

Reducing loneliness amongst older people: a systematic search and narrative review

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(Received 17 June 2013; accepted 9 December 2013)

Objective: To investigate the effectiveness of recent social therapeutic interventions to reduce loneliness in older people.
Method: To examine this matter, a literature review, using seven databases, was undertaken using search terms relating to the themes of ageing, loneliness and social support. A total of 17 relevant studies relating to loneliness interventions were analysed.

Results: Three studies reporting on new technologies and one on a group work intervention identified significant reductions in loneliness.

Conclusion: Further research into interventions using new technologies to reduce loneliness in older people is recommended.

Keywords: loneliness; older people; literature review; effectiveness; social isolation; social support; social network; ageing

Introduction

It is now widely argued that loneliness is believed to be a significant risk factor to the physical and mental health of older people. Holt-Lunstad, Smith, and Layton (2010) meta-analysis of 148 studies investigating the impact of social relationships concluded that there was a '50% greater likelihood of survival' for those who had adequate relationships over those whose relationships were deemed poor or insufficient (p. 14). Loneliness is more likely to be correlated with self-reported poor health (Cornwell & Waite, 2009; Iliffe et al., 2007; Kobayashi, Cloutier-Fisher, & Roth, 2008; La Grow, Neville, Alpass, & Rodgers, 2012; Losada et al., 2012; Nummela, Seppanen, & Utela, 2011) and, as such, older people who report that they are lonely are at greater risk of mortality (Luo, Hawkey, Waite, & Cacioppo, 2012; Patterson & Veenstra, 2010; Tilvis et al., 2012).

Many researchers note the direct link between the experience of loneliness and depression (Bekhet & Zauszniewski, 2012; Cacioppo et al., 2006; Drageset, Espehaug, & Kirkevold, 2012; Golden et al., 2009; Iliffe et al., 2007; O'Luanaigh & Lawlor, 2008; Routasalo et al., 2006; Stek et al., 2004). By contrast, Rius-Ottenheim et al. (2011) found that older men were less likely to be lonely if they had an optimistic disposition and Häfner et al. (2011) identified a gender-specific association between social isolation and depression in men with inflammatory disease (interleukin IL-6) but not women.

Certain life events that are more likely to occur in older age may be critical in inducing loneliness. Factors that influence loneliness in an older population include the impact of bereavement or increasing incapacity in one's partner (de Jong Gierveld, 1998; Dykstra, van Tilburg, & de Jong Gierveld, 2005; Golden et al., 2009;

Savikko et al., 2005), traumatic or negative life events (Hensley et al., 2012; Palgi, Shrira, Ben-Ezra, Shiovitz-Ezra, & Ayalon, 2012; Tjihuis, De Jong Gierveld, Feskens, & Kromhout, 1999) and decreasing functional competence (Kobayashi et al., 2008). Savikko et al. (2005) also outlined structural factors such as a poor education, poor income and living in a residential home could all increase the likelihood of loneliness in older people.

Weiss (1973) differentiates between emotional and social isolation. The desolation felt by the loss of someone close is 'emotional isolation'. Social isolation, on the other hand, refers to a lack of engagement with others. Fischer and Phillips (1982) describe this kind of social isolation as 'knowing relatively few people who are probable sources of rewarding exchanges' (p. 22). More recently, several authors have identified social isolation as being separate from loneliness and have called for the phenomena to be treated separately (e.g. Masi, Chen, Hawkey, & Cacioppo, 2011; Victor, Scambler, & Bond, 2009), though this review has included studies examining social isolation.

As the risk factors associated with loneliness can have a severe impact, it is imperative to consider potential interventions that may ameliorate the negative impact of this condition. The purpose of this article is to review studies that have examined the effectiveness of interventions.

Previous literature reviews into what works

A number of researchers have undertaken literature reviews on quantitative analyses into loneliness interventions with older people. Cattan, White, Bond, and Learmouth (2005) outlined that the most successful methods were those that comprised groups with an educational or support element, whilst one-to-one interventions

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seemed significantly less successful. By contrast, Findlay's (2003) survey of 17 interventions found a single one-to-one intervention, involving informal referrals to other services, significantly effective but hypothesised that group interventions were more likely to be effective if they were at least 5 months in duration.

Masi et al.'s (2011) meta-analysis of randomised group interventions found 'a small but significant effect' on loneliness (p. 256), though there was no change in the outcomes for a number of groups and studies with more female participants had smaller reductions in loneliness. The authors queried whether it was the socialisation effect of the gathering of a group in and of itself that produced the positive change rather than the therapeutic programme but recommended that future interventions aim to correct 'maladaptive social cognition' (p. 259).

Examining data from a study in North Wales, Wenger, Davies, Shahtahmasebi, and Scott (1996) concluded that 'interventions at the network level which increase contact and interaction are likely to have preventative outcomes in terms of loss of independence and health maintenance as well as improving quality of life' (p. 351). Of particular significance here is the authors' identification of the links between addressing social isolation and its impact on both physical health and fulfilment.

The conclusion of Findlay's (2003) review highlighted that the 'dearth of evidence highlights the need for further rigorous research' (p. 665) and Cattan et al. (2005) noted that, due to there being many inconclusive studies in their own review, further evaluative work was required. This new review therefore builds on the existing knowledge base.

Aim: The aim of this literature review is to identify studies that report on the effectiveness of interventions to reduce loneliness or social isolation and to make recommendations as to the choice of interventions for practice.

Method

The method used in this literature review is a systematic search followed by a narrative approach. The approach is more rigorous than a narrative review as it uses specific systematic search functions to find relevant data. A two-stage search design was adopted. Initially the literature review used broad terms to capture relevant articles addressing studies about loneliness in older people as preliminary scoping indicated that it was not possible to specify effectively the dimension of interventions and their effectiveness on database searches. The second step was to trawl the abstracts for articles that reported on studies exploring the effectiveness of loneliness interventions.

Two concept groups were used to structure the search to find relevant articles, as indicated below, the second concept group being expanded to include both positive and negative dimensions.

Age group: 'old' or 'eld*' or 'geri*'*

It was important to ensure that the participants in the study were from an older generation. Truncations were used to

attempt to capture a variety of suffixes that might be followed by the above base terms. However, the very use of 'old*' ensured that many articles not directly related to older people were recovered.

Loneliness: 'loneliness' or 'social isolation'

Initial searches were carried out using the PsycInfo and Medline databases on the Ovid search engine. Terms inputted into this search engine commonly suggested these titles as key terms and therefore they were used in lieu of truncations. Initially truncated terms were used but these produced a large number of irrelevant articles. Not every database allowed for key terms and, therefore, in an attempt to be consistent, the words as stated above were included in search formulae as opposed to using truncations in those databases that did not suggest key terms.

Social network: 'social network' or 'social support'

After initial scoping, this positive variant on the theme of 'isolation' was added. Andersson (1998) refers to loneliness and social support as 'opposite notions' (p. 265). Using these terms helped to identify potential research that focused on solutions to the problem of loneliness or, at least, commented on support networks for older people. Again key terms were used and, as with the second criterion stated above, the full words themselves used instead of truncations in those databases that did not suggest key terms.

In the databases that allowed them (and not all had facilities to include every filter), a number of limitations were included:

Years 2000–2012; Articles that were peer reviewed; Articles in the English language; Articles with human participants.

Taylor et al. (2003) also encourage researchers to examine a number of databases in order to retrieve articles on a chosen topic as this allows for the identification of 'relevant studies much more efficiently and comprehensively' (p. 425). In this case, databases representing sociological, psychological and medical perspectives were chosen. Seven databases were selected using advice from an academic librarian: PsycInfo, Medline, CINAHL, ASSIA (Applied Social Sciences Index and Abstracts), Scopus, Social Services Abstracts and Sociological Abstracts – and these were searched within a one-week period at the end of April 2012. The hits retrieved by each database are detailed in Table 1.

Taylor et al. (2007) define sensitivity as the 'capacity to identify as many as possible of the total available relevant articles' (p. 699). Here, this means calculating the total number of relevant articles identified by each database expressed as a percentage of the total of relevant articles. Precision is 'the positive predictive value of the [individual] search' (Taylor et al., 2007, p. 700). Above, precision is shown as the total number of relevant articles

Table 1. Results of database searches.

Database	Total retrieved	Relevant articles	Sensitivity (%)	Precision (%)
PsycInfo	19	16	11	84
Medline	71	29	19	41
CINAHL Plus	40	28	19	70
ASSIA	88	48	32	55
Social Services Abstracts	78	50	33	64
Sociological Abstracts	100	79	53	79
Scopus	718	100	67	14

Note: Total number of relevant articles, excluding duplicates, was **144** (of which **11** explored a loneliness intervention quantitatively). In terms of the sensitivity rating, percentages are calculated on the basis of a total of **150** articles, including the six articles that were found through hand searching and added to the total from database searching.

identified by one database expressed as a percentage of the total number of articles found by that database.

These results indicate that, in this particular search, Sociological Abstracts produced a very high level of precision alongside a very good degree of sensitivity. Both PsycInfo and CINAHL Plus were excellent in terms of precision but were low in sensitivity. Both ASSIA and Social Services Abstracts scored well in precision and moderately well in sensitivity. Whilst the Scopus database produced a significantly larger number of hits than any of the others, and thus had the best sensitivity, it had the lowest level of precision by some margin of the seven databases.

Figure 1 outlines the process of the systematic search. A total of 350 articles that were found to be relevant to the topic contained 206 duplicates, leaving 144 unique articles focusing broadly on the topic of older people and loneliness. In the second stage, only quantitative studies that attempted to measure the impact of interventions upon loneliness in an older cohort were selected and this resulted in 11 relevant studies being identified.

Finally, hand searching through articles referenced within these sources and elsewhere produced a further six articles that were included in the study. The six in question not uncovered in the database search were Banks, Willoughby, and Banks (2008), Creswell et al. (2012), Greaves and Farbus (2006), Iecovich and Biderman (2012), Kahlbaugh, Sperandio, Carlson, and Hauselt (2011) and Martina and Stevens (2006).

The final 17 articles, outlined in Table 2, were classified into three broad categories: (1) Group interventions; (2) one-to-one mentoring interventions and (3) interventions using new technologies.

Ten of the 17 studies measured loneliness using a discrete validated scale and, therefore, it is only possible to report accurately on any reduction in loneliness in those studies.

Results

Group interventions

Nine of the 17 articles reported on group interventions that aimed to enhance social support or tackle loneliness (Anstadt & Byster, 2009; Bell et al., 2011; Creswell et al., 2012; Gleibs et al., 2011; Iecovich & Biderman, 2012;

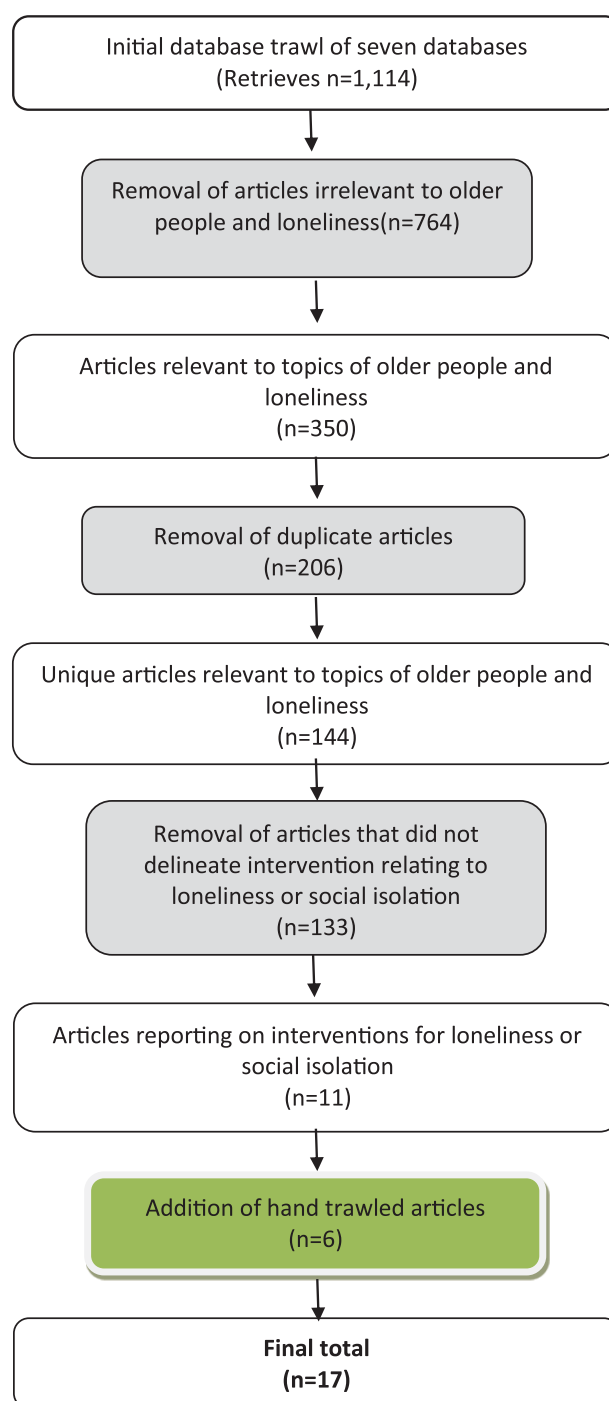


Figure 1. Process of database searches.

Table 2. Summary of articles detailing loneliness interventions.

Authors	Aim	Method	Loneliness measured by	Intervention	Location	Setting	Number	Age range	Gender
Group interventions Anstadt and Byster (2009)	To reduce social isolation and build intergenerational relationships	P	Self-developed satisfaction survey	'Community Connections' group (older people and international students)	Florida, USA	C	764 (364 older people)	57–103	NR
Creswell et al. (2012)	To test the effectiveness of the Mindfulness Based Stress Reduction Programme	CT	UCLA	MBSR group programme	Los Angeles, USA	C	40 (20 control)	55–85 ($m = 65$)	F 80%, M 20%
Gleibs et al. (2011)	To test whether gender based groups increase a sense of social identification in residential care	BA	Not explicit (Social Identity Scale)	Gender-based social groups	Cornwall, England	SL	26	NR	F 54%, M 46%
Iecovich and Biderman (2012)	To explore the relationship between day centre attendance and loneliness	E	De Jong Gierveld	Attendance at adult day centres	Israel	DC	817 (400 control)	60–100 ($m = 78$)	F 76%, M 24%
Kremers et al. (2007)	To evaluate how successful a social programme was at recruiting its target audience	CT	De Jong Gierveld	LUSTRE six week group programme	Holland	C	247 (105 control)	55+ ($m = 64.3$)	F 100%
Martina and Stevens (2006)	To examine the effects of attending a friendship enrichment programme	CT	De Jong Gierveld	Friendship Enrichment 12 week group programme	Holland	C	115 (55 control)	53–86 ($m = 63$)	F 100%
Routasalo et al. (2009)	To explore the effects of psychosocial group interventions on loneliness and social activity	CT	UCLA	Nurse led 12 week psychosocial group work	Finland	C	235 (118 control)	75–92 ($m = 80$)	F 74%, M 26%
Winningham and Pike (2007)	To measure the impact of a cognitive enhancement programme designed to enhance social networks	CT	UCLA	Cognitive enhancement group work	Oregon, USA	SL	58 (29 control)	61–98 ($m = 82.11$)	NR
One-to-one interventions Butler (2006)	To report on the assessment of a Senior Companionship Program	E	UCLA	Senior Companion Program befriending scheme	Maine, USA	C	66 (32 service users)	62–99	F 82%, M 18%
Dickens et al. (2011)	To examine the effectiveness of community based mentoring service on social isolation	CT	Not explicit (Internally developed social support scale)	Community-based mentoring service	Devon, UK	C	393 (195 control)	NR ($m = 71.8$)	F 65%; M 35%

(continued)

Table 2. (Continued)

Authors	Aim	Method	Loneliness measured by	Intervention	Location	Setting	Number	Age range	Gender
Greaves and Farbus (2006)	To evaluate a mentored intervention directing isolated older people to community activities	BA	Not explicit (MOS Social Support Survey)	Mentoring service + community activities	Devon, UK	C	172	52–96 ($m = 77$)	F 76%; M 24%
Interventions using new technologies									
Banks et al. (2008)	To compare the ability of a living dog and robotic dog to treat loneliness	CT	UCLA	Animal-assisted therapy	St Louis, Missouri, USA	SL	38 (13 control)	NR	NR
Bell et al. (2011)	To examine the effects of Nintendo Wii usage on social relationships	CT	Not explicit (Social Provisions Scale)	Nintendo Wii group activities	North Carolina, USA	SL	21 (7 control)	60–94	F 76%; M 24%
Kahlbaugh et al. (2011)	To test the compensatory effects of playing Nintendo Wii on loneliness	CT	UCLA	Nintendo Wii with a partner	New Haven, Connecticut	SL	35 (19 control)	NR ($m = 82$)	F 89%; M 11%
Meyer et al. (2010)	To investigate whether the use of webcams helps reduce social isolation	P	Minimum Data Set 2 and short survey	Webcam conversations with family and friends	Ohio, USA	SL	33	65–100	F 82%; M 18%
Sum et al. (2009)	To explore how older adults' internet usage affects their sense of community	E	Not explicit (Australian Well-being Index)	(Any) Internet usage	Australia	P	222	55+ (48%, <65)	F 62%; M 38%
Tsai and Tsai (2011)	To evaluate the effectiveness of videoconferencing in building social support	BA	UCLA	Video-conferencing with family members	Taiwan	SL	90 (50 control)	NR ($m = 73.82$)	F 58%; M 42%

Note: Method: BA = Before and after; CT = Controlled trial/randomised controlled trial; E = Evaluation/post-hoc evaluation; P = Pilot/exploratory study
 Setting: P = Large population in unspecified setting; C = Community; DC = Day centre; SL = Supporting living/nursing care, etc.
 Gender: F = Female; M = Male; NR = not reported.

Kremers, Steverink, Albersnagel, & Slaets, 2007; Martina & Stevens, 2006; Routasalo et al., 2009 and Winningham & Pike, 2007). Six studies used validated loneliness scales whilst the other three measured some form of social support or provision. Six interventions were with those living in the community, including one in a day centre, whilst three were with supported living populations.

Community-based group interventions

Of these nine studies, only Creswell et al. (2012) reported on a significant reduction in loneliness in those taking part in their study. The authors examined the impact of a Mindfulness Based Stress Reduction (MBSR) programme and found statistically significant decreases in those who completed the programme compared with a control group, who actually had a slight increase in loneliness (intervention group mean reduced from 42.35 to 37.40, compared with the control group's increase from 38.40 to 40.75; $p = 0.008$).

Five other studies reported on community based interventions. Kremers et al. (2007) asked whether the researchers had identified the correct audience for their group intervention 'LUSTRE' programme (which focuses on positive self-management and well-being). This followed on from a previous study (Kremers, Steverink, Albersnagel, & Slaets, 2006) which had not been identified through the systematic search, which had not revealed any statistically significant differences in loneliness reduction between the intervention and control groups, though both groups did report a reduction at the end of the six-week programme (intervention $p < 0.01$; control $p < 0.05$).

Routasalo et al.'s (2009) psychosocial group intervention recruited members to their groups through the explicit question, 'Do you ever suffer from loneliness?' and the group operated activities and group discussions around the area of loneliness. There was no statistically significant difference in loneliness scores between group participants and those in the control group though the authors did note that those attending were significantly more likely to gain new friendships (45%) than the control group (32%).

Like the above study, group members attending the friendship enrichment programme organised by Martina and Stevens (2006) were also significantly more likely to develop new friendships (65%) in comparison with the control group (33%). The 12-week programme under investigation aimed to reduce loneliness in older women by encouraging them to achieve personal goals through friendships and build their self-esteem. However, whilst friendships were gained and although there was a greater decrease in loneliness for those participating in the group, there were no significant differences in loneliness found between group attendees and the control group ($p = 0.51$).

The final two studies were not time limited group interventions. The study by Anstadt and Byster (2009) investigated the benefits for two groups of potentially

socially isolated communities – older people and international students within a 'Community Connections' group. This pilot study's use of a short non-validated satisfaction survey could not adequately evaluate the programme's potential impact on loneliness.

Iecovich and Biderman's (2012) investigation into the impact of day centre attendance on loneliness in Israel examined differences between 417 day centre attendees and 400 older people who did not attend. Using a one-time cross-sectional design, the authors did not find any statistically significant differences between these two populations in terms of their reported loneliness.

Supported living group interventions

Gleibs et al. (2011) examined the benefits of gender segregated social activity groups and found, in their small sample of 26, greater benefits for male participants than females. Following group attendance, male participants had increased life satisfaction and better social identification as well as reductions in depression and anxiety. However the researchers did not use a loneliness scale and, therefore, despite the other benefits, potential reductions in loneliness were not recorded.

Winningham and Pike (2007) commented on the impact of a cognitive enhancement programme designed to stimulate the brain and strengthen social networks. The researchers found that, whilst there was little change in loneliness for group participants ($p = 0.19$), those in the control group reported much higher loneliness at the study's conclusion ($p = 0.06$).

Bell et al.'s (2011) investigation of group-based Nintendo Wii activities within a nursing home setting will be discussed in the 'New technologies' section below.

In summary for group interventions, only Creswell et al. (2012) reported on a statistically significant reduction in loneliness with a group intervention and this for a small cohort.

One-to-one interventions

Three studies examined one-to-one mentoring interventions (Butler, 2006; Dickens et al., 2011; Greaves & Farbus, 2006). These were all community based and only one used a validated loneliness scale, the other two measuring social support.

Butler's (2006) examination of a Senior Companion Programme in Maine, USA, which matched volunteers with older individuals, measured loneliness on one occasion and found a comparatively low mean score for its participants.

The other two studies examine the ongoing development of a mentoring scheme from the same location. Both studies measured social support. Greaves and Farbus (2006) investigated the effectiveness of a mentoring service in Devon in signposting community activities for an older population. The authors found that there were significant improvements in social support at 12 months ($p = 0.02$). Five years later, Dickens et al.'s (2011) measurement of

social support showed no statistical significance between intervention and control subjects ($p = 0.75$)

New technologies

Six studies investigated the use of new technologies in possibly reducing loneliness (Banks et al., 2008; Bell et al., 2011; Kahlbaugh et al., 2011; Meyer, Marx, & Ball-Seiter, 2010; Sum et al., 2009; Tsai & Tsai, 2011). Three of the studies used validated loneliness scales and five of the six took place exclusively within supported living facilities.

Two studies examined Internet-based video communication. Tsai and Tsai (2011) focused on the efficacy of videoconferencing to improve nursing home residents' social support. Participants in this study were asked to make contact with family or loved ones at least once a week via services such as Skype or MSN. After regression, the authors concluded that videoconferencing was effective in reducing loneliness ($p < 0.01$).

Meyer et al.'s (2010) study on web-based communication included a nine-item instrument that examined social contact and interaction. Using a sample of 33 participants, the authors did not find a statistically significant relationship between loneliness and the use of webcam.

Whilst these two studies focused on communication methods, Sum et al. (2009) examined the impact of Internet usage in and of itself with community-based older people. This study reported better contact with family and friends for two-thirds of the sample but did not explicitly measure loneliness.

Two studies investigated the impact of the use of the games console, the Nintendo Wii. Bell et al. (2011) examined whether there was an improvement in social relationships for nursing home residents using the console in a group setting. The authors were not able to make any strong, quantifiable conclusions partly because, by their own admission, they felt they had used the wrong instrument to measure the social impact of the intervention. However, Kahlbaugh et al. (2011) explicitly measured loneliness in a cohort of 28 community-based individuals who either played the Wii with a partner or watched television. This piece of research found a reduction in loneliness for those playing the Wii and an increase in loneliness for those watching television ($p < 0.05$).

Finally, Banks et al. (2008) contrasted loneliness using animal-assisted therapy in two different interventions alongside a control group. Within their population of 38 participants, 13 were supplied with a living dog, 12 with a robotic dog and 13 were control subjects. The researchers found that loneliness significantly reduced for those with either a living or robotic dog compared with a control group ($p < 0.05$) and that there were no significant differences in loneliness between those two interventions.

In summary, three of the studies resulted in findings reporting in a significant reduction in loneliness through the use of new technologies but all three were substantially different, whether through web-based communication (Tsai & Tsai, 2011), a games console (Kahlbaugh et al., 2011) or a real or synthetic pet (Banks et al., 2008).

Discussion

The following four studies found that their interventions were successful in reporting significant reductions in loneliness.

- Creswell et al.'s (2012) MBSR group programme.
- Kahlbaugh et al.'s (2011) one-to-one Nintendo Wii intervention.
- Banks et al.'s (2008) introduction of either a living or robotic dog.
- Tsai & Tsai's (2011) study on videoconferencing.

What is interesting to note is that all four are distinctly different interventions, though three involve new technologies. This finding would seem to support future development of the use of innovative interventions and perhaps helps quash perceptions that older people are resistant to new technologies. However, another study by Lilja, Bergh, Johansson, and Nygard (2003) expresses caution around the introduction of assistive technology at home for lonelier older people. This study highlights a greater reluctance in those who are lonelier and receiving personal support to adopt these new adaptations. This insight perhaps indicates not only a dependency on personal support, but also a fear of a social network being removed by an improvement in independent abilities. By contrast, it is those with a strong social network who are more likely to respond positively, perhaps revealing a desire to maintain independent relationships with this network.

The finding that three out of the four time limited group work interventions did not reduce loneliness appears to contrast with Cattani et al.'s (2005) conclusion that group work with an educational focus had a greater likelihood of reducing loneliness than one-to-one interventions (pp. 51, 56). However, this may be explained by the relative short timescales of the groups in this sample (6–12 weeks), especially when one considers Findlay's (2003) assertion that group interventions of 5 months in duration or longer are more likely to be effective.

Minkler, Frantz, and Wechsler's (2006) report on an attempt to develop a social action group within an older community illustrates the benefits of longer term group work which has strong informal aspects. Initial attempts to initiate a group focused on self-empowerment proved fruitless and it was only when residents came together in a more informal setting that the original goal of the project became attainable. What worked was not the coercion of a group of strangers to tackle commonly held concerns but rather it was the building of relationships, through social activities, that generated self-esteem, mutual respect and confidence that led to action. This led the authors to conclude:

[T]he expectation that people would openly share thoughts and feelings on such emotionally laden topics as loneliness... was probably unrealistic. (p. 53)

This supports the notion that individuals may be wary or resistant of tackling the topic of loneliness directly, due to its stigmatising nature (Griffin, 2010, p. 3; Peplau &

Perlman, 1982, p. 3; Victor et al., 2009, p. 37). Andersson (1998) advises that intervention goals should not be on loneliness itself but to prevent loneliness 'evolving into other serious problems' (p. 270). Hawkey, Preacher, and Cacioppo (2007) fear that gathering a group of lonely people together may increase negative affect. The authors state:

[T]he tendency of negativity to be self-reinforcing fosters greater negativity in interactions and affect among lonely individuals. (p. 571)

A further challenge, therefore, for those carrying out group work with lonely individuals is the need to consider how individuals' negative perceptions may impact on the programme's effectiveness.

Only one study in this review assessed the impact of attending day centres in addressing loneliness (Iecovich & Biderman, 2012). Whilst this study did not find a significant difference in loneliness between those attending and a control group, it is worth considering the characteristics of those in attendance. Day centre attendees were much more likely to be widowed (72.4% against 46.4%) and live alone (56.1% against 36.2%). As loneliness is often characterized by these variables, perhaps the significant finding is the lack of difference in the cross-sectional loneliness scores between the two cohorts. In addition, the researchers' findings that, in both intervention and control group, those who rated their health and economic status as poor were more likely to have higher loneliness scores supports the idea that poor physical health and a lack of financial resources are serious impediments to an older individual.

Another study by Aday, Kehoe, and Farney (2006) found that attendance at senior centres encouraged older women who lived alone to become more independent with nearly 90% reported making new friends, but the researchers did not specifically measure loneliness. Tse and Howie's (2005) qualitative interviews with eight day centre attendees identified the importance of companionship and that attendance helped 'minimise feelings of loneliness' (p. 137). Whilst participants expressed dissatisfaction with some aspects of the service, e.g. the 'child-like' activities, the authors concluded from their survey that 'the benefits of attending far outweighed the dissatisfactions' (p. 138).

A concern about the articles identified was that 7 of the 17 studies did not use a validated loneliness scale. In some cases, this was because the research was couched in positive terms and was more interested in improvements in social support than loneliness per se. For example, Sum et al. (2009) were most interested in how Internet usage improved individuals' sense of community, whilst Greaves and Farbus (2006) and Dickens et al. (2011) wanted to know how social engagement helped reduce depression. Whilst loneliness was not explicitly addressed, Greaves and Farbus (2006) did report a significant improvement in their measurement of social support. On other occasions, the tool used was ineffective in being able to reach conclusions. Anstadt and Byster's (2009)

research into an innovative community connections group between older people and international students used only a non-validated three-item questionnaire to survey satisfaction with the older clientele, whilst Bell et al. (2011) concluded that their study had perhaps not used the most appropriate instrument.

It can be argued that measuring loneliness is not always the most effective way of analysing the social needs of individuals. Masi et al. (2011) are concerned that interventions that reduce social isolation do not necessarily reduce loneliness, supporting not only Weiss' contention that there are different types of loneliness, but also Victor et al.'s (2009) assertion that social isolation is distinct from loneliness. They also felt that introducing opportunities for social interaction were not as sufficient as interventions 'enhancing social support or addressing abnormal social cognition' (p. 257).

Two studies that did not find changes in loneliness did report significant improvements in friendships (Martina & Stevens, 2006; Routasalo et al., 2009).

There are additional concerns about the findings. The four studies that reported reductions in loneliness were with relatively small experimental populations – Creswell et al. (2012), for example, conclude that their study provides an 'initial indication' (p. 1100) into the effectiveness of their model – only 20 participants were measured and, of these, only 16 completed the programme – and Kahlbaugh et al. (2011) refer to their own work as 'small-scale' (p. 341). The largest of the four interventions (Tsai & Tsai, 2011) involved 40 active participants and 50 control subjects, though even here 35 individuals did not complete the study. In addition, the authors noted that the mean age of control group participants was almost 6 years older than the experimental group and this may have impacted upon the findings. Therefore, there may be concern about generalising these findings to a wider population.

As well as the fact that only 16 of Creswell et al.'s (2012) group members completed the introduced programme, those participating were relatively young (a mean age of 64.35) and were recorded as being 'healthy' at baseline. As other studies have demonstrated, the health of an older person often has an impact on their perceptions of loneliness.

The range of age of participants in these studies is also worth noting. There is much debate about when someone becomes 'old'. Twelve of the 17 studies in this review recorded the range of ages, with six identifying that their participants included those in their 50s (as young, in one case, as 52). In addition to Creswell et al. (2012), of the 10 studies that reported a mean average age, two others had populations with means of under 65 (Kremers et al., 2007; Martina & Stevens, 2006). Whilst Tsai and Tsai (2011) did not record a mean average age, they identified that 48% of their sample were under 65.

Whilst the terms of the search only identified three studies that attempted to measure the impact of one-to-one interventions, numerous qualitative studies published during the timescale reveal that this method is used in various settings. Cattan, Kime, and Bagnall (2011), for

example, reported positive responses from their sample of participants in a telephone befriending scheme, whilst Andrews, Gavin, Begley, and Brodie (2003) highlighted another befriending service that helped ameliorate loneliness and enhanced reciprocal relationships in a cohort of frail older people (with a mean age of 86.5) who had become largely socially inactive.

The distinctive elements of quantitative and qualitative reporting are highlighted by two studies. Butler's (2006) research involved a mixed methodology. Whilst Butler's use of the University of California Los Angeles (UCLA) loneliness scale reported a below average scoring for her participants in terms of loneliness (a mean of 31, the author stating that a typical score for those between 60 and 80 years of age being between 32 and 37), the smaller cohort interviewed as part of the qualitative element of the research revealed 'significant isolation and loneliness for some clients' (p. 63). In addition, Routasalo et al.'s (2009) study was supplemented by Savikko et al.'s (2010) qualitative findings. Whilst the use of the UCLA loneliness scale outlined no significant changes for participants in their group intervention (Routasalo et al.), Savikko et al. reported that 95% of those taking part felt that their loneliness had been alleviated by the programme (75% at three-month follow-up). This apparent discrepancy was highlighted by Routasalo et al. when they queried whether the UCLA scale was 'insensitive to change' (p. 301).

This kind of difficulty with sensitivity has been highlighted elsewhere. Franklin (2009) also observes a greater likelihood for those to disclose loneliness in qualitative rather than quantitative research. Routasalo et al. (2009) queried whether the 'shameful' (p. 301) subject of loneliness is something that is not easily disclosed but may become more readily discussed in an interview context. Perhaps a brief scale will always struggle to fully capture a concept that may well be teased out in a longer interview, where some trust has been gained.

Limitations

It was only possible to use seven databases, and whilst these were selected using expert librarian advice as being most suitable further studies might have been retrieved by searching additional databases such as AgeInfo, Social Care Online and even World Wide Web search engines (cf. McFadden, Taylor, Campbell, & McQuilkin, 2012). However AgeInfo and Social Care Online are small databases compared to the ones employed in this review, and the potential for generic web search engines for academic purposes is not yet established.

Although the sensitivity achieved by the search process was very reasonable, it should be noted that the search methodology used did not identify 6 of the 17 articles surveyed in this report. Whilst this indicates that a systematic database search should not be relied upon to find all relevant research, in this case, the broad search terms used by the researcher in the seven database searches may have contributed to why these articles were not recovered. In contrast to McFadden et al.'s (2012) comprehensive searching, which involved in PsycInfo, for

example, 86 search terms, this search limited itself not only to broader terms, but also to key terms – indeed, noted above is the fact that, with the use of truncations, initial returns produced a larger number of items with many more irrelevant articles. The authors of that study also recognise that their own search, regarding stress and resilience in social workers, was difficult to define and therefore produced lower levels of precision and sensitivity. By contrast, Taylor et al.'s (2007) search on older people and institutional care produced levels of precision and sensitivity similar to this study. However, it must be conceded that the lack of use of truncations could explain why some relevant articles were not found.

Conclusion

A wide systematic approach can be helpful in identifying the more effective interventions and thus, for practitioners, highlight and advise upon the approaches for which scarce resources should be allocated (Taylor, 2012).

There was limited evidence of the effectiveness of one-to-one interventions on the basis of the three studies examined. One structured group work intervention was found to be effective. The highlight of this review, however, was that three of the four interventions demonstrating measurable effect on reducing loneliness amongst older people involved introducing new technologies. Whilst these studies reported relatively small numbers and may not be generalizable to a larger population, these investigations do highlight the need for further research to be conducted in this particular area. As society develops more sophisticated methods of indirect communication and contact, research into technological responses to loneliness is especially pertinent. This deserves a more concentrated focus for older people as well as for others so as to create a more inclusive society with stronger social communication that engages older people and produces benefit to their well-being.

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