other services.  7 predictors and 1 comorbidity were found to be statistically *significant* predictors of depression which was highest with: visual impairment; frequent falls; lower income; little leisure-time physical activity; low satisfaction with neighbourhood; trouble hearing; being disabled; having arthritis/rheumatoid arthritis. | Findings set in context of US public health coverage limitations, however findings applicable more broadly despite systemic differences. |
| Liu *et al*. (2015)  Singapore  Peer-reviewed journal:  Journal of the American Medical Directors Association | To trace the evolution of day centres in Singapore and chart directions for the future. | Ageing in place. | N/A | Think piece. | Describes development of the different types of DCs for OP and categorises them. Considers funding, payment and other challenges (e.g. assessment, buildings) and makes suggestions about future directions. | DCs recognised as key to supporting ageing in place, but also as incurring substantial development/maintenance costs. Several models operate, many run by voluntary sector. Buildings are often inaccessible. Communication barriers are common due to many employed professionals being foreign. DCs are a health care service and places can be bought with means-tested health funding. They ‘receive funding proportionate to the number of clients they receive and the type of services they provide’ which Liu at el class as a ‘misaligned incentive’ as it results in financially constrained DCs sometimes prioritising potential clients with lower needs. Unnecessary work is carried out as additional assessments in addition to the assessment carried out by the referring health care professional are undertaken.  Liu *et al* recommend that ‘to move beyond merely social and custodial roles, the quality of services offered must improve and be rooted in evidence-based practice to be viable non-pharmacological treatments. Even social day care serves a therapeutic purpose in providing structure and purposeful activities that could improve the clients’ quality of life and maintain their physical and emotional well-being’ [p9]. ‘Although increasing total capacity is important, it is equally pertinent to enhance capability to cater to the varying and complex needs of the frail elderly. Day care centers must be upgraded to holistically meet the custodial, functional, intellectual, emotional and social needs of clients.’ [pe9]….‘Day care could be used as a staging point for services such as education, counselling and support to caregivers.’ [p10], i.e. are multi-functional buildings. ‘….engaging in the community is critical in allowing the elderly to age gracefully.’[p10] | Discusses DCs for all types of older DC users, including people with dementia, rehabilitation or psychiatric needs, or who are dying who are excluded from this review. Recommendations clearly concerning these groups are not referred to here. |
| Sanders, Saunders and Kintzle (2009)  US  Peer-reviewed journal *Journal of Community Practice* | To identify barriers to the growth of Adult Day Services in order to inform policy development.  Article presents only findings related to views of day centre managers and descriptive data from survey).  *Adult Day Services (licenced to receive Medicaid reimbursement)* |  | All managers ‘administrators’) of ADS in state (n=38) were contacted.  (Evaluation involved ADS managers, professionals, voluntary providers & carers.)  -----------  **DC managers** (25).  28 (74%) completed survey & willing to participate, but 3 unable to due to constraints of time.  (66% participation rate) | **Evaluation**  Interviews (telephone)  Survey  2007  (Evaluation also used focus groups) | 4-page survey: ADS data, including attenders from 2004-7, attender-staff ratio, staff data, funding and reimbursement sources of funding.  Semi-structured telephone interview: further information about the ADS, including its history, details of financial functioning, views of state regulations and certification requirements, and current challenges faced.  Thematic analysis using grounded theory. | Evaluation commissioned by Iowa’s Department of Elder Affairs to better understand why licenced ADS (i.e. able to accept third party reimbursement) were underdeveloped and underused despite growing numbers of eligible older people. At the time, half operated at less than 60% capacity.  Survey found that licenced ADS were operating at 70% capacity.  Barriers to growth identified by managers concerned: - funding: low Medicaid reimbursement rates that don’t cover actual costs & mean subsidy from parent organisation is needed; poor managerial knowledge of budget, spending & funding sources - the system: transport; low political advocacy for ADS (professionals lacked knowledge about their value and overlooked them); overwhelming licensing requirements - the community: poor knowledge of ADS, limited sources of donations; ‘service’ vs ‘business’ mentalities – the latter being stronger; limited potential attender and staffing base; stigma associated with ADS – people preferred ‘day services’ over ‘day care’ perceiving attenders of the latter to be disabled and older than themselves. Prevalent in rural areas was concern about dependency and others becoming aware of a person’s service use. Managers were of the view that misinformation was at the root of such stigma.  Conclusion: centralised support would be needed to facilitate validation of their place within the system/care continuum. | Two perspectives missing: Dept of Elder Affairs and licensing body (Dept of Inspection and Appeals). |
| Vogel *et al*. (2007)  US  Peer-reviewed journal  *Journal of Health and Human Services Administration* | Article retroactively applies a formal model for interagency collaboration to describe and analyse the process of collaboration between public health and a housing authority.  *Senior centre* | Stages of Collaboration  *(formal model for interagency collaboration)* | N/A  --------------------------------------------  21 DCs in public housing developments (New York) | **Case study** of pilot service delivery  Programme implemented from 2001-2004. | Interagency collaboration (public health & a housing authority) delivered a health outreach programme in DCs that aimed to support OP living in public housing (i.e. lower income) to age in place by offering health services beyond what housing authority could provide.  DC **directors** selected activities appropriate for their own clientele from the menu of services available. These included exercise classes, healthy cooking demonstrations and tastings, vaccinations (flu & pneumonia), mental wellbeing activities and support groups, health education on a range of chronic and infectious diseases as well as services that were delivered in people’s homes (e.g. counselling). | Programme was well-received by DC directors and OP alike. The collaborative programme addressed targets for both partners by supporting them to better address OP’s needs and, due to its positive reception, led to spin-off collaborations, and demonstrated how innovation can be created within bureaucratic organisations.  Challenges included differing organisational cultures, a lack of resources and managing unplanned expansion.  Working became more joined up and integrated over the 4-year period. | Context for programmes’ operation very different from England. |
| Wick (2012)  US  Peer-reviewed journal *The Consultant pharmacist: the journal of the American Society of Consultant Pharmacists* | To discuss the evolving roles of senior centres. | N/A | N/A | **Opinion piece** | Discusses the potential role that DCs may have for trainee health professionals such as pharmacists by improving their awareness of older people. | Wick observed that pharmacists’ knowledge puts them in an excellent position to support the health of DC attenders. She reported that some pharmacists have been involved with DCs for some time by providing health and wellbeing activities in them (e.g. medication reviews, targeted falls prevention) and educating carers (not specified if unpaid family or paid) which may help keep more mobile attenders healthy and active for longer. Wick suggested that there may be mutual benefits of partnering with pharmacists, and other health providers. In addition to older attenders benefiting, there is potential for health professionals and students to improve their awareness of older people by exposure at day centres. | Conclusion based on anecdotal and unreferenced reported experiences but concurs with McGivney *et al*’s findings (2011). |
| **ECONOMIC ASPECTS** | | | | | | | |
| Dabelko *et al*. (2008)  US  Peer-reviewed journal *Journal of Aging & Social Policy* | To examine the development of public reimbursement opportunities for ADS and determine whether these opportunities have addressed client needs.  *Adult Day Services* | Resource dependency theory | N/A | **Analysis from policy perspective**  **N/A** | Examines ADS development of the from a policy perspective. | Most attenders receive some public funding (medical). Public funding is linked with physical medical needs not psychosocial needs, and with carer respite.  Many DCs depend on public funding and have developed techniques to remain solvent: changing what they offer to access funding (buffering) and developing partnerships with to maximise resources (bridging). Buffering has resulted in around two thirds of DCs now providing medical services. Example of bridging given: National Assoc. of Day Services (NADSA, a membership organisation) and American Assoc. of Homes and Services for the Aging (AAHSA, representing not-for-profit home health services, assisted living & nursing homes) have formed a strategic partnership with two potential benefits: 1) for partners - increased clients for DC and home health services as each will refer to the other, 2) for public purse - reimbursement rates for DC cost 95% of home health care. Only 4% of DCs had partnered with AAHSA when article was written.  Future DC development could either be led by the availability of resources or by client needs (via funding that is linked with client outcomes). Under a resource dependent model, DCs would become more client-centred to enable evidence to be gathered about outcomes which could be used to access resources. | Funding context and operating model very different from England. |

# Table S2: Evidence table: literature not directly about day centres but relevant to review

| Author/date  Country  Publication | Aims | Theoretical framework / conceptual model | Sampling | Research design & data collection | Study details (data collected, measurements, analysis) | Findings relevant to review | Limitations |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Brookes et al. (2015)**  **England**  **Peer-reviewed journal *British Journal of Social Work*** | Article draws on findings from a scoping study which aimed to identify future areas for research to assist councils in developing and commissioning personalised services. | None. | **Purposive**  Part of a wider 18-month study.  Local authorities (20) were surveyed.  3 case study areas with high levels of self-directed support take-up were selected.  --------------------------------------------  **Local authority staff** (15, care managers and brokers, commissioners)  **Service users** (23, only 2 were older people) in 3 LA areas. | **Qualitative**  **-------------------------------**  (Survey)  **Interviews**  **Focus groups**  2010-11 | (Telephone survey aimed to establish development of personalisation).  Progress of personalisation was explored and innovative practice identified.  Staff interviews explored changes to ways of working resulting from personalisation; benefits of personalised services; examples of new services/innovations and types of personalised arrangements.  Service users (interviews & focus groups): previous use of services and support; experiences of setting up PB and its impact on QoL; good/bad experiences of personalisation and/or PBs; service gaps. | 5 LA staff were aware of reduced demand in some services, especially DCs which they perceived to be due to a lack of personalised service from DCs or a preference by individuals to use mainstream services instead.  9 staff said that there had been no reduction in demand in their area.  5 staff knew that some services, mainly DCs, had been decommissioned. 2 noted challenges associated with this, including some demand still being present.  Most staff noted that there was a lack of suitable daytime activities (*but did not refer to specific client groups).* | Study aimed to cover DCs for all client groups so is likely not be representative of DCs for OP.  LAs with higher percentages of people on self-directed support (personal budgets or direct payments were selected for the study. |
| Chaichanawirote and Higgins (2013)  US  Peer-reviewed journal *Research in Gerontological Nursing* | To provide a detailed snapshot of social support networks of health independent living older adults.  *Senior centre* | Complex adaptive systems & social network theory | **Convenience** – 101 recruited from 14 senior centres & 1 retirement community  **--------------------------------------------**  Healthy **OP (95)** ≥65 living independently in the community.  Mean age:76  94% of whole sample  (2 excluded due to low cognitive status using 6 item screener; incomplete data for 4). | **Quantitative**  **-------------------------------**  **Interview**  2010-11 | Face-to-face interviews:  - Demographic data  - Social network: Arizona Social Support Interview Schedule (ASSIS - Barrera 1981) - relationship patterns, density, size of positive networks (available and utilised), size of negative networks (available and used), support need and satisfaction.  Statistical analysis carried out.  Levels of independence were calculated based on living arrangements and driving status. | Participants had very diverse social networks.  Average number of network members: 6.22 (maximum allowed 7). Range: 1-7.  Used networks: Largest available and used networks were for intimate interaction (close relationship in which able to discuss personal matters). Smallest available network was for physical assistance (with ADLs). Used negative networks were small (i.e. those involving potential unpleasant interaction).  Need: Participants reported moderate levels of social support need. Highest score was for need for social participation (getting together for recreation). Lowest was for material aid (appreciated objects or money).  Satisfaction: Highest satisfaction was for social support; lowest for material aid.  Availability & use of psychosocial support was perceived as ‘very adequate’. | Generalisability to other populations, particularly the housebound, is limited. Study participants likely to be atypical of DC attenders (72.6% regularly drove; 88% rated their health as good, very good or excellent). |
| Chen and Berkowitz (2012)  US  Peer-reviewed journal  *Bmc Geriatrics* | To identify any differences in home and community-based services use between older people grouped into 4 patterns of residential transition, and which services are associated with which pattern.  *Senior centres.* | Anderson’s Health Behavioral Model | **Purposive**  People with functional limitations selected as more likely than those without to seek support services.  -----------  **OP (3,085) with functional limitations** at baseline (at least 1 disability in ADLs or IADLs or Nagi's functional limitation); all had completed all 3 LSAO II interviews.  Mean age: 76.3 | **Exploratory**  **-------------------------------**  **Secondary analysis  of data** collected by interview for the Second Longitudinal Study of Ageing (LSOA II))  1994-2000 | Data gathered on residential status and receipt of home & community-based services (HCBS) of two types: - *non-discretionary* services (i.e. require prescription from health care professional) e.g. physiotherapy, skilled nursing - *discretionary* services (i.e. individual's choice) e.g. senior centres, meals at senior centres, homemaker/companion services, personal care services.  Investigated associations between 13 different types of HCBS and 4 types of residential transition patterns at T1, T2 and T3:  CCC, CIC, CCI, CII (C= community; I= Institution. | When used in combination, DCs and personal care may enable people to remain in the community or to live in the community following a period in a care home.  People who remained in the community throughout used DCs more than other services. DCs were the most commonly used service by people in 3 of the 4 pattern groups.  Patterns of service use differed significantly between groups.  Chen & Berkowitz noted the lack of research about how use of one service may support the outcomes of another.  Largest group was of people remaining the community throughout (CCC n=2,589, 84% of total), which suggests that the finding concerning their use of DCs is robust. CIC was the smallest (n=69, 2%). | Exploratory -unable to establish causal relationships.  Adult Day Care not surveyed at T2 - findings refer only to Senior Centres.  May be generalisable only to people with light to moderate functional limitations: the most disabled did not participate at T2 & T3.  No data on participants' cognitive status.  Service use depends partly on service availability (not recorded). |
| **Clough et al. (2007)**  **England**  **Sector press** | To identify barriers to service access and what improvements could be made, and to discover the services wanted by older people to support them to remain at home. | N/A | **Details not given.**  -----------  **Local authority staff in commissioning of services, social workers (32) and nurses (37)** (survey).  **Older people (79)** (7 focus groups). | **Qualitative**  **Literature review** (policy & research literature)  **-------------------------------**  **Postal surveys. Focus groups.** | Relevant to this review: nurses (in frequent contact with less healthy OP) were asked about their priorities for low-level support for OP.  Report mainly concerns what OP want, barriers to accessing services & how to reduce these, i.e. not relevant to this review. | Nurses’ top priorities were for support to carry out IADLs and ADLs, usually in people’s homes. DCs and other services reducing isolation figured among their priorities but it was not specified how they were ranked. | No account of recruitment methods given |
| **Glendinning et al. (2008)**  **Peer-reviewed journal: *Health and Social Care in the Communit****y* | To assess progress in developing outcomes-focused services for OP and the factors that help and hinder this. | None. | **Purposive.**  **Survey:** all adult social care managers & practitioners in an existing network of people interested in developing outcomes-focused services (n=222) (England & Wales).  **Case study sites:** - 6 LAs with firmly established outcomes- focused service selected from survey respondents.  --------------------------------------------  Survey:  54 social care managers & practitioners.  (24% response rate).  Case study sites: - 6 local authorities with firmly established outcomes-focused services. | **Qualitative**  -------------------------------  **Postal survey**  **Case studies** – interviews (82 frontline practitioners & managers)  **- interviews & focus groups** (71 OP using services)  2005 | Survey gathered data about development of outcomes-focused services, involvement of partners, types of activities/ services and for which OP, any achievements and factors that helped or hinder progress.  Service users asked about which outcomes were important to them, their experiences of services & how much these had helped them achieve the outcomes they wanted.  With reference to a) assessment, care planning and review processes, and b) service planning, commissioning and development, managers were asked about factors that hindered/helped progress, culture/practice change by frontline staff, whether change had extended to other areas, training/monitoring, and the involvement of OP and carers. | Progress in developing outcomes-focused social care services is relatively recent and somewhat fragmented.  Process outcomes were addressed across a range of day care services (and in residential and reablement).  DC attenders reported appreciating the respectfulness they were shown and the personalised, flexible nature of these services. Asian attendees held in high regard DCs that employed staff who spoke their languages.  LA staff saw partnership working as facilitating an outcomes approach as it meant additional skills and resources could be accessed. DCs were cited as one of two noted successful examples of services taking multidisciplinary approaches.  DCs did not support the maintenance of attendees’ social networks/activities outside the day centre.  Glendinning *et al* highlighted challenges associated with differing understandings of ‘outcomes’ between social care & medical professionals as problematic for integrating service delivery. They noted the potential for different interpretations bring with it a risk of change outcomes dominating the development of services to the detriment of longer term maintenance outcomes.  Conclusion: ‘day centres could provide excellent quality services, with a high emphasis on process outcomes’ [p61]. | Very few details of process outcomes in DCs. |
| Iecovich (2008)  Israel  Peer-reviewed journal (Journal of Applied Gerontology) | To examine the extent to which various supportive services help to alleviate caregivers' burden.  To examine the extent to which caregivers' burden affects various domains of the quality of life of primary caregivers.  To investigate the factors that best explain quality of life.  *Day care centre* |  | **Random sample (stratified)** of 200 from list of 4,100 recipients of services.  --------------------------------------------  **114 primary carers** of frail, older family members without cognitive impairment who visited DCs (33) or received live-in (39) or live-out (42) home care.  67% of original sample.  77 not interviewed. 48 refused. 5 identified by social workers as being hospitalised or moved to care home. 24 unable to communicate due to mental frailty, language barriers of deafness. 9 carers refused or were unavailable. | **Quantitative**  **------------------------------**  **Interviews** administering validated scales | Face-to-face interviews: respondents asked about socio-demographic characteristics (age, gender education, marital status, relationship to cared-for), satisfaction with various aspects of services provided to them and perceived health status. Validated scales used to assess the latter: - Zarit Caregiver Burden Scale - WHO Quality of Life Brief (26 item version) – subjective measure of QoL related to physical and mental health, social relationships, environment, general health and general QoL.  Statistical analysis undertaken to examine extent to which carer & cared-for characteristics, weekly hours of care provided & burden explained the WHO QoL domains. | Carers of people attending DCs experienced better psychological quality of life, measured subjectively, than those whose family member received home care.  Carer burden and overall quality of life scores were similar for primary family carers of frail OP attending day centres, and those receiving either live-in or live-out home care. | Cautious generalisation due to study location in 1 large city in Israel. |
| **Ipsos MORI (2014)**  **UK**  **Sector press (policy-related report)**  ***Ipsos Mori & Age UK)*** | To gain an understanding of and insight into commonalities and differences in the day-to-day life experiences of older people living with frailty, overarching issues or problems from their point of view and what would help to improve their lives. | None. | **Quota**  1- Individuals recruited via informal routes though trusted contacts - matching ‘pen portraits’ of 4 types of frail OP.  2- Visits to DCs to fill gaps in quotas (socio-demographic & pen portrait type). Selected with Age UK (commissioner of study) in 4 areas of England.  ---------------------------------------------  Frail older people - 6 of 12 interviewees attended a DC.  - number & details of participants in 4 focus groups at 3 DCs not given.  Whole sample represented diverse cross-section of society. | **Qualitative**  -------------------------------  1-**Ethnographic visits** (filmed) - 5-6 hours per participant (5) during which an interview took place  2- **Focus groups** (4) with variety of DC attenders & **interviews** - (4 telephone; 2 face to face, one which was paired)  (May-Aug 2013) | Stage 1: Ethnographic visits including interviews in which OP were asked about daily routine, the impact of frailty, finances, carers and other support-workers, living with long-term conditions and other ailments, healthcare professionals, medication and the future. Informal & formal carers also involved if present.  Stage 2: Focus group discussions with a variety of DC attendees based on case studies developed from experiences of stage 1 participants exploring:  - commonalities and differences - to what extent are experiences the same or different?  - drivers - why do people become frail and what can they do to improve their self-efficacy?  - motivations - what motivates or encourages people and what happens when traditional motivators no longer work?  Interviews (7), content as above. | 4 of the 6 participants attending DCs reported benefits of doing so.  - Increased happiness and confidence, which improved overall wellbeing and health and resulted was reported by one participant who felt that attending a DC helped prevent isolation.  - Being around other people energised another participant and helped her stay active as she enjoyed helping clear up after meals.  - A couple, both attenders of the same DC, enjoyed being able to recount the day’s activities to their sons when they phoned.  - Another participant highlighted her initial difficulties. She became happy to attend once she got to know people, having initially not enjoyed it when she first started (7 years previously) as she found it difficult to remember people.  Researchers reported observing a DC worker taking the time to help a frail attender to work out what she owed for her tea. Since doing so took the worker away from other tasks, this was reported to suggest respect for the attender’s wish to retain as much control as possible within their life. | Very small, but in-depth and therefore insightful although not statistically representative. |
| Kane, Bershadsky and Bershadsky (2006)  US  Peer-reviewed journal  *The Gerontologist* | To compare long-term care recommendations among various types of health professionals. | None. | **Convenience** sample (snowball)  Part of a larger project aiming to improve computerised long-term care decision-making process.  ----------------------------------------------  196 professionals from varying disciplines and work locations (practice & academia):  23 advanced practice nurses, 21 registered nurses, 40 geriatricians, 23 primary care professionals, 12 gerontologists, 46 social workers, 15 people working in health administration and 16 in ‘other’ areas.  64% of original sample:  304 contacted & willing to participate;  211 returned data, 15 of which were incomplete. | **Quantitative**  **---------------------------------**  **Postal**  A letter with detailed instructions & definitions and a computer disc with scenarios was mailed to participants, completed and returned, then used as a data entry device. | Randomly varied hypothetical scenarios (5 each) presented to participants. Scenarios included systematic variation of individuals’ ADL difficulties, extent of cognitive impairment, behavioural problems and incontinence). Participants made recommendations for suitable long-term care treatment options from a pre-defined list including: institutional (assisted living, skilled nursing-facility care, rehabilitation) & community-based (adult placement, personal & medical care, personal care, hospice, day care, informal care). Points were allocated to each type, indicating appropriateness, totalling 100 across each row of individual characteristics.  Expert judgement was assumed to be a reasonable method for decision-making given the lack of evidence regarding what type of care works best for people with particular characteristics.  Statistical analysis undertaken comparing recommendations for long-term care made by the various different professionals. | **Recommendations appeared to be influenced by the professional’s background, and hence training and education.** However, Kane *et al* noted that **day care may be a special case since advanced practice nurses (health professionals) were most likely to recommend it, and social care professionals (social workers and gerontologists) were not any more positive about it than health professionals.**  Registered nurses, geriatricians, primary care professionals, gerontologists, social workers and people working in health administration were similarly negative about day care. Advanced practice nurses were not, and tended to recommend day care more often than did other professionals. Geriatricians recommended day care more than GPs did.  Using average numbers of points allocated, nursing homes were the most popular (35.3), followed by formal home care and informal care (15.3 each). Less popular were assisted living (11.6), home health care (7.1), day care (6.9), hospice (4.0), rehabilitation (2.8) and adult foster care (1.7).  Day care definition: ‘*community-based program offering structured activities and meals during daytime hours*’ [p477] | Cautious generalisation given a convenience sample.  It was not possible to vary all potential variables, but this was adjusted for statistically.  Multiple self-classification of role was not possible. |
| McHugh *et al*. (2015)  Ireland  Peer-reviewed journal *International Journal of Geriatric Psychiatry* | To gain an understanding of what mealtimes mean to older people and to healthcare professionals working with them. | None | No details given.  --------------------------------------------  **DC attenders** living independently in community (n=6)  **Healthcare professionals - dietitians, social policy officers, dentists & occupational therapists** (n=10). | **Qualitative**  **---------------------------------**  **Interviews** (OP)  3 **focus groups** (healthcare professionals) | Semi-structured interviews with OP explored the meaning of mealtimes. Focus groups discussed the same topic.  Transcripts analysed using content analysis. | Themes arising with OP: - Socialising: Some are often alone. DCs offer an opportunity to socialise with peers, even if not everyone gets on with everyone else. - Services: appreciated DCs, meals they ate there and other services received (meals on wheels & home help). - Meal seen as occasions: Table presentation considered important. Some preferred to share mealtimes with others, but those with sensory impairments preferred not to (embarrassment). - Cooking & food prep: Few prepared meals at home, instead eating at DCs, family members’ homes or having meals on wheels. - Health & illness: Although most reported sensory impairments or lack of teeth affecting their eating, many were unaware that nutrition & health were linked.  Themes arising with healthcare professionals: - Met & unmet needs: Available services appeared to be appreciated. Scarce resources meant that everyone’s social & nutritional needs could not be met. - Nutrition: Poor appetites often linked with unaddressed dental problems. Good eating habits important for health. - Autonomy & choice: Autonomy & choices OP make about support must be respected. - Cooking motivation: OP may lack skills, appetite or motivation to cook, particularly if without company, especially after bereavement. - Meals as occasions: Meals seen to be occasions if shared with others. Presentation thought to be important, as was social aspect of eating in company.  - Support: Suitable crockery/cutlery supports independence.  There is a need to prioritise services offering nutritional & social support which can be delivered concurrently. | Although a very small sample, this research was in-depth. |
| **Tucker et al. (2014)**  **England**  **Peer-reviewed journal *International Journal of Geriatric*** *Psychiatry* | To identify the extent of outreach activity that Community Mental Health Teams for older people provide to mainstream service in the light of the National Dementia Strategy. | N/A | **All 457 Community Mental Health Outreach Teams for older people** (Nov 2008).  88% response rate (376) | **Qualitative**  ---------------------------------  **Postal survey**  (free text and pre-coded) | Respondents were asked about the structure, organisation and focus of CMHTs. | Almost half (47.1%) had formal outreach activities in DCs, the second most common venue after care homes (54%). The main activity provided at DCs was education or training by itself (44.96% of teams, n=79) followed by link workers only (19.8% of teams, n=35). Just over a third of teams (15.8%, n=28) provided education/training and link workers. A very small number of teams (4%, n=7) provided education/training and case finding/screening, and a further 4% provided link workers in addition to these two activities. Screening only was provided by 2.8% (n=5) teams and open clinics by 1.7% (n=3).  Understaffing affected outreach: a *significant* minority (18%) reported needing more staff, time with patients or fewer referrals.  The survey was carried out just prior to the publication of the National Dementia Strategy. | Types of DCs hosting outreach were not specified. Given that the survey related to the National Dementia Strategy, these may have been specialist dementia services. |

# Table S3: Evidence table: literature about interventions carried out in day centres

| Author/date  Country  DC model | Aims | Study design | Sample | Intervention | Outcomes | Limitations |
| --- | --- | --- | --- | --- | --- | --- |
| Battaglia *et al*. (2014)  Italy  *Senior centre* | To investigate the effects of an 8 week flexibility training programme on the range of spinal motion in older women. | **Quasi-experimental** (case-control)  37 meeting eligibility recruited from 45 volunteers at one senior centre. | 37 attenders randomly assigned to intervention group (19) or control group (18).  All ≥60, cognitively intact, physically able to participate in activity, able to ≥ 80% of training, independent in ADLs and IADLs, no falls in past year.  Mean age: 68 (intervention), 69 (control). | Over 8 weeks, two sessions per week of core stability and flexibility exercises: 10 minute warm-up, 50 minutes exercises, 10 minutes cool down. No physical activity intervention for control group.  - Spinal ranges of motion (ROM) measured before and after using SpinalMouse r device. | *Significantly* improved ranges of spinal motion: 16.4% increase in spinal inclination, 29.2% increase in sacral/hip ROM. Insignificant increase in thoracic ROM (22.5%) in intervention group compared with control group from maximum extension to maximum bending position. No significant change in lumbar ROM compared with control group.  Conclusion: the training programme was practicable for active and independent older people without ADL needs. | High attrition due to personal reasons in control group (5 of 18) compared with intervention group (2 of 19).  Subjective outcomes (e.g. perceived pain) not measured. |
| Boen *et al*. (2012)  Norway  *Senior Centres* | To reduce depression by addressing social isolation. | **RCT**  Random sample (4,000) from Norwegian Population  Register; 111 excluded as care home residents; 2,387 of 3,889 questionnaires returned 61%; included if Hopkins Symptom Checklist-10 (HSCL-10) indicated light depression and not attending a DC). | **55 previous non-attenders** (3 DCs**) in intervention group**  **37 control group of previous non-attenders**  (61 and 77 at start)  All with | Weekly 3 hour group programme (7-10 people) for 35-38 weeks over 1 year consisting of transport to DC, exercise (developed by physiotherapists) and self-help group (discussion topics of participants’ choice) aiming to address social isolation and increase life satisfaction thereby reducing depression.  Control group offered intervention after 1 year but not followed up afterwards.  - Depression: BDI (Beck Depression Inventory). - Social support: Oslo-3 Social Support scale (no. of people so close who can be counted on if great personal problems; level of interest and concern people show in what they do; level of ease to get practical help from neighbours if needed).  Life satisfaction based on QoL. Self-reported health. If made new friends or met other participants elsewhere. | Small, but clinically *insignificant*, improvements in levels of depression. Higher improvements in people with milder depression.  40% of women reported new friendships and increased home visits from friends.  No differences in friendships among men.  ‘…most of the participants said the intervention meant much to them’ (p1).  Conclusion: this was not the most appropriate model of intervention for depression, but that DCs seem to be suitable arenas for community-based health promotion interventions. | 33% attrition - mainly due to poor health, death or heavy care burden.  Study commissioned by DC provider. Aims included producing practical knowledge about how DCs could expand activities, reaching out to OP with loneliness & psychological distress & increasing use of DCs. |
| Dabelko-Schoeny *et al*. (2010)  US  *Adult Day Health Centre* | To explore the feasibility and effectiveness of an intervention designed to promote civic engagement in older people with functional limitations.  Aim: to increase well-being (purpose in life, usefulness, self-esteem, and self-perceived health.) | **Pilot experimental (case-control)** using non-equivalent switching replications. (*Site 1 received intervention & Site 2 received services as usual). Site 2 then received intervention & intervention was withdrawn from Site 1).* | **Attenders** (43) of 2 DCs – all with functional limitations, aged ≥60, attending on designated day, with capacity to take informed decision to participate.  Mean age: - Site 1 77  - Site 2 76 | 5 week civic engagement (meaningful activity/volunteering) intervention in 3 phases:  - education about community group to be served (e.g. homeless, families of soldiers serving overseas) including sharing of own personal stories - assembling of care packages of donated and bought items - presentation of care packages to representative of community group and recognition of participation (certificates and celebratory event). | Improvements to purpose, self-esteem and self-perceived health were found, but these were *not* *significant*.  After intervention was withdrawn, participants in Site 1 experienced decreases in self-esteem and self-perceived health that were ***significant***, but scores did not drop below baseline.  Intervention was welcome by OP and staff. After the study ended, both DCs formed similar service groups to promote civic engagement.  ‘…there appears to be a continued yearning for generativity, productivity, and con­nectivity in this population. Adult day programs, and possibly other congregate settings, appear to be well suited to provide opportunities for com­munity involvement and engagement for this pop­ulation. Civic engagement interventions could be integrated into care plans and become a treatment option for increasing participant well-being’ (p700) | 20% attrition.  3-item Purpose in Life scale found to be unreliable. Chosen instead of 20-item scale due to cognitive impairments of some. |
| Dickson *et al*. (2014)  US  *Senior centre* | To pilot test an innovative skill-building intervention to improve heart failure self-care among community-dwelling older adults, specifically the efficacy of a theoretically-derived intervention. | **RCT**  (pilot)  144 of 250 met eligibility criteria and 69 declined leaving 75 who were randomised to intervention or waiting list control group. | Convenience sample of 75 older people with heart failure recruited from cardiology clinics and community settings.  Intervention (38) and control (37) group. All had been diagnosed with chronic heart failure at least 3 months previously, aged ≥55, lived in the community, without cognitive impairment that may interfere with study.  56 completed 3 month follow-up (29 intervention & 27 control).  No significant differences in self-care scores between groups, but significantly higher HRQoL in intervention group.  Mean age: 69.9 | Group sessions (4-8 participants) of 60 minutes per week of self-care education run by trained lay health educators over 4 weeks. Sessions focused on 4 major self-care processes: adherence to medication, low-salt diet, monitoring symptoms, management of symptoms. Following assessment of self-care knowledge and practical skill levels, deficits were addressed (e.g. reading food labels, preparation of low salt meals) taking into account cultural and social requirements. Health educators also offered self-care lifestyle coaching and problem solving (e.g. access to care).  Control group received usual care and was offered intervention after 3 months.  Content based on patient education guidelines) - Kansas City Cardiomyopathy Questionnaire (KCCQ) (23-item health-related quality of life measure that quantifies disease-specific physical limitation, symptom frequency, severity, and change over time, overall quality of life, social interference, and self-efficacy – those dimensions shown to be key aspects of HRQL in persons with HF) - New York Heart Association NYHA classification  - Charlson Comorbidity Index (CCI)  - Duke Activity Status Index (DASI) (physical function) | Improved self-care in all 3 domains (knowledge of heart failure, management and maintenance) in intervention group compared with control group at 1 month, rising to *significant* improvement at 3 months which suggested sustainability of effects.  No significant change in HRQoL.  Dickson *et al* concluded that ‘the health educator model may be an alternative to clinician-based approaches, especially when the focus of the intervention is on promoting self-care’ [p194].  Conclusion: ‘the health educator model may be an alternative to clinician-based approaches, especially when the focus of the intervention is on promoting self-care’ [p194].  Since patients with HF experience high symptom burden and exorbitant healthcare costs, understanding how this intervention might decrease health care costs is needed. | Small sample size.  High attrition (25%) due to regional superstorms which interfered with communication, enrolment and data collection, but high treatment fidelity among participants.  Cost-effectiveness analysis not built in. |
| Fitzpatrick (2010)  Canada  *Senior Centre* | To explore whether brain fitness activities have a relationship to mental and physical health among older women. | **Self-administered questionnaire** | **Attenders** (257) – female (of 9 DCs) – all were relatively independent & functional and participated in specific cognitive fitness activities at DC they attended.  Mean age: 77 | Participation in & impact of specific cognitive fitness activities participated in at DC (e.g. strength exercises, aerobic exercises, listening to speakers, volunteering, travelling, computer-based programmes, laughing, paid work, group work, language classes and taking career decisions etc.) measured by self-completed questionnaire covering use of DC, cognitive activities, mental & health status, and demographics. Measurement of mental health included modified version of the Psychological General Well-Being (PGWB) Schedule. | Laughing with others, strength exercises, working together on a project and career decisions *significant*ly related to mental health (spirit, happiness and an interesting life).  *Significant*ly positively related to both self-reported physical health and chronic conditions: aerobics, strength exercises, group work, listening to speakers career decisions, computer labs, learning new languages and paid work.  ‘Brain fitness activities represent a specific type of community activity in which older individuals may find additional intellectual and fitness challenges to promote and maintain physical and mental welbeing’. [p33] | Cognitive fitness activities not confined to those carried out at DCs – some took place at home, or in other community venues. |
| Frosch *et al*. (2010)  US  *Senior centre* | To evaluate the effect of an intervention to improve active self-management and activity in older people with chronic conditions. | **Quasi-experimental**  Convenience sample. | 116 attenders from 2 senior centres.  All ≥55, able to walk and complete questionnaires without assistance.  Both groups received financial incentives for completing surveys, and 1 received an additional amount for attending at least 3 screenings. Survey completion rate: 98%.  Participants in group with additional incentive were younger, more likely to be BME, with lower education levels and income, reported significantly more minutes walking and higher mental health scores. | Group screenings of 5 videos (20-45 mins each) over 12 weeks aiming to inform about and motivate self-management of chronic conditions prevalent among older people (heart conditions, diabetes, back pain) and advance directives, followed by discussion moderated by a facilitator trained in motivational interviewing (member of research team). Videos were shown multiple times to maximise viewing opportunities.  Demographic and health data was collected.  Validated measures used at baseline, 12 weeks and 6 months:  - Medical Outcomes Study 12-item Short-Form Survey (SF-12) (HRQoL – mental & physical) - Patient Activation Measure (PAM) (activation: self-rated ability to take preventive actions, manage symptoms, find/use appropriate medical care, and make decisions about care with healthcare providers). - WHI brief physical activity questionnaire (enables estimation of number of minutes engaged in walking/moderate/vigorous physical activity in previous week).  Likert scales measured subjective perceptions of change (12 weeks and 6 months): willingness to consult GP, confidence in ability to ask GP questions, general health, who has responsibility for managing health and what is done to manage health).  Open question about any changes made in how manage condition resulting from programme participation. | At 6 month follow-up, participants attending ≥3 screenings reported *significantly* increased activation (those with least activation at baseline showed greatest increases) as well as more minutes spent walking, engaging in vigorous physical activity and better HRQoL (mental and physical) compared with those who attended <3 or no screenings.  (Differences in moderate activity were non-significant. There were no differences in HRQoL scores at 12 weeks. Significantly higher PAM scores in people attending ≥3 screenings at 12 weeks and 6 months).  Among attenders of ≥3 group screenings, there was significantly greater change in willingness and confidence to ask GPs questions, sense of personal responsibility for health, making more changes in activities to manage health and in self-perceived health rating.  At 6 months, attenders of the advance directive screening (58% of all participants) were significantly more likely than those who did not attend it to have completed an advance directive (13.4% cf 2.1%) or have the intention to do so (41% cf 17.4%).  No participant viewed a video individually despite encouragement and equipment being available, suggesting that facilitation is important.  Frosch *et al* highlighted that this successful and targeted intervention ‘reached people in a setting without the time pressures inherent in primary care’ [p1500]***..*** | Participants represented a small sample of attenders and may not have been representative.  Physical and mental health scores could have been affected in 2 ways: 1) attenders of more group screenings were more physically active at baseline, 2) scores dropped in those attending fewer screenings while those who attended more remained similar possibly leading to increased scores. |
| Gallagher (2016)  Ireland  *Day centre providing integrated social and health care* | To explore how a discussion form may promote social engagement and learning | **Qualitative**  Exploration of intervention operation and experiences.  Thematic data analysis. | Interviewed: 9  6 attenders who regularly participated in cafe, 3 staff (manager, facilitator and the person conceiving the intervention)  Participant observation: author participated in intervention and recorded conversations from Feb 2012 to Feb 2013. | Weekly 2-hour facilitated philosophical discussion groups of 10-16 people (Socrates Café). Participants included the centre manager, attenders and visitors (including students). Designed to encourage and enable conversations about important life matters. Facilitator opens with a question and leads discussion and dialogue. Examples: What is goodness? Is happiness a choice? Is money the root of all evil?  Replicated Socrates Café model initiated in US in 1992. | Main benefits: social interaction and intellectual stimulation. Attenders got to know each other better; added benefit of this: most were neighbours in adjoining sheltered housing scheme and did not know each other beforehand. As well as improving social engagement, discussions were fun; humour was evident weekly. Participants looked forward to attending. Some found the cafe more appealing than other activities; it was purposeful and meaningful and people with varying levels of disability/dementia joined in, speaking about personal lives, own history and feelings. Mutual understanding and tolerance improved as did relationships with staff. Having a mixed age group (visitors) and different backgrounds was positive.  Attenders’ out-of-centre-hours links with wider community improved, e.g. manager made centre bus available for attender-organised evening trip to cinema.  Benefits for the organisation: staff got to know and understand attenders better; gave insights into activities/initiatives they may enjoy (e.g. started a choral group); gave opportunity to share information about local events, issues or security matters conveyed by the police; acted as an enabler for participants to provide feedback to staff about day centre. Manager and facilitator saw café as reflecting centre values of ‘respect for personhood’ (p74).  ‘The findings suggest that Community Philosophy adds an important dimension of lifelong learning to the more traditional ‘leisure/recreational’ programmes in elder care settings and this can make a qualitative difference in participants’ lives.’ (p75) (i.e. counteracts the care and health focus of day centres).  ‘…and benefits for the organisation itself.’ (p65) | Views of participants who attended a few times and decided not to return were not gathered.  Claimed improved links with wider community appear to refer mainly to links with residents of sheltered accommodation community where centre was located. |
| Ganz and Jacobs (2014)  Israel  *Senior centre* | To examine the impact of a 5 month humour therapy intervention on the physical and mental health of community-dwelling senior centre attenders. | **Quasi-experimental.**  **Convenience sample. All members of 4 DCs were invited to participate.** | 92 attenders of 4 senior centres, all living in the community.  Intervention (50), control (42) groups.  Attrition 25% (n=23).  At baseline, intervention group had higher positive mental health and lower depression than control group. These differences were controlled for in analysis. | 12 weeks programme of weekly 2-3hour workshops (based on a successful pilot programme) run by a professional humourist and a social worker over 5 months. Workshops encouraged the use of humour strategies.  Control groups attended DCs as usual and were offered workshops after study concluded.  Participants assessed at baseline and 6 months using validated scales: - RAND Health Status Questionnaire-shortened version (health-related quality of life: physical functioning, role limitations due to physical and emotional health, energy/fatigue, emotional well-being, social functioning, pain and general health) - General Well Being Scale (GWB) (psychological wellbeing/mental health: positive wellbeing, self-control, vitality, anxiety, depression and general health) - Brief Symptom Inventory (BSI) (psychological distress). Demographic data.  Statistical analysis was undertaken.  A mean of 11 workshops were attended by intervention group participants. | Compared with control group participants, anxiety and depression was *significantly* lower at follow-up in intervention group participants who also experienced improved psychological wellbeing. Improvements were all clinically *significant*.  No effects were observed in general health, health-related quality of life or psychological distress.  Easy to implement. | Groups too small to detect moderately significant changes (64 in each group were required).  Detailed data not collected about participants’ medical comorbidity, general physical health status or medications taken.  Study difficult to replicate due to differing interpretations of what constitutes humour therapy. |
| Henwood, Wooding and de Souza (2013)  Australia  *Respite Day Centre (i.e. for people unable to care for themselves completely)* | To test the feasibility of a staff-delivered, evidence-based exercise programme for people with functional limitations attending respite day centres. | **Mixed methods evaluation / feasibility study**: single-group, repeated-measures & staff focus group | **Attenders** (23) in 1 respite DC.  Inclusion: ≥ 65, live in the community, rely on others for ≥ 1 ADL, have no advanced, unstable or terminal illness.  Cohort obese with walking speed associated with increased risk of falls and institutionalisation.  Average no. of medications was 5.95 & co-morbidities 5.7. | Minimum 16 session evidence-based, physically challenging exercise programme that was appended to a low intensity exercise programme. The entire session lasted around an hour.  Exercise was initially led by a professional and, after training, by DC staff (registered nurses and qualified activity planners/leaders). | Demonstrated *significant* benefits with potential to contribute to continued physical independence and reduce risk of falls.  Walking speed, lower body strength, hand grip, agility and balance improved *significant*ly.  All improvements *significant* after 16 sessions, except for habitual walk and right hand grip which became *significant* after 16-24 sessions and 24 sessions respectively.  Improvements in *dignity* were reported (in toileting) by 1, potentially reducing carer burden. | Small group with 30% drop-out  Difficult to speculate about delivering prog in a DC that does not normally run exercise classes  DC staff were registered nurses & people with accredited qualification in planning, developing, implementing & monitoring activity programmes. Not all DCs will have such staff. |
| Kogan *et al*. (2013)  US  *Senior centres* | To test the effectiveness of a multifaceted exercise and nutritional education intervention for chronically ill, community-dwelling older adults. | **Quasi-experimental**  (pre/post test)  **Purposive sample.** | 62 people aged ≥60, with ≥2 chronic conditions, with ≥1 A&E visits or hospital admissions in previous 6 months, and at nutritionally moderate to high risk (screened using Nutritional Screening Initiative non-validated questionnaire).  62 of 318 identified via patient records as meeting criteria participated (19%), having also been screened as suitable by their GP.  Mean age 73.5 | 16 weeks of twice weekly 2 hour classes at DCs, led by dieticians and exercise specialists, at 2 DCs. First hour was low-impact physical activity that progressed from seated to standing exercises. Second hour was education about nutrition for managing chronic conditions (diabetes & high blood pressure) e.g. meal planning, food label reading, portion size.  Measured at baseline and 4 month follow-up (face to face): - Depression measured by validated scale: Patient Health Questionnaire - Physical activity self-reported. - Fitness levels measured by performance on 7 tests designed to measure flexibility, strength and stamina in OP (30-second chair stand, arm curls, steps taken on a 6-min walk, 2-min step-in-place, sit-and-reach, back scratch, and 8-ft up-and-go). - Body measurements taken and Body Mass Index (BMI) calculated.  At the start, participants met with the dietician to discuss their specific needs and set goals. Participants were given a personalised programme manual.  >50% attended ≥26 classes. Mean attendance 21.7 classes. Participants were encouraged to exercise between classes, alone or in company (peer support).  Statistical analysis was undertaken. | *Significant* improvements in physical and mental health were found.  *Significantly* increased weekly exercise by 3.3 hrs (from 2.6 to 5.9) and distance walked during an average day by 1.56 miles (from 0.34 to 1.9 measured by pedometer). The majority (57.7%) did not walk at all at baseline. Almost all (95.1%) reported engaging in some walking at follow-up.  *Significant*reduction in depression (mean scores 5.5 down to 2.8 where <5 indicates minimal/no depression and ≥5 mild-severe depression). At baseline, 45% were mild to severely depressed, reducing to 16% at follow-up (i.e. decreased by 64%), with 84% reporting minor/no depression.  *Significant* improvements in 6 of 7 fitness tests30-second chair stand, arm curls, 2-min step-in-place, sit-and-reach, back scratch, and 8-ft up-and-go). There was no change in 6-min walk.  *Significant* reductions in 5 body measurements (waist, hips, arm, chest, and leg circumference).  Participants lost an average of 7 pounds in weight and lowered both their BMI (by 2kg/m2) and body fat percentage.  Anecdotal evidence suggested that participants provided peer support to one another. Kogan *et al* speculated that the peer support element and social interaction may have contributed to programme adherence given that high numbers were widowed/divorced/single (71%). | Cause-effect conclusions limited due to lack of comparison group.  Small sample size.  Long-term activity unknown as short-term intervention.  NSI is unvalidated, but a better measure was not identified.  Participants were not previously attending a DC. |
| McGivney *et al*. (2011)  US | To evaluate an ‘introductory pharmacy practice experience’ whereby university students provide supervised pharmaceutical care to people attendingday centres. | **Programme evaluation** | Attenders (361) in 13 day centres.  (215 students) | As part of 1st year university module in pharmacy, comprehensive medication reviews were carried out with attenders of DCs and supervised by faculty members or fourth year students.  Students followed up matters raised ( e.g.: arranging an appointment with doctor to assess symptoms suspected to be a urinary tract infection, obtaining glucose test strips through Medicare for someone who has been paying for these.)  Feedback informing the evaluation of the 2008 and 2009 ‘experience’ programmes was obtained from students, supervisors (faculty staff or 4th year pharmacy students, n=13) and DC staff. | For attendees: 447 medication-related problems identified. Most common: non-compliance (n=176, 39%) and the need for additional medication (n=105, 32%). Others: adverse reactions (n=48), unnecessary medications (n=42), needing a different medication (n=34) and dose too low (n=25) or too high (n=17).  Top benefits for attenders reported by DCs: identification of medication problems and better medication use.  Additional benefits reported: new health information and the companionship provided during a review.  For pharmacy students Supervising faculty members observed that students learnt communication skills, clinical decision-making and professional identification (understanding pharmacists’ role as medication managers). 4th year students also benefited from supervising 1st years. They fine-tuned their communication and patient interaction skills, realised that people may be less independent than they seemed, perhaps needing help with medication management, and recognised that properly supervised 1st year students could make an impact on people.  Contributed to improving the curriculum by providing an opportunity to put learning into practice which acted as a foundation on which to build skills, by reinforcing to students the reality that patients, and their problems, were real, that everything is not always uncomplicated, and by enabling them to see that pharmacists had a valuable role beyond dispensing. | Gaining feedback directly from a selection of attenders might have resulted in additional findings. Only DC staff’s perception of benefits were gathered and data on outputs (e.g. number of problems identified.) |
| Mathieu (2008)  US  *Senior centre* | To assess whether a therapeutic recreation programme addressing happiness and humour could produce a measurable change in life satisfaction. | **Quasi-experimental**  Pre- and post-test | 17 attenders of 1 DC increasing to 25 by end of programme.  15 completed all 10 sessions.  (age 65-89)  All attendees invited to participate. | Once weekly interactive, experiential ‘Happiness and Humor’ sessions for 10 weeks. Each included an informational presentation about contributing factors to happiness and life satisfaction (pessimism and optimism; light exercise and music; exercise, nutrition, leisure and attitude and why these were important). Format varied from talks, interactive activities and group discussions, jokes (which were encouraged) and comedy videos. Props were used (e.g. sweets) to generate discussion. Participants were encouraged to share funny anecdotes about their lives. They were given ‘laughter prescriptions’. Many shared deep feelings during these group psychotherapy sessions.  The Life Satisfaction Scale (LSS) (self-rated validated scale measuring 5 dimensions of perceived life satisfaction: pleasure, determination, goal achievement, mood, and self-concept) was administered pre- and post-test with 15 people who participated in all 10 sessions.  Statistical analysis was undertaken. | Self-rated life satisfaction scores *significantly* improved following programme participation.  Group dynamics and sharing were noted to be very effective. The group was cohesive by the fourth session and quieter members began to participate. By the end of the programme, all appeared to feel comfortable speaking about personal matters which, they reported, made them feel better emotionally and psychologically. Participants listened well, served each other refreshments and became very interested in and supportive of each other. Sessions encourages social interaction and participants **began to meet socially outside sessions**. Anecdotal evidence suggested that they became significantly more optimistic during the programme.  Mathieu concluded that this programme can be replicated in DCs and suggested 6 core principles to be used in implementing such programmes. | Very small sample.  Some claims unsubstantiated (e.g. participants were observed to feel less lonely). |
| Morrisroe *et al*. (2014)  US | To improve understanding of urinary incontinence and its predisposing characteristics in older Latinos. | **Longitudinal cohort study** – 1 year | Attenders (328) | Behavioural intervention (Community-Based Physical Activity Trial) to increase in sedentary older Latinos.  Validated scales used:  - Physical performance - Short Physical Performance Battery18 (balance, gait, strength, and endurance) - ADLs - Activity of Daily Living (ADL) summary scale (assesses difficulty performing 16 basic tasks). - Health-related quality of Life - Medical Outcomes Study 12-item Short-Form Survey (SF-12 - Geriatric Depression Scale (GDS-5)  Steps per day measured using pedometers worn at all times, except bathing or sleeping, for a while week before scheduled data collection. Display was covered in a fabric case to minimise it functioning as a motivational tool rather than a measure of walking level.  Statistical analysis was undertaken. | After 1 year, incident urinary incontinence (UI) was lower in those who improved their physical performance (but was still high) suggesting that interventions that improve physical performance may help prevent UI in older Latino adults.  Higher mental and physical HRQoL was associated with a lower risk of incident UI.  Increase in depression associated with higher incident UI. | No details given of what the intervention entailed.  Selection bias, attrition, and possible measurement error.  (Missing data may have skewed results.  Self-reported data is subject to recall and social desirability bias.  Urge and stress incontinence not separated.  High attrition at 1 year |
| Ota *et al*. (2014)  Japan  *Senior centre* | To investigate the effects of physical fitness, posture, and quality of life on community-dwelling older people using pole walking at a day service centre. | **Quasi-experimental**  **(case-control)**  **DCs randomly allocated to intervention or control.** | 66 attenders of 5 DCs in intervention (28) and control (38) groups.  All could walk independently or under supervision, attended a DC twice weekly and were not severely cognitively impaired. People unable to use poles because of palsy of the hands/fingers were excluded.  No significant differences in baseline data between groups except for height.  57 completed pre- and post-tests (22 intervention & 35 control), 86%.  Mean age: 83. | Intervention groups used poles while walking/carrying out ADLs at DC for 3 months while control groups continued moving around as usual.  Data was gathered pre- and post-test:  - MOS 8-item Short Form Health Survey (SF-8)- validated Health Related QoL measure (general health, physical function, role physical, bodily pain, vitality, role emotional, mental health, and social function).  Physical fitness measured using knee extensor strength, back muscle strength, one-legged standing time with eyes open test, and the validated timed up and go  (TUG) test which assesses mobility.  Posture was measured by videoing participants after placing markers at key points.  (Pole walking is similar to Nordic walking but without the need for licenced instructor training). | Compared with baseline, the intervention group experienced *significant* improvements in Physical Component of HRQoL (associated with activity & function) and to some aspects of posture (decreased upper cervical angle, i.e.chin up, and pelvic plane angles). There were no changes to physical function, but pole walking appeared to *maintain* physical function as measured by TUG.  There were no improvements to physical function or fitness (e.g. strength of knee extensor, TUG) or changes in upper cervical angle.  All *significant* changes in the control group were negative for OP: slower TUG, and posture - decreased neck slope angle (forward head position), pelvic plane and lumbar spine angle.  Average total pole walking minutes: 229.3. Average daily pole walking time: 9.7 minutes twice weekly.  Ota *et al* concluded that pole walking could be realistically undertaken at DCs as part of a usual day particularly since it did not involve physiotherapists or occupational therapists who are not usually employed by Japanese DCs. | Random allocation of DCs mean conditions were different for each group.  Small sample size affected power of statistical analysis.  Small intervention (9.7 minutes/day and twice/week) although this did mirror actual circumstances. |
| Pitkala *et al*. (2009)  Finland  Pitkala *et al*. (2011) | To determine the effects of new psychosocial group rehabilitation on the subjective health, use and costs of health services, and mortality of lonely older people. | **RCT** | Attenders (235) of 7 DCs self-identifying as lonely. | 3 month intervention of weekly 6 hour sessions of psychosocial group intervention work (3 groups: discussion with therapeutic writing, group exercise or art experiences) led by registered nurses, occupational therapists and physiotherapists. Sessions aimed to enhance interaction and friendships between participants as well as to stimulate them socially, and were based on the principles of closed-group dynamics and peer support. | At 2 year follow-up, survival was 97% in the intervention group and 90% in the control group.  Intervention group experienced *significant* improvements in subjective health, resulting in *significant*ly lower health care costs during the 2 year follow-up period (–€ 943 per person per year). | Participants were volunteers who wanted to change their lives - may have exhibited better attendance than OP less open to participating in such activity. |
| To determine the effects of socially stimulating group intervention on cognition among older individuals suffering from loneliness. | Wellbeing, cognition and health were found to be inter-related with social networks, stimulating activities and surroundings.  *Significant* improvements in cognition after 3 month intervention.  *Significant* differences in the therapeutic writing group members’ cognition compared with their control groups. Differences were not *significant* in the art and exercise groups.  At 12 month follow-up (down to 208), mental function remained *significant*ly improved in intervention group. |
| Resnick *et al*. (2012)  US  Senior Centres | To explore implementation of telehealth equipment in community-based day centres by collecting information on the logistics and operational considerations associated with implementing nurse-monitored telehealth kiosks and conduct a preliminary examination of blood pressure and other characteristics of hypertensive older people using day centres. | **Pilot quasi-experimental** (**case-control**) - 10 months | **Attenders of** 4 day centres.  Case groups (2): 41.  Control groups (2): 73 | Hypertensive older people who were regular attenders were asked to monitor their blood pressure at least weekly for 10 months after being trained in equipment use.  Nurses remotely monitored data (intervention group only), making rapid GP or hospital referrals in cases of clinically relevant changes in blood pressure.  Data were retrieved automatically by the telehealth central IT system and monitored daily. Nurses were alerted by email to readings outside GP-defined parameters and then accessed individual data to carry out appropriate follow-up.  Blood pressure data for the non-intervention group were not monitored in this way. | Easy access to telehealth monitoring equipment offer the potential for better management of blood pressure and cost savings.  Mean blood pressure declined in both monitoring and control groups over the period, but was a higher percentage of people with controlled blood pressure in the monitoring group.  Participants readily embraced the technology. By end of the study, 95% were very comfortable with its use. Use of the equipment was highest at 5 months after which it decreased.  Nurses would have welcomed mobile notifications of data that needed follow-up.  DCs were found to be a suitable location for telehealth equipment to monitor blood pressure. Not only could their location in a familiar community venue mean that monitoring of certain chronic conditions might be built into high-risk people’s normal routine, but congregate settings also potentially enable such technology to have a broader reach.  Monitoring and intervention bridged the gap between routine check-ups. Senior DC staff reported they would readily house such equipment in their DCs permanently were their purchase and maintenance costs not so high. | Some participants did not comply with instructions, measuring blood pressure too frequently, directly after activities that may have led to increases (e.g. card games) or incorrectly placing the cuff. Use of the equipment decreased after month 5.  Small pilot study in rural areas of the US. |
| Santacreu and Fernandez-Ballesteros (2011)  Spain | To build a behavioural treatment for feminine urinary incontinence in order to reduce the involuntary urinary leakage in a group of women volunteers. | **Quasi-experimental**  (pre–post test) – 2 months | Female attenders (14) who had experienced at least 1 incontinent episode in week before starting programme. | Daily pelvic floor muscle training (Kegel exercises) (3 times daily) at home for 2 months (9 weeks), following a class at DC teaching the exercises. In fortnightly supervision sessions, an expert supervisor (no details provided) gave instructions for further exercises.  GPs had explained Kegel exercises to all participants, but they had not previously performed them.  Participants were followed up 2 months complete of intervention. | Urinary incontinence episodes reduced by 75% after completion of programme. All participants (n=14) completing the programme experienced reduced incontinence episodes, regardless of type or severity of urinary incontinence and health characteristics.  Findings confirmed importance of availability of expert supervision (at least, at the beginning) for the acquisition of a new habit. | Research design was changed. Initial plan: randomise 37 participants to 2 groups - experimental & control in waiting (to commence treatment 2 months after first group). High attrition (62%, n=23) meant that all became part of the experimental group & study became very small scale.  Attrition due to a) not completing programme (6); b) not having leakages in 1st week of treatment (7); c) caring for family member & no time (3); d) no time (4); e) no reason given (3). |
| Truncali *et al*. (2010)  US  *Senior centre* | To describe ‘Keep On Track, an enhanced and updated version of a senior center–based program that aims to reduce the BP of ommunity-dwelling older adults using peer volunteers, its implementation and evaluation. | **Evaluation**  All DC members were invited to participate. | 244 attenders of 6 DCs that had ≥60 daily visitors and 4-6 senior volunteers (recruited from DC membership) and were in low to middle income areas.  All had newly enrolled in the BP monitoring programme.  Mean age: 73 | Over 6 months, blood pressure (BP) measuring sessions were run fortnightly in a volunteer-run programme that aimed to reduce BP by conducting ongoing monitoring in people with or without diagnosed hypertension. New enrollees’ measurements were recorded on a tracking card that participants were encouraged to show to their GP. Volunteers also asked if people had taken prescribed BP medications in previous 24 hours. Participants were informed of BP using a low-literacy, colour-coded chart and advised about any actions they should take. An average of 6 volunteers per DC ran the programme.  The programme had run for >20 years. Enhancements evaluated included updated hypertension management protocols, enhancing health literacy (via low literacy materials and regular reminders about medication adherence) and links with clinicians (letters informing GPs of study participation were developed). Automated monitors were used to measure BP.  Local Health Promotion Unit administered the programme and DCs received quality assurance visits to ensure adherence to guidance and correct measurement technique. Start-up material included volunteer training, 2 automatic BP monitors, tape measures and printed materials. Volunteers were given a manual after receiving 6 x 2 hour sessions of training from health educators in hypertension and practicalities (e.g. measuring BP, record keeping and communicating with participants.  DC directors recruited volunteers and sent attendance data to Health Promotion Unit, stored materials and dealt with emergencies (approx. 5 hours p.a.). Some DC funding was dependent on participation in programme.  First and last Systolic BP (SBP) measurements were compared using statistical analysis. | 43% of participants (n=105) had their BP measured multiple times (mean 4.7 times) over an average of 4 months and the remainder (n=139) only once.  181 (74%) had hypertension at baseline. 92% (n=144) of these were aware of this, 78% (n=121) were taking medication for hypertension and 31% (n=31) were being controlled. Awareness, treatment and control did not differ significantly between single and multiple visitors at baseline.  Of multiple-visit participants, 62% experienced clinically relevant reductions in SBP over the intervention period (mean 3.9-mmHg reduction in SBP). Reductions were greatest in those with highest baseline BP (20 participants with baseline SBP >160 mmHg experienced mean reduction of 20.9-mmHg). Maintaining this reduction would lead to healthier ageing.  38% of multiple-visit participants experienced no change or higher BP, possibly due to inadequate documentation, lack of adherence to or limitations of programme design.  Truncali *et al* concluded that volunteer-run BP in DCs was a low cost, low risk, simple model that was effective in reducing BP and had the potential to be sustainable and reproducible. However, more attention would need to be given to communication with GPs. | Pre-post test design does not control for outside influencing factors.  Only baseline data was available for 57% of participants.  Short evaluation period – some improvements may not have been detected. |
| West *et al*. (2011)  US  *Senior centre* | To determine whether a translation of the Diabetes Prevention Programme (DPP) Lifestyle programme delivered by lay health educators in senior centres is effective in promoting weight loss in older adults. | **RCT**  **DCs were randomised to intervention or control.** | 228 attenders of 15 DCs (average 15.2 per DC).  Intervention group: 116  Control group: 116  All were obese (BMI ≥30), able to undertake moderate exercise (e.g. riding a bike, walking, swimming, without serious cognitive impairment, had not recently lost  a substantial amount of weight, were not under weight loss treatment and did not report recent heart attack/stroke/other condition preventing participation.  Mean age: 71.2  93% completed 4-month follow-up. | 12 one-hour group sessions of adapted version of the Diabetes Prevention Program Lifestyle behavioural weight-control programme delivered by trained lay health educators; included self-monitoring, stimulus control, problem-solving, goal-setting, relapse prevention. Lay educators used a script; handouts were given to participants. Sessions and individual data collection took place in separate private spaces.  Each DC identified 2-3 lay health educators. 40% were community volunteers and 60% DC staff; none had health or lifestyle intervention backgrounds. They received 32 hours face-to-face training and weekly support from the research team.  Participant goals included 7% weight loss, 25% reduction in calories from fat, graded physical activity (up to 150 minutes/week). Pedometers were provided. Self-completion diaries recording diet and physical activity were reviewed weekly.  Data collected: body weight (digital scale) (weekly), percentage loss from baseline to 4-month follow-up and proportion achieving ≥5% and ≥7% weight loss (≥7% is known to delay development of type 2 diabetes). At 4 months, participants completed a questionnaire about the programme’s usefulness and whether they would recommend it. To address concerns regarding lack of treatment for control group participants, these received cognitive training (brain and memory function).  Materials were provided to DCs without charge.  Data was analysed statistically. | Individuals in intervention group lost *significantly* more weight than control group:  - 38% lost ≥5% of baseline weight compared with 5% of control group (mean loss 3.7kg and 0.3kg  - 24% lost ≥7% of baseline weight compared with 3% of control group.  Loss of ≥5% is associated with clinical improvements.  Adherence was high: 86% attended at least 50% of sessions. Weight loss was positively associated with attendance and diary submission. Participants reported high satisfaction with the programme: 86% said sessions were extremely useful; 92% would be extremely likely to recommend it to a friend. Session length was just right for 83%; 12 weeks was just right for 73%.  Attrition of lay educators was low (95% remained at 4 months; 1 left after moving employers and 1 moved away). Their mean age was 59.  Socio-economic characteristics were not associated with clinically significant weight loss (age, gender, education, marital status, employment status).  Conclusions: - a lifestyle behaviour modification (Diabetes Prevention Programme) can be successfully delivered by trained lay people as shown by clinically significant weight loss in an intervention group compared with a control group  - DCs may be a suitable venue for such a programme. | Most participants were female and further research about lay health educator delivered behavioural weight control programmes with men is needed.  Weight loss was lower at 4 months under the adapted programme, compared with the original programme, but was made 4 weeks shorter to make it more sustainable. |
| Yamada and Demura (2014)  Japan  *Day care* | To examine the effect of continuous participation in a day-care fall prevention service on the mobility of community-dwelling older people. | **Quantitative**  **Purposive** | 214 of 334 participants of a fall prevention service.  Continuous group: 57 participated continuously for 3 years (mean age: 75.6)  Dropout group: 157 participated for only the first year (mean age: 76.6).  No significant different in groups’ age and physical characteristics.  Remaining 120 were excluded. | Falls prevention service focused on education: twice monthly lectures on improving nutrition, preventing cognitive decline, oral health, improving motor function) (i.e. 24 p.a.).  Mobility measurements, taken at 1, 2 and 3 years, were peak and mean transfer velocity of centre of gravity (PV, MV) (during Sit To Stand test) and 10 metre maximum walking speed (MWS).  Using statistical analysis, measurements for groups were compared. | No *significant* differences between groups in any of the 3 measures at 1 year. At Year 3, all three measurements were *significantly* higher for continuous participants compared with drop-outs.  From Year 1 to Year 2, continuous participants, experienced *significant* increases in peak and mean velocities.  Conclusion: continuous participation in a falls prevention service at a DC contributed to improved mobility (as measured by peak and mean transfer velocities and 10m maximum walking speed) in OP living in the community. | Very few details of the falls prevention service are given and  the characteristics of the service leader are not provided. |