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Preventing social isolation and loneliness among older people: a systematic review of health promotion interventions

MIMA CATTAN*, MARTIN WHITE*, JOHN BOND*
and ALISON LEARMOUTH†

ABSTRACT
Preventing and alleviating social isolation and loneliness among older people is an important area for policy and practice, but the effectiveness of many interventions has been questioned because of the lack of evidence. A systematic review was conducted to determine the effectiveness of health promotion interventions that target social isolation and loneliness among older people. Quantitative outcome studies between 1970 and 2002 in any language were included. Articles were identified by searching electronic databases, journals and abstracts, and contacting key informants. Information was extracted and synthesised using a standard form. Thirty studies were identified and categorised as 'group' (n = 17); 'one-to-one' (n = 10); 'service provision' (n = 3); and 'community development' (n = 1). Most were conducted in the USA and Canada, and their design, methods, quality and transferability varied considerably. Nine of the 10 effective interventions were group activities with an educational or support input. Six of the eight ineffective interventions provided one-to-one social support, advice and information, or health-needs assessment. The review suggests that educational and social activity group interventions that target specific groups can alleviate social isolation and loneliness among older people. The effectiveness of home visiting and befriending schemes remains unclear.

KEY WORDS – loneliness, social isolation, older people, effectiveness, systematic review, ageing.

Introduction

The importance of tackling social isolation and loneliness to improve older people's well-being and quality of life is increasingly recognised in international policy and in some national health strategies (Department of Health 1999*b*, 2001; New Zealand Associate Minister of Health 2002;

* School of Population and Health Sciences, University of Newcastle-upon-Tyne, UK.
† Sedgefield NHS Primary Care Trust, Sedgefield, Yorkshire, UK.

World Health Organisation 2002). In the United Kingdom, the National Health Service National Service Frameworks for Mental Health and for Older People have provided local incentives to address loneliness and isolation (Department of Health 1999*a*, 2001). Health promotion services and activities intended to alleviate social isolation and loneliness among older people have long been considered important in providing support to develop, improve and maintain social contacts and mental wellbeing (Walters *et al.* 1999).

A lack of evidence has resulted in the effectiveness of interventions being contested. The available research findings suggest that there is a close but complex association between loneliness, social isolation and living alone (Wenger *et al.* 1996; Andersson 1998). There is a widely-held belief that home visiting improves the well-being of housebound older people who live alone (Cattan *et al.* 2003). Two systematic reviews that examined the effectiveness of preventive home-based support for older people living in their own homes reached conflicting conclusions. While van Haastregt *et al.* (2000) concluded that no evidence could be found to suggest that preventive home visits were effective, Elkan *et al.* (2001) maintained that home visiting could reduce mortality and admission to institutional care. Although these two reviews considered the provision of health promotion by health professionals, neither the alleviation of loneliness or social isolation were included as outcome measures. Poor mental health, particularly depression, is known to be a major predictor of loneliness in old age (Mullins and McNicholas 1986; Bowling *et al.* 1989). A systematic review that assessed the effectiveness of interventions to promote mental health across childhood, adulthood and old age suggested that mental health promotion interventions for the bereaved and for carers were likely to be valuable (Tilford, Delaney and Vogels 1997). None of the studies included in the review was, however, directly concerned with social isolation and loneliness. A recent overview of interventions that target social isolation among older adults concluded that there was little evidence that they worked (Findlay 2003). The lack of evidence may have been because the review considered a small number of both quantitative and descriptive studies that targeted socially-isolated older people, not specifically the alleviation of social isolation.

We conducted a systematic literature review to determine the effectiveness of health-promotion interventions that target social isolation and loneliness among older people. Because of the interchangeable and often confusing use of the terms 'social isolation' and 'loneliness' in both practice and research, it was decided to include studies that investigated either or both these states. Loneliness, or emotional isolation, was defined as the subjective, unwelcome feeling of lack or loss of companionship,

while social isolation was considered to be the objective absence or paucity of contacts and interactions between an older person and a social network (Townsend 1957; Weiss 1982). Because of the inconsistent age definitions of 'older people', the term was determined by the criteria used in the studies identified by the review, regardless of race, gender, physical disability or ability. Health promotion was defined as 'the process of enabling older people to increase control over and improve their health', derived from the World Health Organisation's (1986) definition.

Methods

Search strategy

The review was guided by three sources of good practice: *Undertaking Systematic Reviews of Research on Effectiveness* from the Centre for Reviews and Dissemination (1996), the *Review Guidelines on Data Collection* from the EPI-Centre (1996), and the recommendations from the International Union of Health Promotion and Education effectiveness project (Veen *et al.* 1994). The review identified outcome studies (experimental, quasi-experimental, and before-and-after studies) published between 1970 and 2002 in any language (but note the later comments on the limitations of this approach). The inclusion criteria were that:

- The study related in full or in part to older people.
- The intervention was intended to prevent or alleviate social isolation and/or loneliness in full or in part.
- The study described health-promoting interventions that enabled older people to increase control over and to improve their health.
- The study recorded some form of outcome measures with or without process measures.

Electronic searches were conducted on Medline, BIDS SCI and SSCI, EMBASE, PsychInfo, ASSIA, CINAHL, SweMed, FirstSearch, Academic Search Elite, SIGLE, the Cochrane Library, and LILACS.[1] Relevant books, journals, indexes and abstracts were searched manually and experts in the field were contacted. Manual searches included reference lists in other than English-language articles. In addition, an opportunistic search of Nordic journals and reports was conducted at the University of Helsinki Medical School Library, although only *Gerontologia* in Finnish and *Läkartidningen* in Swedish were searched systematically.

The search terms were grouped into five categories: population/target group; problem area; prevention/promotion topic; intervention/method; and type of article (Table 1). Articles were identified and included

TABLE 1. *Keywords and search terms*

Population/ target group	Problem area	Prevention/ promotion topic	Intervention/ method	Type of article
Core search terms:				
Older$	Social isolation	Social support	Promot$	Review
Elder$	Isolation	Loss	Prevent$	Overview
Senior$	Loneliness		Support	Evaluation
Geriatric	Social		Self-help	Intervention
Aged				
Peripheral search terms:				
Older aged	Mental health	Access	Educat$	Discussion article
Carer	Suicid$	Ageism	Policy	Demonstration project
Older person	Psychosocial	Housing	Community development	Discussion paper
Caregiver	Depression	Transport	Community programme	
Ageing		Mobil$	Strateg$	
Aging		Behaviour$	Empower$	
Old age		Behavior$	Skill	
		Fear	Screening	
		Environment$	Social activity	
		Activ$	Advice	
		Housebound	Community	
		Motivation	Inform$	
		Bereavement	Information	
		Physical disability	Welfare	
			Benefits	
			Rehabilit$	
			Neighborhood	
			Neighbourhood	

Note: $ indicates any suffix or none.

in two stages. First, each abstract was scanned to make an initial judgement about its suitability for inclusion, and at the second stage, each study was read independently by two reviewers, with one (MC) reading all studies. If there was disagreement between the reviewers, a third reviewer assessed the study and consensus was reached through discussion. The data extraction form had 67 questions in eight categories: bibliographic identification and source of study; intervention characteristics; description of study; type of study; study population; methods of evaluation; analysis; and judgements about quality, generalisability and effectiveness. The judgement of 'effectiveness' was made on the basis of: evidence of a reduction in social isolation and/or loneliness, and whether the reported outcomes took into account the stated aims, the study design, quality and appropriateness for the intervention, and the stage of the research.

Assessment of the quality of the study considered the study method and design and how these were reported. The final judgement about the quality of the study was based on an overall assessment of the article and

the appropriateness of the study design and methods in relation to the objectives or hypothesis. This enabled a wide range of studies to be considered. Studies in which the methods were considered flawed were categorised as 'inconclusive', while those with sound methods were judged as 'effective', 'ineffective' or 'partially effective', depending on the extent of significant outcomes. 'Effective' interventions demonstrated a significant reduction in loneliness and/or social isolation. Those judged as 'partially effective' had significant changes in outcomes related to social isolation and/or loneliness, and a change (but not significant) in social isolation or loneliness. 'Ineffective' studies did not demonstrate significant changes in any of the relevant outcome measures. Given the considerable heterogeneity of the interventions, a meta-analysis was not feasible (Centre for Reviews and Dissemination 2001). Instead a qualitative synthesis of the results was conducted by classifying the studies under four broad programme types (group intervention, one-to-one intervention, concerning services, community development), which were further sub-divided by the method of intervention.

The intervention studies

The literature search and the review of 83 articles covering 49 studies are summarised in Figure 1. Seven articles were excluded because they failed to meet the inclusion criteria, leaving 30 quantitative outcome studies. The remaining 12 were qualitative evaluation studies and surveys.[2]

Study design

One-half of the studies (16/30) had been conducted in the USA, and the remainder in Canada and European countries. Sixteen of the studies were randomised controlled trials (RCT), and one-third were non-randomised controlled studies. One study from The Netherlands (Hopman-Rock and Westhoff 2002), based on Nutbeam, Smith and Catford's (1990) model for the evaluation of health promotion programmes, had three elements: an RCT, a complex community intervention trial (CIT), and a large dissemination study.

Characteristics of the interventions

The characteristics of the interventions are shown in Table 2. Seventeen group and 10 one-to-one interventions were identified, one of which compared group and one-to-one support (15).[3] In addition, three studies

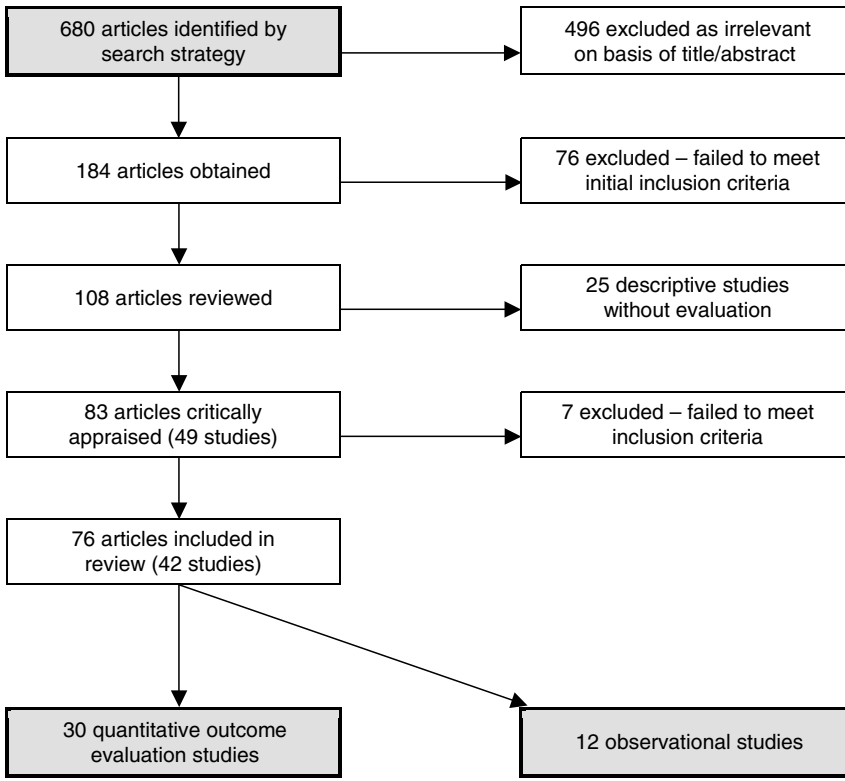

Figure 1. The identification of eligible studies for systematic review.

evaluated the impact of service provision on loneliness, and one considered a community development approach. Among the studies that investigated group activities, nine (1, 7, 8, 9, 11, 12, 14, 16 and 17) evaluated the effectiveness of an educational input, two (8 and 9) of which combined the educational element with physical activity. Bereavement support was assessed in one study in each of the United States, Canada and The Netherlands (5, 13 and 14 respectively). Social activation was evaluated by one Swedish and one American study (2 and 3), the latter being modelled on the Swedish study.

Although the basic methods used in the group interventions were similar (discussion, self-help, exercise, skills training), they had variable structures, intensities of input and durations. The majority of the studies engaged professional staff to carry out the intervention, but three studies considered the effectiveness of peer-support (5 and 15) and peer-educators (8). Seven interventions enabled some form of participant control (1, 2, 5,

8, 13, 15 and 16). Among the 10 studies that evaluated one-to-one interventions, seven were concerned with home visiting (18, 19, 20, 22, 24, 25 and 26), while two evaluated telephone contact in the form of social support for low-income older women (21), and support therapy for older people at risk of suicide (23). Only two studies provided social support as the main component of the intervention (21 and 24). None of the studies enabled participants any form of control over the intervention, although participants in two of the studies could ask for assistance, refuse an offer for help (while continuing in the study), and agree the frequency of meetings with the co-ordinator/nurse (19 and 20).

Study participants

The number of participants in the studies varied considerably, from 22 in an evaluation of a course for widows (14), to 1,555 in an RCT that investigated the impact of home services on loneliness among community-living older people (25). Nine evaluations of group interventions (of 17) had sample sizes of less than 100. Over half (5 of 8) of the one-to-one interventions had sample sizes between 201 and 580 (19, 20, 21, 22 and 26). The characteristics of the participants also varied. The majority included both men and women, but four studies were of women only (1, 12, 13 and 21), and four evaluated activities to alleviate loneliness among older widows (5, 11, 13 and 14).

Theoretical basis of interventions

Among the 30 studies, 11 did not state the theoretical basis of the intervention, while in four it was implicit. Of those that were explicit about the theoretical framework, the majority utilised some form of behavioural theory (1, 3, 5, 6, 7, 9, 10, 11, 13, 20, 21 and 29), such as cognitive/traditional educational theory (Peplau, Miceli and Morasch 1982; Baranowski, Perry and Parcel 1997), social learning theory (Bandura 1977) and the theory of reasoned action (Fischbein and Ajzen 1975), in some cases linked to Weiss's theory on loneliness (Weiss 1982) or to disengagement theory (Burbank 1986). Hopman-Rock and Westhoff's (2002) (8) evaluation of a national physical activity programme utilised Rogers's (1995) diffusion of innovations model to explain the adoption of a large-scale intervention. Arnetz and Theorell (1983) evaluated a social activation programme on the premise of Kupyer and Bengtson's social breakdown and competence model (Bengtson, Burgess and Parrott 1997), which postulates that ageist attitudes label older people as incompetent in social mechanisms, ultimately leading to learned helplessness and to the older person relinquishing personal control.

TABLE 2. *Characteristics of interventions*

Study	Participants	Activity	Intervention	Setting
Group interventions				
1 Andersson 1984/85	108 women living alone, on senior citizen apartment waiting list, aged 60–80	Education/discussion	Four group meetings; women agreed and discussed health topics; 2 months	Neighbourhood centres, Stockholm, Sweden
2 Arnetz *et al.* 1982–85	60 men and women, aged 52–91 years	Social activation/ self help support	Tenants helped organise activities. Encouraged to take more responsibility for daily chores; 6 months	Senior citizen apartment building, Stockholm, Sweden
3 Baumgarten *et al.* 1988	128 men and women, aged 65 + years	Social activities/ self help support	Network building encouraged through volunteering, social activities; 15 months	Government subsidised apartment building, Montreal, Canada
4 Brennan *et al.* 1995	102 caregivers (men and women), median age 64	Caregiver support/ discussion	Computer network providing information, decision support, inter-personal communication; 12 months	Home, USA
5 Caserta *et al.* 1992–96; Lund *et al.* 1989	339 bereaved men and women, aged 50–89	Bereavement support/self help	Closed self-help groups facilitated by peers or counselling professionals; 8 weeks + 10 months	Community centres, libraries, Salt Lake City, USA
6 Evans and Jaureguy 1982	84 registered blind men and women, mean age 62	Therapy/telephone communication	Task centred group therapy using telephone conferencing; 8 weeks	Home, Washington State, USA
7 Haley *et al.* 1987	54 care givers (daughters, spouses) mean age 56	Carer support/ training, discussion	Structured information, support and stress management training; 15 weeks	Not clear, Alabama, USA
8 Hopman-Rock *et al.* 2002	849 physically inactive men and women, aged 51–89	Education/ physical activity	Exercise and health education sessions; 5 years	Community centres across The Netherlands
9 McAuley *et al.* 2000	174 sedentary men and women, mean age 65.5 years	Education/physical activity	1. Brisk walking 2. Stretching and toning; 6 months	Not clear; Gymnasium, Illinois, USA
10 Rosen and Rosen 1982	117 men and women with mental health problems	Therapy/counselling, self-help support	Group meetings, discussed things that had happened to them recently; encouraged to make contact between sessions; 12–15 months	Senior citizen centre, rural Georgia, USA

11	Scharlach 1987	37 daughters aged 38–68; 24 widowed mothers aged 69–92 years	Education & training/ Care giver support	Two 6 week Cognitive-behavioural or Supportive-educational workshops Weekly telephone calls	Educational institution, Los Angeles, USA
12	Stevens 2000/01	64 lonely (majority living alone) women, aged 54–83	Education/discussion, skills training	12 weekly lessons focus on topics relating to friendship	Local social services agency, The Netherlands
13	Stewart *et al.* 2001	28 widows, aged 54–74	Self-help support/ discussion	Peer and professional co-led self-help groups; 20 weeks	Senior centres, Canada
14	Theunissen *et al.* 1994	22 widows, aged 55–79	Bereavement support/training, discussion	'Loss and then On' course; 10 weeks + follow-up after 3 months	Community, The Netherlands
15	Toseland *et al.* 1989/90	87 care givers (women), aged 49–53, and care receivers (men and women), aged 80–81	Carers support/ self-help, discussion	Peer and professionally-led support groups; 8 weeks	Not stated, USA
16	White *et al.* 1999	27 men and women, aged 77 ± 7 years	Training and one to one support	Computers, Internet access on site, training, access to help desk; 5 months	Congregate housing, North Carolina, USA
17	White *et al.* 2002	100 men and women, aged 71 ± 12 years	Training and one to one support	Computers, internet access on site, training, access to tutor afterward; 5 months	Congregate housing, nursing home, North Carolina, USA
One-to-one interventions					
18	Bogat and Jason 1983	39 men and women, aged 65 +	Home visiting/ 1. Directed support 2. Social network building	Psychology students acting as catalysts for network building and support; 3 months	Home, northern Chicago, USA
19	Clarke *et al.* 1992	523 GP practice patients living alone, aged 75 + years	Home visiting/ service provision	Case worker offered assistance at home visits, up to 2 years	Home, Leicestershire, UK
20	Hall *et al.* 1992	201 frail men and women, aged 65 + years	Home visiting/ problem solving	Nurse visits, focused on skills development; 18 months	Home, Vancouver, Canada
21	Heller *et al.* 1991	291 low income women, living alone, mean age 74 years	Social support/ telephone communication	Peer supportive, friendly telephone calls; 10 weeks + 10 weeks after assessment	Home, Indiana, USA
22	McEwan *et al.* 1990	296 GP practice patients, aged 75 + years	Home visiting/ assessment	Nurse assessed health needs; referrals and information; one 45 minute visit	Home, Newcastle upon Tyne, UK

TABLE 2. *(Cont.)*

Study	Participants	Activity	Intervention	Setting
23 Morrow-Howell *et al.* 1998	80 men and women, at risk of suicide referred to 'Link Plus'	Supportive therapy/ telephone counselling	Encouraged to discuss feelings, take action; support provided; 75% terminated by 12 months	Home, St Louis, USA
24 Mulligan and Bennett 1973/77	23 isolated men and women, aged 65+	Home visiting/social support	Social support visits by volunteer visitors; 6 months	Home, upper west New York, USA
25 Sorensen *et al.* 1982–88	1,555 men and women, aged 75, 80, 85 years	Home visits/screening	Social worker and physician visits to assess health and social needs; 12 months	Home, Copenhagen, Denmark
15 Toseland *et al.* 1989/90	87 caregivers (women) aged 49–53; care receivers mean age 80	Caregiver support/ counselling	Individual counselling by peer and professional counsellors; duration not clear	Not stated, USA
26 van Rossum *et al.* 1993	580 men and women living at home, aged 75–84 years	Home visiting/ information, advice	Nurse visits, health topics discussed, advised to contact other services; 3 years	Home, Weert, The Netherlands
Concerning services				
27 Robertson 1970	Isolated men and women	Transport/recreation	Transportation and group work; 12 months	Community and the home, Chicago, USA
28 Sorensen *et al.* 1989	217 patients, aged 65+ from one hospital	Coordination, provision of services	Coordination of services on discharge; 2 months	Hospital, home, Copenhagen, Denmark
29 Tesch-Romer 1997	140 men and women with hearing impairment, aged 51–87 years	Medical intervention	Fitting of hearing aid; 6 months	Hospital, Berlin, Germany
Community development				
30 Pynoos *et al.* 1984	120 men and women, aged 20–93 (majority 60+)	Social activities/ outreach, service influencing	Community networks; peer support; skills exchange; 3 years	Community, North Hollywood, USA

Main outcomes and effectiveness

The studies assessed as high quality are listed by level of effectiveness in Table 3. The majority used validated measurement tools, the University of California Los Angeles (UCLA) loneliness scale being the most frequently applied (8 of 29) (1, 2, 6, 9, 16, 17, 20 and 29), with two additional scales correlated against it (11 and 21). Interestingly, the de Jong Gierveld loneliness scale was used in only two studies (12 and 26), even though, unlike the UCLA scale, it was developed for older people. In five studies, 'loneliness' was added to an existing scale (7, 8, 10, 22 and 25), and in four studies another type of loneliness scale was used (13, 19, 23 and 24).

Group activities with an educational input

Five of the nine group interventions with an educational input demonstrated a significant reduction in loneliness. Andersson (1985) (1) found that among small groups of older women who lived alone and who discussed health-related topics, significantly reduced loneliness and increased social contact, self-esteem and participation in organised activities was found. A structured skills course for lonely older women reported reduced loneliness, improved self-esteem, and a significant increase in the complexity of friendship contacts (12). The authors suggested that although the programme had attracted older women who were quite lonely, it was not possible to conclude that the intervention would be effective for *all* women because the participants were self-selected and the 'socially-active lonely'. The small sample (n = 64) could also have introduced bias and therefore have affected the generalisability of the intervention.

Two studies demonstrated that a structured approach to physical activity decreased loneliness among the participants. Hopman-Rock and Westhoff (2002) (8) combined health-education sessions with exercise (gymnastics, swimming and dancing) in a large study, which included an RCT (n = 71, attrition 20%), a community intervention trial (CIT) (n = 390, attrition 14%), and a dissemination and implementation study (n = 388). Despite some problems in recruiting physically-inactive older people to the CIT, the results demonstrated that they had reached the intended target group. According to the authors, the most effective way (although costly and time consuming) of reaching inactive older people was a combination of mass-media advertising, direct mail and personal contacts. Importantly, although the majority of the participants were not lonely, the CIT demonstrated a statistically significant decrease in loneliness from pre-test to follow-up (from a mean score of 3.9 [standard deviation 1.5] to 4.2 [s.d. 1.3], Friedman $p = 0.00$). One of the reasons given for the success of the programme was that it offered older people a flexible

TABLE 3. *Study design and effectiveness of high quality studies*

Study and study type[1]	Recruitment	RoTG[2]	PCI[3]	Quality	Other comments
Effective interventions					
1 Andersson 1984/85. RCT, P, EXPT	Selected from waiting list, invited by home helps	Yes	Yes	High	Good study design; simple intervention; put into practice by social services; generalisable
2 Arnetz *et al.* 1982–85. RCT, P, EXPT	Selected from 2 floors of senior apartment building	Yes	Yes	High	Triangulation of methods, researchers; performed within existing budget; generalisable
5 Lund *et al.* 1989 RCT, P, EXPT	Identified through obituary columns; letter + phone call	Yes	Yes	High	Large, detailed study; generalisable; possible long-term effect: coping ability
8 Hopman-Rock *et al.* 2002. RCT, CIT, DISS, P, DEM	CIT: media, local newspapers, personal communication, brochure[4]	RCT: No C/D: Yes	Yes	High	Uses Nutbeam *et al.* 1990 model for health education evaluation; considers factors outside programme control; generalisable
10 Rosen and Rosen 1982. Non-RCT, DEM	Recommended by senior centre director, geriatric mental health worker	Yes	n.s.	High	Good, detailed study; transferability would need to consider cultural factors
15 Toseland *et al.* 1989/90. RCT, P, EXPT (group)	Extensive mass media campaign; personal contacts with social services, religious + civic organisations	Yes	Yes	High/ moderate	Large detailed study, duration only 8 weeks. Borderline to be included as no data available for older care receivers; generalisable
Partially effective					
28 Sorensen *et al.* 1989 RCT, EXPT	All patients admitted to hospital	n.s.	No	High	Reasonable paper; no effect on loneliness; generalisable for similar health system

Ineffective					
4 Brennan *et al.* 1995. RCT, EXPT	Research registry of AD research centre; AD association local group; self-referred[5]	Yes	No	High	Good study design; useful discussion on lack of effect; transferable where computers & Internet accessible
19 Clarke *et al.* 1992. RCT, EXPT	All eligible on GP list invited[6]	n.c.	No	High/ moderate	Good study design; results reported as 'intention to treat' may have contributed to n.s. results
25 Sorensen *et al.* 1982–88. RCT, EXPT	Drawn from National Central Register of Patients	n.s.	No	High	Large study; intervention generalisable; may be transferable to similar health system
15 Toseland *et al.* 1989/90. RCT, EXPT (one-to-one)	Extensive publicity, media campaign, personal contacts	Yes	No	High/ moderate	One to one compared with group intervention; generalisable
26 van Rossum *et al.* 1993. RCT, EXPT	Postal questionnaire sent to eligible, aged 75–84 years in area	n.s.	No	High	Only effective for sub-group 'poor health'; generalisable for similar health system; n.s. results because study group 'too healthy'?
Inconclusive					
29 Tesch-Romer 1997. Non-RCT, DEM	Referred by ENT physicians, hearing aid acousticians	n.s.	No	High/ moderate[7]	Self selected intervention group could affect results

Notes: 1. The serial numbers of the studies refer to those in Table 2. RCT: randomised control trial. CIT: community intervention trial. P: process. EXPT: experimental. DISS: dissemination. DEM: demonstration. C/D: community intervention trial and dissemination. 2. RoTG: Representative of target group. 3. PCI: Participant control of intervention. 4. Noted how time consuming reaching target group is; most successful – a combination of newspapers, TV announcements, direct mail, personal communication. 5. AD: Alzheimer's disease. 6. 50 per cent declined the intervention; >50 per cent of those who declined said they were not lonely. 7. Regarding effect on loneliness. n.s. not stated. n.c. not clear.

approach to exercise. McAuley *et al.* (2000) (9) also used various media to recruit participants for their study. The research compared brisk walking three times a week with a stretching-and-toning class that met three times a week for six months. At the end of the programme, significant improvements were found in levels of loneliness, social support and happiness, although at 12 months these improvements had reversed. Transferability of the results may be difficult, however, because the sample was not considered representative of the target population (it was mainly Caucasian, well-educated and overweight), nor were cultural and social factors accounted for.

Group interventions providing social support

The group support interventions that reported a significant reduction in loneliness or social isolation were a social activation programme in a senior citizens' apartment building (Arnetz and Theorell 1983) (2), bereavement support for recently widowed older people (Caserta and Lund 1993) (5), therapy-type discussion groups for older people with mental health problems (Rosen and Rosen 1982) (10), and peer- and professionally-led counselling/discussion groups for adult daughters and daughters-in-law who were primary carers (Toseland *et al.* 1990) (15). Arnetz and Theorell's intervention (2) in a senior citizens' apartment building was designed to encourage tenants to help organise social activities and to take more responsibility for daily household chores. After six months there was a significant increase in social activity participation, and the staff rated the intervention group as significantly 'less amenable'. In other words, the participants took control of the activities. The study also suggested that the participants who were initially most pessimistic and those with internal locus of control, had the greatest decrease of loneliness. The study provided a broad model of evaluation by incorporating outcome and process measures, and triangulated the methods and researchers. Despite the small sample (n = 60), and bearing in mind that senior citizens' housing has moved on in 20 years, the general principles of the intervention are transferable with reasonable confidence.

Caserta and Lund (1993) (5) established 26 closed self-help groups, 13 being led by peer-facilitators who had been widowed four to five years, and 13 by professionals. The participants were identified through obituaries in the local press. The study found no significant difference between the peer- and professional-led groups. Although the authors did not offer an explanation, they stated that all facilitators received the same training and project co-ordinator support. Fourteen of the groups were short (8 weeks) and 12 were long-term (10 months): measurements were taken

two to three months after the death of the spouse, at eight weeks following the intervention, at 10 months after the second measurement, and at two years after the death. There were statistically significant decreases in depression and loneliness at 10 months after the short-term intervention (the mean loneliness score decreased from 5.4 to 4.3, $p < 0.01$). While those who at 10 months reported some form of contact with group members outside the meetings continued to experience a decrease in loneliness (the mean score decreased from 5.1 at 10 months to 4.8 at 2 years, $p < 0.01$), loneliness increased among those with no outside contact at 10 months. Caserta and Lund (1996) suggested that the effectiveness of self-help groups in reducing grief, depression and loneliness may be enhanced by social contacts with group members outside the group and intra-personal resources, such as self-esteem, competencies and life satisfaction. As long as the specific cultural and social context of the study is taken into account, the intervention is generalisable as a consequence of the 'universality' of the intervention and the appropriateness of the study design and process.

Rosen and Rosen (1982) (10) found that focus-group discussions in a senior citizens' centre in rural Georgia (USA) were effective in reducing loneliness and increasing social activity, but not in reducing social isolation among older people with mental health problems. The generalisability of the findings would need to be considered in the light of cultural and environmental factors that may have influenced the intervention. Toseland *et al.* (1990) (15) used a similar approach in supporting care-givers, but additionally found that, compared with one-to-one counselling, after one year there was a significant increase in network size (and therefore a reduction in social isolation) among those attending peer-led group support, but not among those attending professional-led groups. There was no significant change in network size among the care-givers provided with one-to-one counselling, but neither condition demonstrated significant satisfaction with informal support (15). Although the intervention lasted only eight weeks, the study was deemed generalisable. Care-givers to people with Alzheimer's disease who were linked to a computer network that provided information, decision-making support and communication after one year were significantly more confident in making decisions, although access to the computer network did not significantly reduce perceived social isolation (4). A content analysis of care-giver messages to an Internet forum did show, however, showed that the system was mostly used for social support. The authors suggested that the lack of effect on social isolation may have been because the measurement tool was inadequate, or that perceptions of social isolation might not be reduced simply by removing barriers to social support.

One-to-one interventions

The majority of one-to-one interventions (including those concerning services) were unable to demonstrate a significant effect in reducing social isolation and loneliness.

Home visits to provide assessment, information or provision of services

A one-off home visit by a nurse to patients aged 75 or more years of a GP practice was the only one-to-one study to demonstrate a significant reduction in social isolation and loneliness (22). The visit included a health assessment, advice, written health information, and referrals to further services if required. Because the intervention employed an external 'task force' to implement the assessment, the authors raised concerns that the intervention might become less effective once applied in practice. Follow-up observations confirmed that the effect wore off soon after the task force had left (because the practice-nurse team did not continue the intervention) (Pearson 2000). The remaining three large-scale RCTs concerned with health assessment, information and service provision were unable to demonstrate that home visits were effective in reducing social isolation and/or loneliness (19, 25 and 26). None of the studies included a process evaluation, which would have shed further light on the findings. It is possible that analysing the trial on an 'intention-to-treat' basis could have contributed to Clarke, Clarke and Jagger's (1992) (19) results that demonstrated little or no effect.

Home visits or telephone contact to provide directed support or problem solving

Four studies investigated the effectiveness of directed support and problem-solving in alleviating social isolation and/or loneliness (15, 18, 20 and 23). None of the interventions were effective. Morrow-Howell, Becker-Kemppainen and Lee (1998) (23) investigated the impact of a telephone support-therapy service for older people at risk of suicide that was provided by the local social service agency, and found that although there was a 'marginally significant difference' ($p = 0.04$) in depressive symptomatology at four months, the intervention was not effective in reducing loneliness and only partially effective in reducing social isolation. The authors suggested that a Type II error might have occurred, because of the small sample size ($n = 60$), and the validity of the social isolation measures was unclear.[4] In addition, the transferability of the intervention is questionable as it was relatively labour intensive with, on average, three calls per client each week.

Social support in one-to-one interventions

Neither of the studies concerned with one-to-one social support (21 and 24) demonstrated a significant reduction in loneliness or social isolation. The intervention by Heller *et al.* (1991) (21) comprised friendly telephone calls over 10 weeks to 238 lonely, low-income women, followed by another after 10 weeks during which some of the women were put in contact with one another. Measurements were conducted at baseline, after the first and second 10-week interventions, and at a final follow-up 10 weeks later. Despite an indication of a reduction in loneliness among the peer dyads during the second 10 weeks, overall both the intervention group and the control showed a similar pattern of improvement, except that the 'assessment only' control group maintained a reduction in loneliness from the second to the final measurement. Unfortunately, a process evaluation, which could have offered some explanation as to why the intervention was ineffective, was not included.

Summary of effectiveness

In summary, effective interventions shared several characteristics:

- They were group interventions with a focused educational input (5 of 10), or they provided targeted support activities (4 of 10).
- They targeted specific groups, such as women, care-givers, the widowed, the physically inactive, or people with serious mental health problems (7 of 10). The majority of studies judged to be partially effective also targeted specific groups (5 of 6).
- They stated that the experimental samples were representative of the intended target group (7 of 10).
- They enabled some level of participant and/or facilitator control or consulted with the intended target group before the intervention (6 of 10).
- They evaluated an existing service or activity (demonstration study) or were developed and conducted within an existing service (4 of 10).
- Participants were identified from agency lists (GPs, social services, service waiting lists) (5 of 10), obituaries, or through mass-media solicitation (4 of 10). Three studies acknowledged a problem of self-selection.
- The studies included some form of process evaluation and their quality was judged to be high (6 of 10).
- The only identified studies evaluating the effectiveness of physical activity (2 of 10) were effective in reducing loneliness, although in one this was reversed after 12 months.

The only majority characteristic among the 'ineffective' interventions was that they were one-to-one interventions conducted in people's own homes

(5 of 7). Four evaluated home-visiting schemes, while the fifth considered the effectiveness of social support using the telephone. Inconclusive studies covered diverse interventions and were characterised by poor reporting, weak study design, high attrition rates, and small or unrepresentative samples. These studies included interventions that have not been reported elsewhere, however, including peer social-support in the home, focus-group discussions on the telephone, the provision of a hearing aid, and the provision and use of the Internet to alleviate loneliness. They therefore deserve further evaluation.

Discussion

This review has been concerned with the effectiveness of health promotion interventions to alleviate and prevent social isolation and loneliness among older people. The findings provide clear evidence that a few interventions are effective, namely group interventions involving some form of educational or training input, and social activities that targeted specific groups of people. The review encountered several methodological problems, the first being whether to include studies published only in the English-language or, alternatively, those in any language. A pragmatic decision was taken to include studies in any language identified through the source databases, by hand-searching and through contacts with experts in the field. Although Spanish and Nordic language databases were searched, and articles in languages other than English were identified through hand-searched reference lists, a bias towards English-language articles remained. The inaccessibility of literature in non-English languages (to native English speakers) is an important limitation on internationally comparative research. Nevertheless, the majority of publications identified in other languages were neither intervention nor loneliness studies but rather examinations of related matters such as social support.

The second methodological problem stemmed from the broad inclusion criterion that had been adopted to include the widest range of health promotion approaches to the alleviation and prevention of social isolation and loneliness. The main weakness of this approach was that occasionally it was difficult to decide whether to exclude a study, and as a result some anomalies occurred. The decision to allow 'older' to be defined by the intervention study authors resulted in the initial selection of studies having very disparate age thresholds (Hansbro *et al.* 1997; Thomas *et al.* 1998; Office for National Statistics 2002). One study was subsequently excluded because it targeted 'middle-aged' women, even though some of the women were aged 50 and more years (Benum *et al.* 1987), while two others

that included carers with mean ages of, respectively, 51 and 38 or more years, were included because the majority of subjects were 'older'. Categorising the interventions into types of health promotion activity (group, one-to-one, service provision, community development) enabled like-with-like interventions to be compared, but even within these categories there were substantial differences in target groups, intervention locations, sample sizes, measurement tools and outcome measures.

The majority of studies included 'loneliness' as an outcome measure, but a few used 'social isolation', 'network size', 'social support' or 'coping style' as indirect measures. Some studies included factors known to be associated with loneliness, such as self-esteem, coping, depression, social activity levels, burden, social contacts and isolation (Rook and Peplau 1982; Andersson 1998; Rokach and Bacanli 2001; van Baarsen 2002). A few studies included a process evaluation, which provided additional information on activities, feelings and 'hidden' changes that occurred during the intervention, which may have had an impact on the outcomes of the study. It has been recommended that public health and health promotion evaluation, to gain a better understanding of *why* outcomes are or are not achieved, should include process evaluation and report any unintended effects (Nutbeam 1998; World Health Organisation European Working Group on Health Promotion Evaluation 1998; Rychetnik *et al.* 2002). Likewise, as only about one-half of the studies specified a validated loneliness/social isolation instrument (a few used a validated tool that included a question on loneliness), judgements about generalisability were not made on the basis of the instrument but by comparing expected outcomes with actual outcomes (direct and indirect).

A single-item loneliness measure used in two studies was said to have shown construct and content validity in bereavement research (Caserta and Lund 1996) (5). Concerns have however been raised about the reliability of this type of measurement, as older people may be reluctant to report directly feelings of loneliness because of the attached stigma (Rotenberg and MacKie 1999; Victor *et al.* 2000). Finally, some of the studies were poorly reported, or employed a weak intervention or evaluation design. Such studies were included because they illustrated potentially effective interventions that needed further evaluation. Having recognised these limitations, the review still offers valuable insights into the evidence on the outcomes of public health and health promotion interventions to prevent or alleviate social isolation and loneliness among older people.

While the term loneliness is meaningful to most people, it is also a vague concept with multiple meanings (Rook 1988). Because of this inconsistent usage, it could be argued that the generalisability of the findings from most

intervention studies is almost impossible to assess. The circumstances of six interventions, however, were sufficiently described and reproducible for the findings to be considered to be generalisable, and the findings of three other studies were generalisable in similar health systems. Two studies had questionable generalisability only because of the lack of information about, and discussion of, the transferability or cultural appropriateness of the intervention. Because the majority of studies had been conducted in North America, the transferability to Europe of the interventions needs to be considered with caution. For example, McAuley *et al.* (2000) (9), in comparing brisk walking with stretching and toning, found that the walking group did not maintain the activity over a prolonged period, but the authors did not consider the social and cultural context. It may be that the outcomes would have been different in countries with a stronger 'walking culture' than the USA or Canada. Similarly, transferability could be questioned when the representativeness of the sample was unclear. Studies with self-selected subjects could, as Stevens (2001) (12) suggested, lead to the participation of the 'socially-active lonely' rather than the 'resigned lonely' or the 'isolated lonely': this is a pervasive dilemma for intervention study practice (Cattan *et al.* 2003).

Some authors suggested ways to enhance the effectiveness of group interventions. Caserta and Lund (1992) and Caserta (1997) (5) proposed that intra-personal resources, such as self-esteem and competencies, in addition to social contacts outside the group, may have an impact on the effectiveness of self-help. Interestingly, both Andersson (1985) (1) and Rosen and Rosen (1982) (10) reported an improvement in self-esteem when loneliness decreased, while Arnetz and Theorell (1983) (2) found a change in perceived locus of control. A recent study of coping with bereavement suggested that lowered self-esteem increases loneliness over time, and that the loss of self-esteem may influence feelings of competence and personal control (van Baarsen 2002). It further found, however, that pre-loss support did not protect bereaved older people from loneliness, nor did an increase in network support shortly after the partner's death help the person to recover from loneliness in the short-term. On the other hand, McAuley *et al.* (2000) (9) found that participants with greater levels of social support at the onset of the intervention were more likely to maintain reduced loneliness. Van Baarsen concluded that other relevant intra- and inter-personal factors need to be taken into account, while Stevens and Tilbury (2000) (12) suggested that a complex network of different types of friendships might be the best protection against loneliness. It would seem that incorporating activities known to enhance self-esteem and personal control may improve the long-term effectiveness of group interventions.

On the basis of the 11 studies identified in this review, the effectiveness of one-to-one interventions to alleviate social isolation and loneliness among older people remains unclear. Only one was judged to be effective, although the long-term effect was not maintained. Five of the seven interventions, judged as ineffective, were either befriending or home-visiting schemes. These findings need to be considered with great caution. Only two studies (of 7) focused on social support as the main intervention, and one was ineffective. The remaining ineffective one-to-one interventions were service-orientated or concerned with directed network building. None judged as ineffective were conducted specifically to measure the effects on loneliness, although the reduction of loneliness was one of the main measures in one of the studies (19). Several reasons were offered as to why the interventions were ineffective, including: the intervention or study design was inappropriate and the measurement tools or outcome measures were insensitive to subtle changes in morale or mood. Van Rossum *et al.* (1993) (26) suggested that their study population was simply too healthy to experience any direct health gain!

Although one survey showed that one-to-one support, in the form of befriending, home visiting and carer support, is one of the most frequently provided activities to alleviate loneliness, and that older people respond favourably to such support (Mulligan and Bennett 1977–78; Dean and Goodlad 1998; Cattan 2002*b*), on the basis of current evidence the effectiveness of one-to-one interventions remains unclear. Older people emphasise the need for reciprocity in social support, which suggests that this is more likely to occur when the volunteer visitor and the 'service recipient' belong to the same generation, have common interests, and share a common culture and social background (Cattan *et al.* 2003). None of the identified studies that evaluated one-to-one support incorporated this feature in the intervention.

Studies that cited a theoretical foundation tended to employ various behavioural change theories (one took a societal perspective). It is notable that despite several British national policies to reduce isolation and loneliness, no evaluations of policy change were found. Likewise, it is well known that the built environment affects health and mental wellbeing, but not one study evaluated an environmental-ecological approach to social isolation and loneliness (Walters *et al.* 1999).

In conclusion, this review identified a small number of studies that have evaluated the effectiveness of health promotion interventions to tackle social isolation and loneliness among older people, and judged one-third to be effective. Most were group interventions with an educational or social support input for specific groups of older people. Of importance to both policy and practice, it appears that programmes that enable older

people to be involved in planning, developing and delivering activities are most likely to be effective. It is, however, less clear what *other* interventions might be effective. Neither can we say with certainty what does *not* work. Our survey of current practice in the North of England showed that a wide range of activities is provided (often within the same project) for older people at large rather than for specific groups (Cattan 2002 *a*). Many have not been evaluated.

All studies included in this review were quantitative outcome studies. Rychetnick *et al.* (2002) suggested that, for the transferability of evidence to be meaningful, then qualitative, observational and multilevel evaluations need to be drawn upon in addition to the 'traditional' trial. The review criteria used and the studies therefore selected may contribute to an apparent disparity between practice and evidence. This is particularly evident with one-to-one interventions, which practitioners and older people in our study considered both acceptable and effective in alleviating loneliness. The many inconclusive studies and the diverse services and activities in the field that have not been evaluated suggest a need for further well-designed evaluations, not excluding socio-political and environmental-ecological interventions. Finally, although progress has been made in establishing realistic criteria (Speller, Learmonth and Harrison 1997; Rychetnik *et al.* 2002), further work is required to identify appropriate methods for public health and health-promotion evaluation. Future reviews should include and appraise the multiple levels of evidence that exend from practitioner-led project evaluations through to complex community trials.

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NOTES

1 *Medline* is the US National Library of Medicine's bibliographic database covering the fields of medicine and related areas. It provides access to over 4,000 biomedical journals worldwide, and is available online at [http//:www.ncbi.nlm.nih.gov/PubMed]. *Bath Information and Data Services* (*BIDS*) is a not-for-profit bibliographic service for the academic community in the UK. It provides access to over 5,000

full-text electronic journals and is available online at [http://www.bids.ac.uk]. The *Science Citation Index* (SCI) and *Social Science Citation Index* (SSCI) are published by The Thomson Corporation and are available online at [http://www.isinet.com/products/citations/sci/*or*/ssci/]. *EMBASE* is a major biomedical database, which can be accessed through several database vendors, such as ScienceDirect and Ovid online. It covers over 4,000 journals from 70 countries (including non-English European journals), and can be accessed online: [http://ovid.com/site/index]. *PsychInfo* is an electronic bibliographic database that provides abstracts and citations for over 1,900 journals (for details see: http://.apa.org/psycinfo/). *Applied Social Sciences Index and Abstracts* (ASSIA) covers health, social services, psychology, sociology, economics, politics, race relations, and education in 650 journals from 16 different countries. It can be accessed through *Cambridge Scientific Abstracts* (CSA): [http://uk1.csa.com]. *CINAHL* specialises in nursing journals: for details visit [http://www.cinahl.com/]. *SweMed* is a database for Nordic journals, and is available on [http://micr.kib.ki.se/]. *FirstSearch* is an online reference search service that gives libraries and end users access to over 10 million full-text articles via a large number of databases, for details: [http://www.oclc.org/firstsearch]. *Academic Search Elite* is owned by EBSCO Publishing and provides access to over 2,000 full-text electronic journals, and indexing and abstracts for over 3,300 journals: for details visit: [http://ebsco.com]. The *System for Information on Grey Literature in Europe* (SIGLE) specialises in non-conventional (so-called grey) literature in the fields of pure and applied natural sciences and technology, economics, social sciences and humanities, and is available on [http://stneasy.cas.org]. *The Cochrane Library* is a collection of evidence-based medicine databases, including the *Cochrane Database of Systematic Reviews*, for details see the Cochrane Collaboration: [http:www.cochrane.org]. *LILACS* is a collection of databases of Latin American and Caribbean health science literature: [http://www.bireme.br/bvs].

2 A complete list of all articles reviewed, and a table of the study design and effectiveness of all studies are available on: http://www.leedsmet.ac.uk/hen/hcc/HealthEducationandPromotion.htm under 'staff'/'Mima Cattan'

3 The numbers in parentheses refer to the study reference numbers in Table 2.

4 Attrition was 19 per cent in the intervention group, and 28 per cent in the control group.

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Address for correspondence:
Mima Cattan, Leeds Metropolitan University,
Centre for Health Promotion Research,
Queen Square House, Leeds LS1 3HE, UK.

e-mail: m.cattan@leedsmet.ac.uk