

Promoting social capital to alleviate loneliness and improve health among older people in Spain

Laura Coll-Planas MD^{1,2}, Gabriela del Valle Gómez MSc^{1,2}, Petra Bonilla MSW³, Teresa Masat MD⁴, Teresa Puig MD PhD^{2,5} and Rosa Monteserin MD PhD^{1,2,6}

¹Fundació Salut i Envel·liment (Foundation on Health and Ageing), Universitat Autònoma de Barcelona, Barcelona, Spain, ²IIB Sant Pau, Barcelona, Spain, ³Equip d'Atenció Primària Sant Martí de Provençals, Institut Català de la Salut, Barcelona, Spain, ⁴Equip d'Atenció Primària Cardedeu, Institut Català de la Salut, Barcelona, Spain, ⁵Servicio de Epidemiología Clínica y Salud Pública, Hospital de la Santa Creu i Sant Pau, Universitat Autònoma de Barcelona, Barcelona, Spain and ⁶Equip d'Atenció Primària Sardenya, EAP Sardenya, Barcelona, Spain

Accepted for publication 3 August 2015

Correspondence

Laura Coll-Planas
Fundació Salut i Envel·liment
(Foundation on Health and Ageing)
Universitat Autònoma de Barcelona
Sant Antoni Maria Claret, 171 (Casa
Convalescència)
08041 Barcelona, Spain
E-mail: laura.coll@uab.cat

What is known about this topic

- Loneliness is more prevalent in Southern European countries than in Northern European countries.
- Loneliness is a risk factor for negative health outcomes, whereas social capital is protective.
- Loneliness is modifiable through psychosocial interventions, especially those based on social activity groups, which actively involve participants.

What this paper adds

- Promoting social capital is a promising intervention strategy to alleviate loneliness among older people.
- Social participation may increase through the use of a behaviour change model and health and social care co-ordination involving community assets and older volunteers as gatekeepers.
- Professionals, community centres and volunteers can support the long-term continuity of new social contacts and participation.

Abstract

Loneliness is especially frequent among older people in Southern Europe. Furthermore, promoting social capital to tackle loneliness and its health effects is an understudied intervention strategy. Therefore, a complex intervention was piloted in Spain in a pre-post study with a 2-year follow-up. Its aims were to explore the feasibility of the intervention and its short- and long-term effects. It was conducted in one mixed rural-urban and two urban areas of diverse socioeconomic levels from 2011 to 2012. The intervention framework was based on social capital theory applying a behaviour change model and care co-ordination. The intervention comprised: (i) a co-ordinated action aimed at building a network between primary healthcare centres and community assets in the neighbourhood and (ii) a group-based programme, which promoted social capital among lonely older people, especially social support and participation. Older people active in senior centres volunteered as gatekeepers. The main outcome domain was loneliness. Secondary outcome domains were participation, social support, self-perceived health, quality of life, depressive symptoms and use of health resources. Pre-post changes were assessed with *t*-test, Wilcoxon signed-rank test and McNemar's test. Differences between the three time points were assessed with a one-way ANOVA with repeated measures. Social workers and nurses were successfully involved as group leaders, 10 volunteers took part and 38 participants were included. After the intervention, loneliness decreased while social participation and support significantly increased. Furthermore, the number of visits to nurses increased. Exactly 65.8% of the participants built social contacts within the group and 47.4% became engaged in new activities. Two years later, social effects were maintained and depressive symptoms had decreased. Exactly 44.7% of the participants continued to be in contact with at least one person from the group and 39.5% continued participating. The intervention contributes a novel and feasible social capital-based approach for alleviating loneliness among older adults while prompting meaningful changes in their lives.

Keywords: aged, psychosocial intervention, loneliness, social capital, social participation, social support

Background

The need to alleviate loneliness

Loneliness is a negative feeling that occurs when a person's social needs do not correspond, either in quantity or in quality, to their actual social relationships (Peplau & Perlman 1982).

Loneliness increases with age. Thus, the current ageing trend entails a higher number of older people suffering from loneliness. However, the nation in which one lives has a greater impact than age on loneliness (Yang & Victor 2011). Longitudinal studies on loneliness are limited to specific regions in Nordic countries and use different measurements. Therefore, repeated European cross-sectional surveys such as the SHARE study provide reliable cross-national comparative data. According to this study, the prevalence of loneliness (i.e. feeling lonely all or most of the time) among people over 65 varies in Europe from 4% in Switzerland to 20% in Greece, with Spain at 14% (Sundström *et al.* 2009). This confirms a north-south gradient, with loneliness being higher in southern countries, contrary to that generally assumed. This gradient appears to be related to poorer social integration and participation and higher expectations of family members in southern countries compared to Northern European countries (van Tilburg *et al.* 1998, Dykstra 2009, Litwin 2010). Moreover, a high proportion of older people and women, unfavourable socioeconomic circumstances and poor health in southern countries such as Spain also contribute to the higher prevalence (Victor *et al.* 2005, Fokkema *et al.* 2012). However, there is a lack of intervention studies on loneliness in Mediterranean countries, which apply a country-tailored approach.

Furthermore, although differences in loneliness between urban and rural areas seem to disappear when taking gender, income and education into account (Routasalo *et al.* 2006), the relevance of geographical contexts when intervening in loneliness is understudied.

Loneliness and health are clearly inter-related. Well-established risk factors for loneliness are poor self-assessed health, depression, functional dependence, low self-efficacy, reduced social network and recent bereavement (Fry & Debats 2002, Victor *et al.* 2005, Cattán *et al.* 2011, Prieto-Flores *et al.* 2011). At the same time, loneliness is a known risk factor for health outcomes such as depression, dementia and mortality (Hawkey & Cacioppo 2010, Tilvis *et al.* 2011). Moreover, loneliness is associated with an increased use of health services (Ellaway *et al.* 1999, Geller *et al.* 1999).

Systematic reviews on loneliness interventions targeting older people have found that the most effective aspects are the following: being group-based and theory-driven, with educational input or supportive activities; targeting specific groups of older adults, including training and support for group facilitators; encouraging older adults' participation in decision-making; involving community resources; and building community capacity (Findlay 2003, Cattán *et al.* 2005, Dickens *et al.* 2011). However, according to systematic reviews and latest trials, loneliness interventions seldom include physical and mental health outcomes. Studies that do so used heterogeneous health measures and yield both positive and negative results (Pitkala *et al.* 2009, 2011, Dickens *et al.* 2011). Thus, the health effects of loneliness interventions are to date promising but inconclusive.

The role of social capital to alleviate loneliness

Recently, the concept of social capital has become prominent in public health research. This interest widens the focus from the individual level to socio-environmental factors at neighbourhood and community levels. Likewise, the Active Ageing paradigm highlights the importance of contextual factors such as social resources in the ageing process and encourages the fostering of social networks for ageing people (World Health Organization 2002).

Social resources, such as social capital, have been linked to the absence of loneliness among the general population (Islam *et al.* 2006, Kim *et al.* 2008) as well as among older people (Routasalo *et al.* 2006, Nyqvist *et al.* 2013a).

Several definitions of social capital have been proposed (Moore *et al.* 2006) but two main conceptualisations prevail. While the social cohesion approach refers to social capital as a public good based on community activities (Weil & Putnam 1994), the social network approach understands that social networks have different values for different individuals (Coleman 1988). From an ageing perspective, Putman's definition of social capital, which is the most popular in health research, has been problematised and adapted to older age (Nyqvist & Forsman 2015). During ageing, health and functional ability deteriorate, limiting the ways in which older people participate and engage in community life. Therefore, Nyqvist *et al.* (2013a) proposed placing more relevance on the interaction between individuals at the micro level. According to them, social capital is an umbrella concept that involves individual (family and friends) and collective social resources (e.g. neighbourhoods), their structural (e.g. social networks,

social contacts and participation) and cognitive aspects (e.g. social support and sense of belonging) (Forsman *et al.* 2011; Nyqvist *et al.* 2013c). Moreover, according to the directions of social ties, social capital is defined as bonding, bridging or linking.

It should be highlighted that social capital as a whole and its different components have protective health effects (Hawe & Shiell 2000, Ertel *et al.* 2009, Holt-Lunstad *et al.* 2010, Holmes & Joseph 2011, Eisele *et al.* 2012; Rocco & Suhrcke 2012, Nyqvist *et al.* 2013b,c, Andrew & Keefe 2014). Among older adults, social capital is related to better mental well-being and increased self-perceived health (Schultz *et al.* 2008; Nyqvist *et al.* 2013b). Furthermore, social capital appears to be a mediator between social determinants and negative health outcomes (Kawachi *et al.* 1999, Bøen *et al.* 2012).

In particular, two components of social capital are crucial to tackle loneliness among older people: social support as a cognitive resource and social participation as a structural one (Routasalo *et al.* 2006, Savikko *et al.* 2010, Litwin & Shiovitz-Ezra 2011, Stephens *et al.* 2011, Nyqvist *et al.* 2013a). Indeed, a recent meta-analysis on loneliness interventions across the lifespan identified and proved effective four intervention strategies: improving social skills, enhancing social support, increasing opportunities for social interaction and social cognitive training (Masi *et al.* 2011). However, in trials targeting older people, increasing social support was the most widely applied strategy and the only effective one. Furthermore, interventions rarely tried to increase opportunities for social interaction and none applied more than one strategy (Masi *et al.* 2011).

Social participation, defined as social engagement, interacting or doing activities with others, entails behavioural challenges (Levasseur *et al.* 2010). Thus, to successfully increase social participation, professionals must foster a behaviour change towards a more active lifestyle. The most commonly applied theory to promote healthier lifestyles is the social cognitive theory, focused on intra- and interpersonal processes (Bandura 1977). Additionally, social ecological models provide a comprehensive framework which accounts for the organisational, community and public policy influences (Bronfenbrenner 1994, Stokols 1996, Michie *et al.* 2011).

At present, in primary healthcare, loneliness is not addressed as a health-related condition. Nevertheless, current health and social care policies advocate care co-ordination, i.e. inter-professional working between health and social care professionals to respond to the complex and multiple needs of older people. This proves to be a promising approach to address loneli-

ness (Dowling *et al.* 2004, Øvretveit 2011, Petch *et al.* 2013, Van Orden *et al.* 2013, Ledesma 2014).

In summary, social capital theory could drive empirical research to target loneliness and its complex link with health (Nummela *et al.* 2009, Hunter *et al.* 2011, Taube *et al.* 2015).

Therefore, a complex intervention was designed to alleviate loneliness among community-dwelling older people in primary care by promoting social capital in their social environment.

Aims

The *first* aim was to explore the feasibility of the intervention in mixed rural–urban and urban areas of diverse socioeconomic levels.

The *second* aim was to assess the immediate and long-term effects of this intervention among older participants on: (i) loneliness; (ii) structural and cognitive aspects of individual social capital (i.e. participation and social support); (iii) perceived health, health-related quality of life, depressive symptoms and the use of anxiolytics and antidepressants; and (iv) the use of health services.

Methods

Study design

This was a multi-centred and non-controlled exploratory complex intervention study with a pre–post design, based on a community and psychosocial intervention with a 2-year follow-up. It was conceived as a first step prior to a definitive trial. Quantitative and qualitative methodologies were applied with a complementary purpose. The goal of this article is to present the quantitative results.

Study population

Three primary healthcare centres in two municipalities in Catalonia (Spain) were selected by convenience to implement the intervention in a mixed rural–urban context with a medium socioeconomic level (zone A) and an urban context with a low and medium socioeconomic level (zones B and C respectively). The mixed rural–urban area had 16,000 inhabitants, while the urban area had 1,600,000.

The participants' recruitment strategy for the group-based programme was pragmatic. Professionals could refer patients by contacting them actively or by asking their patients about loneliness during routine visits. All professionals, i.e. general practitioners, nurses and social workers, were encouraged to use

the programme as an opportunity to refer patients suffering from loneliness, as they usually refer patients to specialists or specific interventions. Participants were also self-referred through advertising in the centres. A nurse ensured that those who volunteered to participate met the following eligibility criteria: (i) community-dwelling aged ≥ 60 ; (ii) feels lonely 'sometimes, often or always' in response to the question 'Do you feel lonely?'; (iii) can walk to the centre independently; (iv) no cognitive decline; (v) able to participate in a group dynamic; and (vii) does not participate in regular social activities.

Intervention

The intervention consisted of a co-ordinated action and a group-based programme. The co-ordinated action was aimed at building and strengthening the network between primary healthcare centres, senior centres and other community assets in the neighbourhood where older people could participate in activi-

ties. Moreover, older people active in local senior centres were recruited and trained as volunteers. Their goal as gatekeepers was to introduce lonely older people from the programme to community assets. The group-based programme was conducted from January to June 2012 applying an intervention guide (Coll-Planas & Gómez 2012). The group met for 1.5 hours a week for 15 weeks. Figure 1 shows the actions comprised in both the intervention components.

The overall intervention framework was based on the social cohesion approach of social capital theory emphasising the interaction between the older persons and their social environment (Weil & Putnam 1994). Specifically, the social capital operationalisation from Nyqvist was used to develop a new complex loneliness intervention considering the structural, cognitive, bonding, bridging and linking elements related to loneliness at individual and neighbourhood levels (Nyqvist & Forsman 2015). The study assumes that social capital is acquired through involvement in

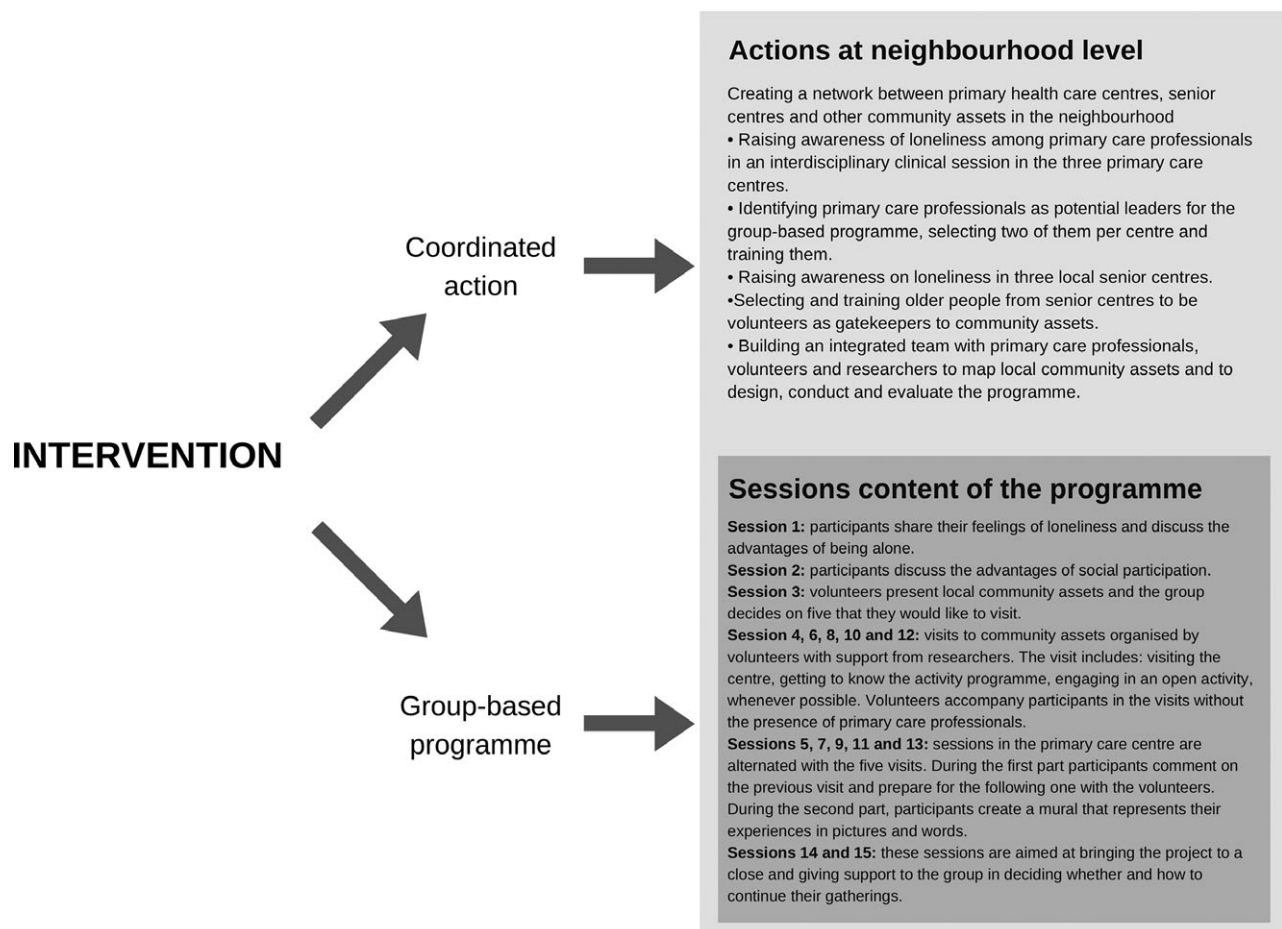


Figure 1 Actions at neighbourhood level and sessions content of the group-based programme.

social activities and that structural and cognitive aspects of social capital (i.e. social participation and social support) reinforce each other. Moreover, strategies based on a behaviour change model and care co-ordination were integrated. Specifically, the programme was initially theory-driven based on the social cognitive theory, complemented by the socio-ecological model, from an empowerment perspective (Bandura 1977, Lord & Hutchison 1993, Michie *et al.* 2008, Braungart 2011). The model for our group-based programme was designed considering previous effective models (Pitkala *et al.* 2009, Savikko *et al.* 2010) (see Figure 2). It was further developed with a practical orientation by professionals from the centres.

Measurements and data collection techniques

Using a semi-structured questionnaire, the professionals involved were asked about their background and experience in conducting groups. Likewise, volunteers were asked about socio-demographic data, their trajectory of volunteering and their motivation for getting involved in the project.

Participant socio-demographic data, chronic morbidity and prescribed medication were recorded for descriptive purposes. Impact evaluation comprised the baseline and follow-up assessment, which consisted of validated interviewer-administered questionnaires regarding psychosocial aspects and health status.

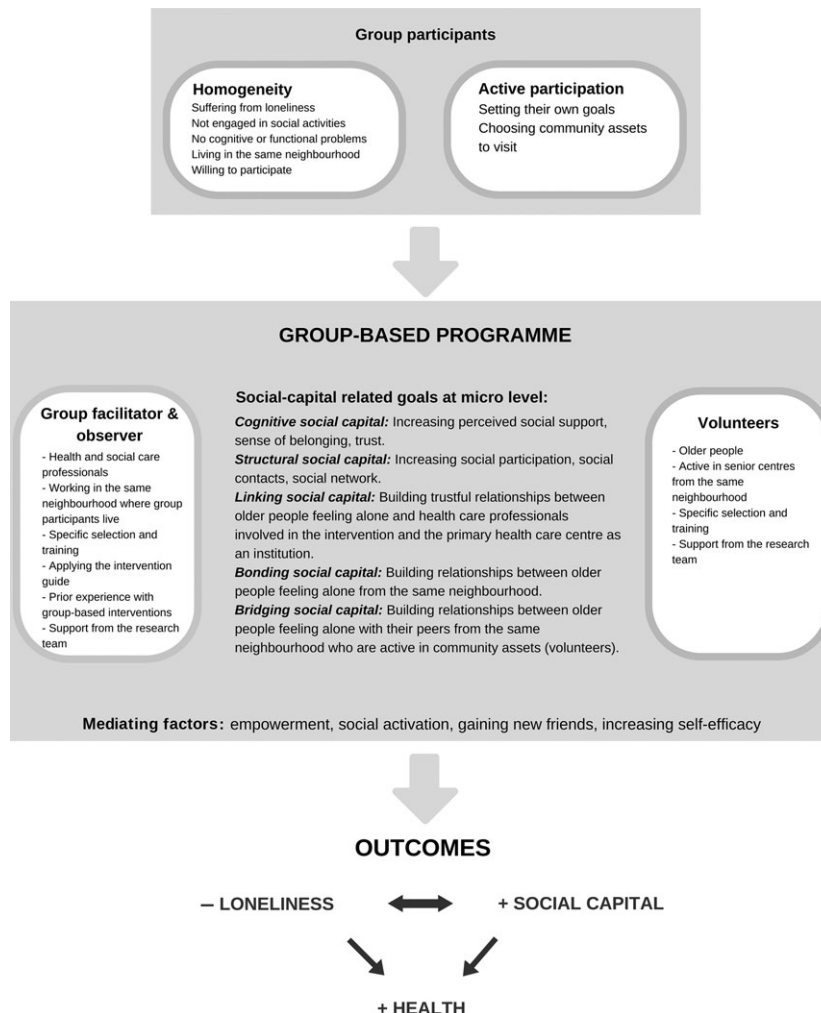


Figure 2 Model of the group-based programme. Elements identified as crucial were predetermined such as characteristics of participants, professionals and volunteers, group activities and group features. Social capital-related goals of the programme were defined. Mediating factors were proposed to achieve the goal of alleviating loneliness by increasing social capital and, consequently, ameliorate health. The intervention model was adapted from Pitkala *et al.* (2009) and Savikko *et al.* (2010).

Loneliness intensity was the primary outcome domain assessed by the 11-item De Jong Gierveld Loneliness Scale (De Jong Gierveld & Van Tilburg 2010). The frequency of loneliness was assessed with a single-item self-rating scale. The impact on social support, as a cognitive aspect of individual social capital, was assessed using the Social Resources Inventory in Older Adults (Veiga 1987). Likewise, the impact on social participation, as a structural aspect of individual social capital, was assessed using the Subjective Social Participation Index (Rubio *et al.* 2009). Further outcome measures were: self-perceived health and health-related quality of life [12-Item Short-Form Health Survey (SF-12)] (Ware *et al.* 1996), depressive symptomatology (Geriatric Depression Scale-5) (Valle *et al.* 2001), and current use of anxiolytics and antidepressants. The use of health services was retrieved from computerised medical records and included consultations with a general practitioner, visits to nurses and social workers in primary care, visits to the emergency department and hospital admissions 12 months prior to the programme, just after it and 6 months later. Participants were also asked about the number of social contacts established within the group, and the number and type of new activities in which they had become regularly engaged.

Two years after finishing the intervention, long-term effects were assessed through telephone interviews, employing the same questionnaire. In addition, using a semi-structured questionnaire, participants were asked about the number of social contacts maintained within the group and how they had stayed in contact, the number and type of activities in which they continued to be engaged and why they had continued them.

The study protocol followed the principles of the Declaration of Helsinki (World Medical Association). The ethics committees from UAB and IDIAP approved the protocol. Participants gave their informed consent.

Statistical analysis

According to the recommendations for exploratory studies, a sample of 20–25 was estimated as adequate (Hertzog 2008). Considering the goal of piloting the intervention in three different areas, three groups were planned. Accounting for a dropout rate of 20%, the estimated initial recruitment was 15 persons per group to achieve a final sample of 36 participants, 12 per group.

To assess pre–post changes, the totality of participants was compared before and after the intervention regarding the impact indicators. Ordinal and numeric variables with a normal distribution (Kolmogorov–

Smirnov test with $P \geq 0.05$) were analysed with a *t*-test to compare the means in paired samples (repeated measures). In variables without a normal distribution, the Wilcoxon signed-rank test was applied. String variables were assessed using McNemar's test. A one-way ANOVA with repeated measures was applied to assess differences between baseline, after the intervention and 2 years later. The level of significance was 0.05. Analyses were performed with the statistical programme IBM SPSS Statistics® 21.

Results

Health and social care professionals were successfully identified; all were women. Specific adaptations had to be made locally. In zone A, the group facilitator was a social worker experienced in groups, and the observer was a primary healthcare nurse. In zone B, two primary healthcare social workers were involved. In zone C, a nurse facilitated the group while a social worker observed.

After the fruitful presentations conducted in each local senior centre, overall, 19 older people wished to participate and of these, 10 became volunteers. The reason for rejection was time availability. Zone A had four volunteers, while zones B and C each had three. The volunteers ranged in age from 67 to 82, and nine were women. They had two different profiles: the younger profile had recently retired and started becoming involved in senior centres, while the older profile had a long trajectory of such engagement. All volunteers reported being motivated to help lonely older people in their neighbourhood by introducing them to the community assets.

In the three zones, the professionals favourably endorsed the group-based programme and had applied the intervention guide smoothly. Three groups were successfully created with a total of 38 persons. The group in zone A began with 11 participants, zone B with 16 and zone C with 11. Further baseline characteristics are shown in Table 1. The flow chart of participants is shown in Figure 3.

Of the 38 participants, 68% ($n = 26$) completed the programme (8 in zone A, 12 in zone B and 6 in zone C). Six persons discontinued the intervention due to health problems, i.e. depression ($n = 2$), hearing impairment, mobility problems, falling and initial cognitive decline. Three persons withdrew due to programme-related reasons: in one case, the group purpose differed from that expected (a recently widowed man looking for a new partner), one person felt uncomfortable, and the third case was a woman from the mixed rural–urban zone who did not wish to

Table 1 Participants' characteristics at the baseline

	Intervention group (<i>n</i> = 38)
Demographic characteristics	
Women, % (<i>n</i>)	95 (36)
Age, in years, mean (SD) (range)	77.24 (5.81) (63–89)
Education level, % (<i>n</i>) (without studies or only primary studies)	82 (31)
Born in the same city where currently living, % (<i>n</i>)	21 (8)
Marital status	
Widow, % (<i>n</i>)	90 (34)
Years of widowhood, mean (SD) (range)	10.43 (10.77) (0–44)
Living alone, % (<i>n</i>)	84 (32)
Psychosocial characteristics	
Feeling lonely, % (<i>n</i>)	
Sometimes	82 (31)
Often or always	18 (7)
Gierveld Loneliness Scale, in categories*, % (<i>n</i>)	
Not lonely	13 (5)
Moderate	84 (32)
Severe and very severe	3 (1)
Health status	
Self-perceived health, % (<i>n</i>)	
Excellent or very good	3 (1)
Good	34 (13)
Regular	50 (19)
Poor	13 (5)
Multimorbidity (≥ 4 chronic conditions), % (<i>n</i>)	79 (30)
Number of chronic medication, mean (SD) (range)	5.84 (2.80) (0–10)
Anxiolytic medication, % (<i>n</i>)	49 (18)
Antidepressant medication, % (<i>n</i>)	43 (16)
Use of health services (last 12 months)	
Number of visits to the GP, mean (SD) (range)	10.51 (7.88) (2–43)
Number of visits to the nurse, mean (SD) (range)	6.65 (7.71) (0–36)
Number of visits to social work, mean (SD) (range)	1.04 (1.95) (0–10)

SD, standard deviation; GP, general practitioner.

*Gierveld Loneliness Scale was categorised as follows: 0–2 = not lonely, 3–8 = moderate, 9–10 = severe and 11 = very severe.

share her feelings in a place where people might know her and the people she would mention. Moreover, one person discontinued for family reasons, one died and one left for unknown reasons. Throughout the intervention and the follow-up, three participants died, one per group. The causes were independent of the study.

Each group conducted five visits to local community assets. The following community assets were visited: seven senior centres, four libraries, one

neighbourhood association, one museum, one community centre and one cultural centre. During the visits, participants engaged in 11 activities: three storytelling sessions, two regular informal gatherings, one workshop on handicraft, one film, one literature awards ceremony, two time-banking presentations and one conference on health.

Table 2 shows the main pre–post results on impact indicators. Positive effects were found on loneliness, social support and participation. Concerning immediate health impacts, other than an increase in visits to nurses, no significant impact was found on health-related quality of life, either on the physical or the mental component of the SF-12. No significant change was seen in visits to the emergency department or in hospitalisation (results not shown).

The long-term impact evaluation showed that loneliness had reduced significantly (mean: 0.46, SD: 0.93, $P < 0.001$), as had emotional (mean: 0.21, SD: 0.66, $P < 0.001$) and social loneliness (mean: 0.25, SD: 0.53, $P < 0.001$). Social participation had significantly increased (mean: 2.04, SD: 1.94, $P < 0.001$), whereas depressive symptoms had significantly decreased (mean: 1.17, SD: 1.15, $P = 0.032$). However, self-rated health did not show significant changes (mean: 3.83, SD: 0.92, $P = 0.33$).

Of the 26 participants who finished the programme, 25 remained in contact with at least one person from the group, and 18 were engaged in activities. Of all the initial participants, 65.8% had built social contacts within the group, and 44.7% maintained contact with at least one person 2 years later. It is noteworthy that 17 participants had contact with three or more people. The mean number of contacts reduced from 3.4 (SD: 2.1) just after the intervention to 2.3 (SD: 1.9) at follow-up. 47.4% of the participants engaged in new activities just after the intervention, and 39.5% continued participating 2 years later.

Two years after the intervention, participants reported diverse forms of continuing their contacts. In zone A, the main bonding elements between participants were activities promoted by the Social Services, in which they were mainly involved as volunteers. In zone B, volunteers were the bonding element: after some informal gatherings, they established a formal memory training activity. In zone C, participants were mainly connected through the senior centre.

Participants reported that they continued the activities because they experienced satisfaction and well-being, their needs were being met (e.g. memory training eased their concern of losing their memory), they were participating with a friend, and they had established and maintained social contacts.

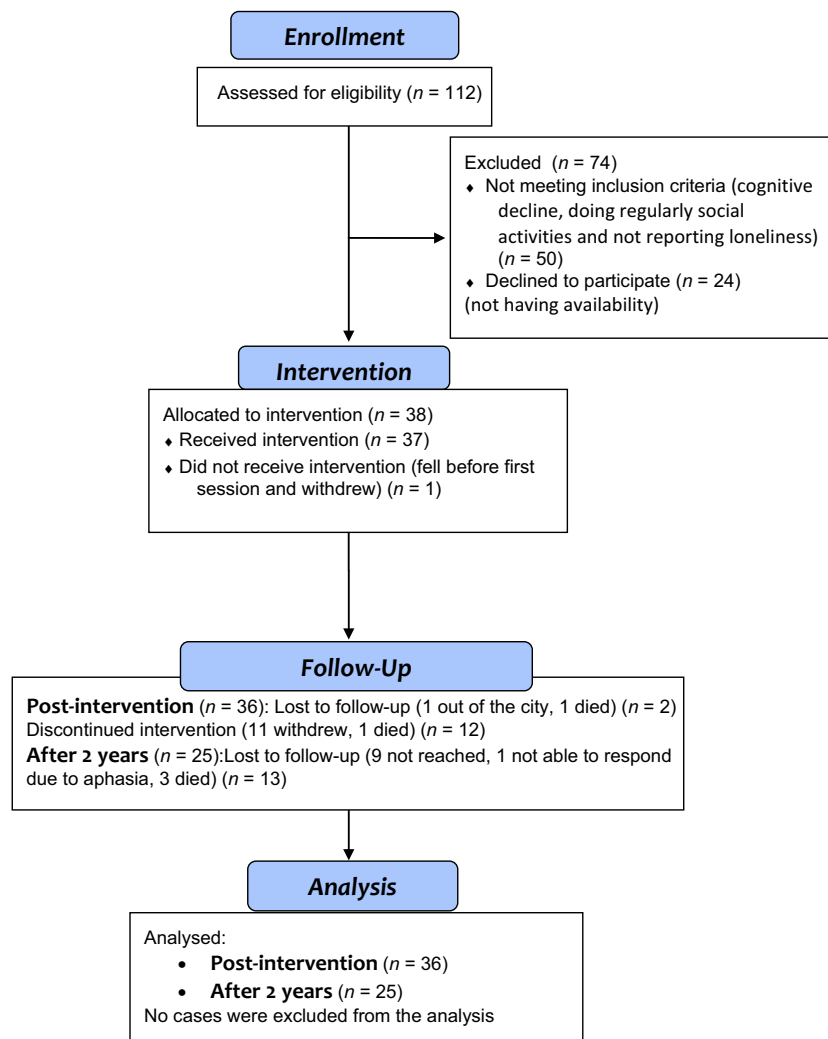


Figure 3 Flow chart of participants during the study.

Discussion

This study provides a novel approach to address loneliness by means of promoting social capital.

Feasibility of the intervention

The co-ordinated action was feasible, and professionals and volunteers were successfully involved. As evidence of care co-ordination is based mainly on disease-specific programmes, our study makes valuable contributions to the practice of care co-ordination from a preventive and psychosocial perspective (Trivedi *et al.* 2013).

The programme was feasible in the three zones. Our findings provide some suggestions regarding the relevance of urban and rural contexts when intervening in loneliness in Spain, such as the need to work

on confidentiality issues, especially in more rural areas. However, the differential findings observed in the zones cannot be attributed to the geographical and socioeconomic contexts.

The proportion of women was very high. While similar studies focusing on loneliness had a lower proportion of women (Pitkala *et al.* 2009), intervention studies aimed at boosting social capital had similar data (Fried *et al.* 2004), and also other group interventions in primary care in our country (Casañas Sánchez *et al.* 2009). This can be explained by the gender composition of the Spanish older population, by the fact that being female is a risk factor for loneliness, that women go to primary care more frequently and tend to express their loneliness more than men (Dykstra 2009). Our findings suggest that older men and women in Spain get involved in loneliness interventions with different goals. Nevertheless, the high proportion of

Table 2 Results pre- and post-intervention

	Pre-test	Post-test	Statistic*	Degrees of freedom, confidence interval, effect size [†]	P-value
Psychosocial variables					
Feeling lonely, mean (SD)	2.18 (0.39)	1.91 (0.69)	−2.065	<i>r</i> : −0.365	0.039 ^{†,‡,§}
Gierveld Loneliness Scale [¶] , mean (SD)	4.55 (2.05)	2.84 (2.33)	−3.645	<i>r</i> : 0.591	<0.001 ^{†,‡,§}
Emotional loneliness subscale [¶] , mean (SD)	2.97 (1.52)	1.97 (1.70)	−3.068	<i>r</i> : −0.498	0.002 ^{†,‡,§}
Social loneliness subscale [¶] , mean (SD)	1.58 (1.00)	0.87 (1.09)	−3.267	<i>r</i> : −0.530	0.001 ^{†,‡,§}
Relationship with friends (Social Resources Inventory in Older Adults), % (<i>n</i>)	73.0 (<i>n</i> = 27)	93.9 (<i>n</i> = 31)	2.45	CI: 0.337–0.038	0.031 ^{†,§§}
Subjective Social Participation Index, mean** (SD)	4.54 (1.57)	3.64 (1.71)	3.491	df: 31; CI: 0.442–1.68	0.001 ^{†,††}
Number of weekly outings, mean (SD)	7.51 (3.22)	9.70 (5.96)	−2.388	<i>r</i> : −0.422	0.017 ^{†,‡,§}
	Pre-test (<i>n</i> = 38)	Post-test (<i>n</i> = 36)	Statistic*	Degrees of freedom, confidence interval, effect size [†]	P-value
Health status and use of health services					
Self-perceived health, mean (SD)	3.74 (0.72)	3.94 (0.89)	−1.414	<i>r</i> : −0.246	0.16 ^{‡,§}
Depression scale GDS-5, mean (SD)	2.05 (1.47)	2.12 (1.58)	−0.297	df: 31; CI: −0.366 to 0.491	0.77 ^{††}
Use of anxiolytics, % (<i>n</i>)	49 (<i>n</i> = 18)	47 (<i>n</i> = 17)	0	CI: 0	1.000 ^{§§}
Use of antidepressants, % (<i>n</i>)	43 (<i>n</i> = 16)	42 (<i>n</i> = 15)	−0.289	CI: 0.284–0.660	1.000 ^{§§}
Number of visits to the GP (last 12 months), mean (SD)	10.51 (7.88)	10.97 (5.72)	−0.538	df: 35; CI: −1.851 to 3.184	0.59 ^{††}
Number of visits to the nurse (last 12 months), mean (SD)	6.65 (7.71)	10.42 (11.24)	−2.802	<i>r</i> : −0.467	0.005 ^{†,‡,§}
Number of visits to social worker (last 12 months), mean (SD)	1.04 (1.95)	1.22 (1.73)	−0.106	<i>r</i> : −0.022	0.91 ^{‡,§}

SD, standard deviation.

*Degrees of freedom (df) and 95% confidence interval (CI) are presented when *t*-test applies; *r* (effect size) is presented when Wilcoxon signed-rank test applies.

[†]*t* Statistic is presented when *t*-test applies. *Z* statistic is presented when Wilcoxon signed-rank or McNemar's test apply.

[‡]Changes were in terms of amelioration.

[§]Changes were in terms of worsening.

[¶]Eleven-item De Jong Gierveld Loneliness Scale: global score 0–11, subscales for emotional loneliness score 0–6 and social loneliness score 0–5. Higher scores indicate higher levels of loneliness (De Jong Gierveld & Van Tilburg 2010).

^{**}Subjective Social Participation Index scale 0–8. Lower scores indicate a higher level of participation (Rubio *et al.* 2009).

^{††}*t*-test for paired samples.

^{‡‡}Wilcoxon signed-rank test for paired samples.

^{§§}McNemar's test.

females could have lowered the intervention effect, as studies with more women seem to have smaller reductions in loneliness (Masi *et al.* 2011).

Effects on loneliness and individual social capital

Loneliness decreased in frequency and intensity. As participants presented non-modifiable risk factors for loneliness (e.g. being female, widowhood and low education level), loneliness was successfully lowered probably because the intervention focused on modifiable components of social capital. Improvements in social and emotional loneliness suggest the possible efficacy of the intervention in building new and effective

friendships. The intervention might also have triggered a change in their perception of social support. Besides, programme features from our model might have been effective.

Social support built within the group has helped to start and continue activities together. Thus, intervention components promoting cognitive and structural social capital elements could have reinforced each other. Furthermore, the long-term maintenance of social contacts and new activities suggests that a meaningful lifestyle change was successfully achieved.

Our study suggests the relevance of professionals, volunteers and community assets as key bonding elements for long-term contacts. However, it remains a

research challenge to understand how to achieve meaningful and lasting changes in lonely people's lives.

Health effects

No immediate health effects were found. This could be explained by the reduced sample size, or by the programme's design, implementation or duration. However, these characteristics enabled us to detect significant immediate effects on loneliness, social support and participation, and process indicators showed optimal implementation (results not shown). Additionally, health effects could have gone undetected by the measurement instruments applied. Nevertheless, these findings are consistent with other intervention studies: effects on social well-being are generally achieved but rarely on physical health (Fried *et al.* 2004, Ertel *et al.* 2009, Pitkala *et al.* 2009, 2011, Dickens *et al.* 2011). Moreover, participants' low education level and bad self-perceived health suggest the appropriateness of a social capital-based intervention, as increasing social capital potentially contributes to health equality (Hunter *et al.* 2011).

Depressive symptoms had decreased at the 2-year follow-up. The long-term but not immediate effect on depressive symptoms could be explained by the maintenance of social activities and social contacts. Although divergent effects on mental health have been found when intervening in loneliness (Dickens *et al.* 2011, Saito *et al.* 2012), social capital seems to be related to reduced depression among older people (Forsman *et al.* 2012). Further research is needed on how to prevent and manage depressive symptoms related to loneliness.

Contrary to a previous trial, our study did not find a significant decrease in visits to the general practitioner or in hospitalisations (Pitkala *et al.* 2009). Moreover, our study is the first of this kind assessing the impact on visits to the nurse, social worker and emergency department. No effect was found other than a significant increase in visits to the nurse. This could be explained by the nurse's role in the group, which could have increased the participants' trust. The intervention could also have empowered participants to take more responsibility for their health. However, the heterogeneity of the reasons for visiting these professionals (e.g. chronic disease management, wound care, etc.) makes it difficult to interpret this increase.

Strengths and limitations of the study

This study contributes a novel approach in terms of the participating actors, the problems tackled and the

strategy applied. Nevertheless, the study has some limitations. Due to the pre-post non-controlled design, results cannot be attributed to the intervention (Dimitrov & Rumrill 2003, López *et al.* 2011). However, the improvement could have been achieved through the intervention, as observational studies show that social networks remain stable or decrease during ageing (Shaw *et al.* 2007, Ertel *et al.* 2009). Furthermore, the study design accomplishes its explorative aim as a preliminary step for a definitive clinical trial (Campbell *et al.* 2007). Moreover, our design avoids the recently suggested ethical problem of randomised clinical trials, placing people suffering from loneliness into usual-care or wait-list groups, as untreated loneliness has potentially negative health effects (Masi *et al.* 2011). Accordingly, when experimental designs are ethically problematic, non-randomised studies bring valuable contributions (Thomson *et al.* 2004).

While the fact that the intervention promoted the social capital of older lonely people in their environment is a strength, the impact was only assessed at an individual level and the neighbourhood impact remains unknown.

The number of people who withdrew from the group-based programme is moderate but other studies confirm the difficulty of retaining this population (Routasalo *et al.* 2009).

Implications for further research, practice and policy issues

Future clinical trials could attempt to endorse a causal inference and to assess health effects, the use of health resources and cost-effectiveness. In addition, a qualitative methodology could help to understand the process of change among participants and effects that were not detected or difficult to quantify.

Differential strategies should be designed to successfully recruit both men and women, and more research is needed on gender issues in loneliness interventions in Southern European countries. It also remains a challenge to include and maintain persons suffering from health limitations that are closely linked to loneliness such as mobility disability, depression and hypoacusia.

Our results support current health and social care policy to implement effective care co-ordination involving primary care and community assets as a key network to promote social capital.

In clinical practice, considering the increasing workload of primary healthcare professionals with the growing proportion of older people with chronic diseases (Contel *et al.* 2012), resources should be

increased to address their associated psychosocial problems such as loneliness. In this vein, our study contributes a promising non-pharmacological approach to prevent or manage loneliness-related depression.

The intervention design is extendable to other healthcare centres at a low cost as it involves using existing professionals and services, but creating new roles, strengthening networks and creating a new volunteer profile (Coll-Planas & Gómez 2012). Thus, it could become a useful resource to which health professionals might refer patients suffering from loneliness.

Conclusions

In summary, our study developed a feasible and culturally appropriate strategy, tailored to our health and social system based on social capital to alleviate loneliness. Moreover, our intervention tried to overcome behavioural challenges, used care co-ordination including community assets and achieved promising results.

A policy debate should be opened about the roles of primary health and social care, community services, and their responsibilities and priorities in implementing care co-ordination and programmes to relieve the increasing number of older people who suffer from loneliness. Moreover, the role of primary care promoting social capital should be also discussed as an increasingly important public health issue.

Acknowledgements

LCP has conducted this study and published this paper within the PhD Program of Preventive Medicine and Public Health at the Universitat Autònoma de Barcelona. We gratefully acknowledge the contribution of M Capel, A Soteras, L Menero, M Márquez and R Penya for the design and data collection, as well as Fredrica Nyqvist and Sergi Blancafort for the revision of the manuscript regarding social capital.

Source of funding

This work is a part of the Project “Camins: de la solitud a la participació” (“Paths: from loneliness to participation”) and was supported by “la Obra Social de Catalunya Caixa” through a grant on Social Impulse 2011.

Competing interests

The authors declare that they have no competing interests.

References

- Andrew M.K. & Keefe J.M. (2014) Social vulnerability from a social ecology perspective: a cohort study of older adults from the National Population Health Survey of Canada. *BMC Geriatrics* **14** (1), 90.
- Bandura A. (1977) *Social Learning Theory*. Prentice Hall, Englewood Cliffs, NJ.
- Bøen H., Dalgard O.S. & Bjertness E. (2012) The importance of social support in the associations between psychological distress and somatic health problems and socio-economic factors among older adults living at home: a cross sectional study. *BMC Geriatrics* **12**, 27.
- Braungart M. (2011) Applying learning theories to health-care practice. In: S.B. Bastable (Ed.) *Health Professional as Educator. Principles of Teaching and Learning*, pp. 51–76. Jones & Bartlett Learning, Sudbury.
- Bronfenbrenner U. (1994) Ecological models of human development. In: *International Encyclopedia of Education*, Vol. 3, 2nd edn. Elsevier, Oxford. Reprinted in: Gauvain M. & Cole M. (Eds) (1993) *Readings on the Development of Children*, 2nd edn, pp. 37–43. Freeman, New York.
- Campbell N.C., Murray E., Darbyshire J. et al. (2007) Designing and evaluating complex interventions to improve health care. *BMJ (Clinical Research ed.)* **334** (7591), 455–459.
- Casañas Sánchez R., Raya Tena A., Ibáñez Pérez L. & Valls Colomer M.M. (2009) Psycho-education group therapy in patients with anxiety and depression in Barcelona Primary Care. *Atencion Primaria/Sociedad Española de Medicina de Familia y Comunitaria* **41** (4), 227–228.
- Cattan M., White M., Bond J. & Learmouth A. (2005) Preventing social isolation and loneliness among older people: a systematic review of health promotion interventions. *Ageing and Society* **25** (1), 41–67.
- Cattan M., Kime N. & Bagnall A.-M. (2011) The use of telephone befriending in low level support for socially isolated older people – an evaluation. *Health & Social Care in the Community* **19** (2), 198–206.
- Coleman J. (1988) Social capital in the creation of human capital. *American Journal of Sociology* **94** (1988). Available at: <http://www.jstor.org/stable/10.2307/2780243> (accessed on 8/2/2014).
- Coll-Planas L. & del Gómez G.V. (2012) Guía de intervención grupal en atención primaria para aliviar la soledad de las personas sociales promoviendo la participación social.pdf. *Revista de Trabajo Social y Salud* **72**, 191–198.
- Contel J.C., Muntané B. & Camp L. (2012) Care of the chronic patient in a complex situation: the challenge of building an integrated care scenario. *Atencion Primaria/Sociedad Española de Medicina de Familia y Comunitaria* **44** (2), 107–113.
- De Jong Gierveld J. & Van Tilburg T. (2010) The De Jong Gierveld short scales for emotional and social loneliness: tested on data from 7 countries in the UN generations and gender surveys. *European Journal of Ageing* **7** (2), 121–130.
- Dickens A.P., Richards S.H., Greaves C.J. & Campbell J.L. (2011) Interventions targeting social isolation in older people: a systematic review. *BMC Public Health* **11** (1), 647.
- Dimitrov D.M. & Rumrill P.D. (2003) Pretest-posttest designs and measurement of change. *Work (Reading, Mass.)* **20**, 159–165.

- Dowling B., Powell M. & Glendinning C. (2004) Conceptualising successful partnerships. *Health & Social Care in the Community* **12** (4), 309–317.
- Dykstra P.A. (2009) Older adult loneliness: myths and realities. *European Journal of Ageing* **6** (2), 91–100.
- Eisele M., Zimmermann T., Köhler M. *et al.* (2012) Influence of social support on cognitive change and mortality in old age: results from the prospective multicentre cohort study AgeCoDe. *BMC Geriatrics* **12**, 9.
- Ellaway A., Wood S. & Macintyre S. (1999) Someone to talk to? The role of loneliness as a factor in the frequency of GP consultations. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners* **49** (442), 363–367.
- Ertel K.A., Glymour M.M. & Berkman L.F. (2009) Social networks and health: a life course perspective integrating observational and experimental evidence. *Journal of Social and Personal Relationships* **26** (1), 73–92.
- Findlay R.A. (2003) Interventions to reduce social isolation amongst older people: where is the evidence? *Ageing and Society* **23** (5), 647–658.
- Fokkema T., De Jong Gierveld J. & Dykstra P.A. (2012) Cross-national differences in older adult loneliness. *The Journal of Psychology* **146** (1–2), 201–228.
- Forsman A.K., Nyqvist F. & Wahlbeck K. (2011) Cognitive components of social capital and mental health status among older adults: a population-based cross-sectional study. *Scandinavian Journal of Public Health* **39** (7), 757–765.
- Forsman A.K., Nyqvist F., Schierenbeck I., Gustafson Y. & Wahlbeck K. (2012) Structural and cognitive social capital and depression among older adults in two Nordic regions. *Ageing & Mental Health* **16** (6), 771–779.
- Fried L.P., Carlson M.C., Freedman M. *et al.* (2004) A social model for health promotion for an aging population: initial evidence on the Experience Corps model. *J Urban Health* **81** (1), 64–78.
- Fry P.S. & Debats D.L. (2002) Self-efficacy beliefs as predictors of loneliness and psychological distress in older adults. *International Journal of Aging & Human Development* **55** (3), 233–269.
- Geller J., Janson P., McGovern E. & Valdin A. (1999) Loneliness as a predictor of hospital emergency department use. *The Journal of Family Practice* **48** (10), 801–804.
- Hawe P. & Shiell A. (2000) Social capital and health promotion: a review. *Social Science & Medicine* (1982) **51** (6), 871–885.
- Hawkey L.C. & Cacioppo J.T. (2010) Loneliness matters: a theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine* **40** (2), 218–227.
- Hertzog M. (2008) Considerations in determining sample size for pilot studies. *Research in Nursing & Health* **January**, 180–191.
- Holmes W.R. & Joseph J. (2011) Social participation and healthy ageing: a neglected, significant protective factor for chronic non communicable conditions. *Globalization and Health* **7** (1), 43.
- Holt-Lunstad J., Smith T.B. & Layton J.B. (2010) Social relationships and mortality risk: a meta-analytic review. *PLoS Medicine* **7** (7), e1000316.
- Hunter B.D., Neiger B. & West J. (2011) The importance of addressing social determinants of health at the local level: the case for social capital. *Health & Social Care in the Community* **19** (5), 522–530.
- Islam M.K., Merlo J., Kawachi I., Lindström M. & Gerdtham U.-G. (2006) Social capital and health: does egalitarianism matter? A literature review. *International Journal for Equity in Health* **5**, 3.
- Kawachi I., Kennedy B.P. & Glass R. (1999) Social capital and self-rated health: a contextual analysis. *American Journal of Public Health* **89**, 1187–1193.
- Kim D., Subramanian S.V. & Kawachi I. (2008) Social capital and physical health: a systematic review of the literature, chapter 20. In: *Social Capital and Health*, pp. 139–190. Springer, New York, London.
- Ledesma A. (2014) *Model català d'atenció integrada social i sanitària*. Available at: http://www.uch.cat/documents/pla-interdepartamental-acci-i-interacci-social-i-sanitaria_copy1.pdf (accessed on 1/9/2015).
- Levasseur M., Richard L., Gauvin L. & Raymond É. (2010) Inventory and analysis of definitions of social participation found in the aging literature: proposed taxonomy of social activities. *Social Science & Medicine* **71** (12), 2141–2149.
- Litwin H. (2010) Social networks and well-being: a comparison of older people in Mediterranean and non-Mediterranean countries. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences* **65** (5), 599–608.
- Litwin H. & Shiovitz-Ezra S. (2011) Social network type and subjective well-being in a national sample of older Americans. *The Gerontologist* **51**, 379–388.
- López M.J., Marí-Dell'Olmo M., Pérez-Giménez A. & Nebot M. (2011) Evaluative designs in public health: methodological considerations. *Gaceta Sanitaria/S.E.S.P.A.S* **25** (Suppl 1), 9–16.
- Lord J. & Hutchison P. (1993) The process of empowerment: implications for theory and practice. *Canadian Journal of Community Mental Health* **12** (1), 5–22.
- Masi C.M., Chen H.-Y., Hawkey L.C. & Cacioppo J.T. (2011) A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review: an Official Journal of the Society for Personality and Social Psychology, Inc* **15** (3), 219–266.
- Michie S., Johnston M., Francis J., Hardeman W. & Eccles M. (2008) From theory to intervention: mapping theoretically derived behavioural determinants to behaviour change techniques. *Applied Psychology* **57** (4), 660–680.
- Michie S., van Stralen M.M. & West R. (2011) The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science* **6** (1), 42.
- Moore S., Haines V., Hawe P. & Shiell A. (2006) Lost in translation: a genealogy of the 'social capital' concept in public health. *Journal of Epidemiology and Community Health* **60**, 729–734.
- Nummela O., Sulander T., Karisto A. & Uutela A. (2009) Self-rated health and social capital among aging people across the Urban-Rural dimension. *International Journal of Behavioral Medicine* **16**, 189–194.
- Nyqvist F. & Forsman A.K. (Eds) (2015) *Social Capital as a Health Resource in Later Life: The Relevance of Context. Series: International Perspectives on Aging*, Vol. 11. Springer, Berlin, Heidelberg, New York.
- Nyqvist F., Cattán M., Andersson L., Forsman A.K. & Gustafson Y. (2013a) Social capital and loneliness among the very old living at home and in institutional settings: a comparative study. *Journal of Aging and Health* **25** (6), 1013–1035.
- Nyqvist F., Forsman A.K., Giuntoli G. & Cattán M. (2013b) Social capital as a resource for mental well-being in older

- people: a systematic review. *Aging & Mental Health* **17** (4), 394–410.
- Nyqvist F., Pape B., Pellfolk T., Forsman A.K. & Wahlbeck K. (2013c) Structural and cognitive aspects of social capital and all-cause mortality: a meta-analysis of cohort studies. *Social Indicators Research* **116**, 545–566.
- Øvretveit J. (2011) *Evidence: does clinical coordination improve quality and save money Volume 2*. Available at: <http://www.health.org.uk/public/cms/75/76/313/2514/Does-clinical-coordination-improve-quality-and-save-money-Vol2.pdf?realName=aiGHQh.pdf> (accessed on 18/7/2014).
- Peplau L. & Perlman D. (1982) *Loneliness: A Sourcebook of Current Theory, Research, and Therapy*. Wiley-Interscience, New York.
- Petch A., Cook A. & Miller E. (2013) Partnership working and outcomes: do health and social care partnerships deliver for users and carers? *Health & Social Care in the Community* **21** (6), 623–633.
- Pitkala K.H., Routasalo P., Kautiainen H. & Tilvis R.S. (2009) Effects of psychosocial group rehabilitation on health, use of health care services, and mortality of older persons suffering from loneliness: a randomized, controlled trial. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences* **64** (7), 792–800.
- Pitkala K.H., Routasalo P., Kautiainen H., Sintonen H. & Tilvis R.S. (2011) Effects of socially stimulating group intervention on lonely, older people's cognition: a randomized, controlled trial. *The American Journal of Geriatric Psychiatry: Official Journal of the American Association for Geriatric Psychiatry* **19** (7), 654–663.
- Prieto-Flores M.-E., Forjaz M.J., Fernandez-Mayoralas G., Rojo-Perez F. & Martinez-Martin P. (2011) Factors associated with loneliness of noninstitutionalized and institutionalized older adults. *Journal of Aging and Health* **23** (1), 177–194.
- Rocco L. & Suhrcke M. (2012) *Is social capital good for health? A European perspective*. Available at: http://www.euro.who.int/__data/assets/pdf_file/0005/170078/Is-Social-Capital-good-for-your-health.pdf (accessed on 22/2/2014).
- Routasalo P.E., Savikko N., Tilvis R.S., Strandberg T.E. & Pitkälä K.H. (2006) Social contacts and their relationship to loneliness among aged people – a population-based study. *Gerontology* **52** (3), 181–187.
- Routasalo P.E., Tilvis R.S., Kautiainen H. & Pitkala K.H. (2009) Effects of psychosocial group rehabilitation on social functioning, loneliness and well-being of lonely, older people: randomized controlled trial. *Journal of Advanced Nursing* **65** (2), 297–305.
- Rubio R., Rubio L. & Pinel M. (2009) *Un instrumento de medición de soledad social, Escala Este II*. Available at: <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:UN+INSTRUMENTO+DE+MEDICION+DE+SOLEDA+SOCIAL+:+ESCALA+ESTE+II#1> (accessed on 5/11/2013).
- Saito T., Kai I. & Takizawa A. (2012) Effects of a program to prevent social isolation on loneliness, depression, and subjective well-being of older adults: a randomized trial among older migrants in Japan. *Archives of Gerontology and Geriatrics* **55** (3), 539–547.
- Savikko N., Routasalo P., Tilvis R. & Pitkälä K. (2010) Psychosocial group rehabilitation for lonely older people: favourable processes and mediating factors of the intervention leading to alleviated loneliness. *International Journal of Older People Nursing* **5** (1), 16–24.
- Schultz J., O'Brien A.M. & Tadesse B. (2008) Social capital and self-rated health: results from the US 2006 social capital survey of one community. *Social Science and Medicine* **67**, 606–617.
- Shaw B.A., Krause N., Liang J. & Bennett J. (2007) Tracking changes in social relations throughout late life. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences* **62** (2), S90–S99.
- Stephens C., Alpass F., Towers A. & Stevenson B. (2011) The effects of types of social networks, perceived social support, and loneliness on the health of older people: accounting for the social context. *Journal of Aging and Health* **23** (6), 887–911.
- Stokols D. (1996) Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion* **10**, 282–298.
- Sundström G., Fransson E., Malmberg B. & Davey A. (2009) Loneliness among older Europeans. *European Journal of Ageing* **6** (4), 267–275.
- Taube E., Kristensson J., Sandberg M., Midlöv P. & Jakobsson U. (2015) Loneliness and health care consumption among older people. *Scandinavian Journal of Caring Sciences* **29** (3), 435–443.
- Thomson H., Hoskins R., Petticrew M., Ogilvie D., Craig N., Quinn T. & Lindsay G. (2004) Evaluating the health effects of social interventions. *BMJ* **328**, 282–285.
- Tilvis R.S., Laitala V., Routasalo P.E. & Pitkälä K.H. (2011) Suffering from loneliness indicates significant mortality risk of older people. *Journal of Aging Research* **2011**, 1–5.
- Trivedi D., Goodman C., Gage H. *et al.* (2013) The effectiveness of inter-professional working for older people living in the community: a systematic review. *Health & Social Care in the Community* **21** (2), 113–128.
- Valle D.D., Sánchez H., Cano R. & Jentoft L.I.C. (2001) Validación de una Versión de Cinco Ítems de la Escala de Depresión Geriátrica de Yesavage en Población Española. *Revista Española de Geriátria y Gerontología* **36** (5), 276–280.
- Van Orden K.A., Stone D.M., Rowe J., McIntosh W.L., Podgorski C. & Conwell Y. (2013) The Senior Connection: design and rationale of a randomized trial of peer companionship to reduce suicide risk in later life. *Contemporary Clinical Trials* **35** (1), 117–126.
- Van Tilburg T., de Jong Gierveld J., Lecchini L. & Marsiglia D. (1998) Social integration and loneliness: a comparative study among older adults in the Netherlands and Tuscany, Italy. *Journal of Social and Personal Relationships* **15** (6), 740–754.
- Veiga P.D. (1987) Evaluación del apoyo social. In: R. FernándezBallesteros (Ed.) *El ambiente: análisis psicológico*, pp. 125–149. Pirámide, Madrid.
- Victor C.R., Scambler S.J., Bowling A. & Bond J. (2005) The prevalence of, and risk factors for, loneliness in later life: a survey of older people in Great Britain. *Ageing and Society* **25** (3), 357–375.
- Ware J., Kosinski M. & Keller S.D. (1996) A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Medical Care* **34** (3), 220–233.
- Weil F.D. & Putnam R.D. (1994) Making democracy work: civic traditions in modern Italy. *Contemporary Sociology* **23**, 373.
- World Health Organization (2002) *Active ageing: a policy framework*. Available at: http://www.who.int/ageing/publications/active_ageing/en/ (accessed on 23/2/2014).
- Yang K. & Victor C. (2011) Age and loneliness in 25 European nations. *Ageing and Society* **31** (08), 1368–1388.