



Volunteering and Health: What Impact Does It Really Have?

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Volunteering and Health: What Impact Does It Really Have?

Final Report to Volunteering England

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Summary

This interim report describes a systematic review undertaken on behalf of Volunteering England to ascertain the health effects of volunteering on individual volunteers and on health service users. 24,966 potentially relevant articles were identified from database searches, and of these 87 papers meeting the inclusion criteria were reviewed. A range of quantitative and qualitative methodologies and study designs were found, and methodological quality varied considerably.

Overall, this review has found qualified evidence that volunteering can deliver health benefits both to volunteers and to health service users.

Volunteering was shown to decrease mortality and to improve self-rated health, mental health, life satisfaction, the ability to carry out activities of daily living without functional impairment, social support and interaction, healthy behaviours and the ability to cope with one's own illness.

There was also evidence of activities in which volunteers can make a difference to the health and well-being of service users. Outcomes for service users included increased self esteem, improved disease management and acceptance, increased breastfeeding and better parenting skills, mental health, survival time for hospice patients, adoption of healthy behaviours, concordance with medical treatments, and improved relationships with health care professionals.

It should be stressed that the volunteering programmes were highly context-dependent, and any success or failure of an intervention may have been a result of other aspects of the programme or of the ways that volunteers were trained and managed. Further research on the training and management of volunteers in healthcare settings, and a UK-based longitudinal study of the health of volunteers, are needed.

Table of Contents

<i>Volunteering and Health: What Impact Does It Really Have?</i>	1
<i>Final Report to Volunteering England</i>	2
<i>Summary</i>	3
<i>Table of Contents</i>	4
<i>Introduction</i>	6
Rationale for review	6
Volunteering and health: Theoretical overview	6
Impact on volunteer health	6
Impact on service delivery	7
Statement of research questions	8
<i>Methods</i>	10
Definitions	10
Databases and Search criteria	10
Inclusion criteria and procedure for manual selection of articles	10
Data extraction	11
Critical appraisal	12
Summarising results	14
<i>Findings</i>	15
Effects on health of volunteers	15
Outcomes	15
Contextual factors	16
Methodologies	17
<i>Controlled trials</i>	17
<i>Uncontrolled longitudinal studies</i>	17
<i>Cross-sectional studies</i>	18
<i>Qualitative studies</i>	18
Effects on health of service users	19
Outcomes	19
Contextual Factors	20
Methodologies	21
<i>Controlled trials</i>	21
<i>Uncontrolled longitudinal studies</i>	21
<i>Cross-sectional studies</i>	21
<i>Qualitative studies</i>	21
<i>Systematic review evidence</i>	22
<i>Economic analyses</i>	23

<i>Discussion</i>	24
Health impact for volunteers	24
Health impact for service users	24
Contextual factors	24
Directions for future research	25
<i>References</i>	26
<i>Appendix 2 – Qualitative data extraction form</i>	34
<i>Appendix 3 – Quantitative data extraction form</i>	37
<i>Appendix 4 – Systematic review data extraction form</i>	43
<i>Appendix 5 – Search flow diagram</i>	46
Appendix 6. Summary tables for studies included in the systematic review.	47
Table 1: Uncontrolled longitudinal studies of health effects on volunteers (n=17)	47
Table 2: Cross-sectional studies of health effects on volunteers (n=10)	63
Table 3: Qualitative evidence of health effects on volunteers (n=16)	68
Table 4: Controlled studies of health effects on service users (n=15)	73
Table 5: Uncontrolled longitudinal studies of health effects on service users (n=9)	83
Table 6: Cross-sectional studies of health effects on service users (n=3)	89
Table 7: Qualitative evidence of health effects on service users (n=19)	91
Table 8: Systematic review evidence of health effects on service users (n=4)	98
Table 9. Economic / cost-benefit analysis of volunteering in health settings (n=3)	101

Introduction

Rationale for review

Although health has been revealed as a supplementary and important issue for many volunteer involving organizations, there has not been a clear focus on the relationship of volunteering and health. Many volunteers and organizations cite anecdotal evidence that volunteering is good for health, and there is growing research and policy interest in examining the health effects of volunteering (Jones, 2004; Neuberger, 2008). Given the increasing emphasis on partnerships and volunteering in health service provision (Department of Health, 2004; Department of Health, 2007), it is very timely that research which examines the relationships between volunteering and health are now drawn together, consolidated and provided with a more systematic and rigorous review. This research will help to inform policy, and form an important basis for longer-term, substantial, cross sector research.

A few reviews have already been conducted on particular aspects of volunteering and health, such as end-of-life care (Wilson, Justice et al., 2005), mental health (Howlett, 2004), and the health of older volunteers (Onyx and Warburton, 2003). However, these reviews do not explicitly examine health outcomes or are not systematic reviews, and a systematic review examining in detail the impact of volunteering across the health sector and the health of volunteers is still needed.

Volunteering and health: Theoretical overview

Impact on volunteer health

The literature on the impact of volunteering activity on the health of volunteers has largely been informed by social integration theory (Musick and Wilson, 2003; Li and Ferraro, 2005; Choi and Bohman, 2007), which posits that multiple social roles provide meaning and purpose in life, promote social support and interactions, and thus contribute to feelings of well-being and offer psychosocial resources that can be drawn on in the face of disease or ill health. Because volunteering roles are typically valued by society and carry positive associations with altruism and contribution, engaging in these roles may be even more effective in promoting feelings of self-worth. Interestingly, volunteering appears to have acquired normative connotations as something 'good' which will 'do good' (cf. Harris and Thoresen, 2005; Ronel, 2006). Taking on a socially valued role increases self-esteem, thereby producing an increased sense of well-being (Wuthnow, 1991 cited in Musick and Wilson, 2003).

Activity theory (Lemon, Bengtson and Peterson, 1972, Kart and Longino, 1982 cited in Luoh and Herzog, 2002) suggests that remaining active and socially engaged in old age is important for identity and well-being. More recent theories (Herzog and House, 1991, Rowe and Kahn, 1998 cited in Luoh and Herzog, 2002) have emphasised the importance of productive activities.

Adaptation theories (Baltes and Baltes 1990, Brim 1998 cited in Luoh and Herzog, 2002) and continuity theories (Greenfield and Marks, 2007) describe how older adults adjust to the declining importance of major life roles by finding alternative productive activities in which they feel competent and give a sense of continuity (Atchley 1989 cited in Luoh and Herzog, 2002).

Piliavin and Siegl (2007) differentiate between hedonic (feeling good about one's situation in life) and eudaimonic (feeling good *about oneself*) well-being. Whilst social activities and hobbies can contribute to the former, other-oriented activity such as volunteering adds to the latter, enabling the individual not only to enjoy the activity itself but to have a greater sense of satisfaction in feeling that they are making a contribution to wider society. It is Piliavin and Siegl's contention that it is this focus *outside oneself* which can make the greatest contribution to mental health and well-being, not just as a result of enhanced self-esteem but as a result of 'mattering': feeling that we are a significant part of the world around us and that people notice, care about and value our existence (Rosenberg and McCullough, 1981 cited in Piliavin and Siegl, 2007).

These ideas are sometimes explicitly formulated into a 'roles theory' perspective (Morrow-Howell, Hinterlong et al., 2003; Greenfield and Marks, 2004; Lum and Lightfoot, 2005; Li and Ferraro, 2006a), positing that multiple roles may enhance one another and contribute to a sense of role-identity, and that volunteering may replace role-identities that are lost when, for instance, an older person no longer has the same responsibilities for caring for family members as before. On the other hand, multiple roles may compete with one another for individual capacity, and may result in 'role strain,' which could counteract the role enhancement effect (Rozario, Morrow-Howell et al., 2004; Li and Ferraro, 2006a; Hinterlong, Morrow-Howell et al., 2007). Burnout may be a serious problem for volunteers in certain roles, as examined by Gabassi (2002). It may be that the benefits of volunteering are ameliorated when the activity consumes a large amount of time, as role strain and burnout become more likely (Van Willigen, 2000, cited in Morrow-Howell, Hinterlong et al., 2003).

It is thus apparent that one might expect different health effects – positive or negative – from volunteering, depending on the life circumstances of the volunteer.

Impact on service delivery

Because the roles performed by volunteers in the health care sector are diverse, it is likely that the benefits to health service users will vary, depending on the context of volunteering. Generalisation is likely to be difficult. Nonetheless, the Commission on the Future of Volunteering (2008, cited in Neuberger, 2008) has highlighted the following unique benefits that volunteers can offer to the health service sector, which can serve as a basis for investigating potential benefits to service users:

1. Peer support – 'a user voice and expertise as former patients'

2. Ownership by user communities
3. A personal, human touch
4. Actual health benefits to individuals (as discussed for volunteers in the section above)
5. Innovation and fresh perspectives
6. Source of local and other knowledge
7. Community cohesion and strengthening – social capital (Blakeley et al., 2006)

In addition, volunteers may act as intermediaries between health professionals and service users or other agencies. They may be seen as less constrained by professional roles, and therefore able to engender a greater sense of trust and intimacy than paid professionals; in certain settings, such relationships could be advantageous for health and well-being of both volunteers and service users.

Lay-led self-help and self-management groups (reviewed by Coppa and Boyle, 2003) represent a situation in which participants are acting as both volunteer and service user. Thus, roles theory, altruism, peer support, relationships, ownership by user communities and special experiential knowledge of conditions may all be important pathways to health and well-being for group participants.

Statement of research questions

The purpose of this research is to conduct a systematic review of the literature on the health effects of volunteering (on individual volunteers and on health service users).¹ This review will analyse the methodology and scientific validity and reliability of studies reported in the literature, to evaluate the current evidence base for claims about the relationship between health and volunteering.

Questions: (1) What impact does volunteering have on the health and well-being of volunteers? (2) What impact do volunteers have on health service delivery? These questions are much broader than those typically investigated in a systematic review, but this is justified by the paucity of research and review articles available on volunteering and health.

Populations: Reviewed articles are mostly from UK, USA, Canada, Australia and New Zealand; however, the databases used also include European and Asian English-language journals, and articles from other countries otherwise meeting the inclusion criteria were included. Studies of volunteering in developing countries were not included. No other restrictions on population (e.g., age or gender) were imposed.

¹ We had originally intended to address a third research question, to describe the range of volunteers' roles in health service delivery/support/promotion described in academic publications on volunteering and health. However, this question was dropped as a formal aim of the project, because the review methodology would have resulted in a bias toward volunteering settings of particular interest to researchers, rather than describing the full range of health-related volunteering contexts. We do, nonetheless, describe the settings of volunteering interventions that are discussed in this review.

Interventions: Volunteering is considered for purposes of this review as a health intervention. For question (1) volunteering activity in any sector is considered. For question (2), volunteering in health service delivery, health care, health promotion, health education (including the Expert Patients Programme) or health advocacy is considered.

Outcomes: Health-related outcomes include physical morbidity and mortality, mental health, subjective experiences and health-related quality-of-life, and well-being.

Methods

Definitions

Volunteering is defined in this review as unpaid activity undertaken voluntarily for the benefit of the wider community (Volunteering England Information Team, 2006) and can include those who may not define themselves as 'a volunteer' (e.g., members of the Expert Patients Programme and community participation representatives). Studies of 'volunteers' who were paid any compensation beyond reimbursement of expenses (e.g., travel) were therefore excluded. Unpaid caregivers looking after their own relatives were also not considered volunteers, unless they were also participating in some other activity with the aim of benefitting the wider community.

We have used here a broad definition of health, in accordance with the World Health Organization definition: 'Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (World Health Organization, 1946). Therefore, physical, mental and psychosocial health indicators have all been considered, as have qualitative findings relating to physical, mental or social health, health-related quality of life and well-being. Studies measuring health-related knowledge or behaviours have been included, but not outcomes of training for health professionals. Health service implications such as cost-effectiveness have also been considered (though were rarely reported in the reviewed studies).

Databases and Search criteria

Relevant academic and scientific articles published since 1997 were identified, in order to update a recent report from the Centre for Reviews and Dissemination (King, Bridle et al., 2002). The following databases were searched: EMBASE, MEDLINE, CINAHL, ArticleFirst, ERIC, International Bibliography of the Social Sciences, Social Sciences Citation Index from Web of Knowledge, EBM Reviews (Cochrane DSR, ACP Journal Club, DARE, CCTR, CMR, HTA, and NHSEED), Business Source Premiere, Social Care Online (formerly Caredata). Articles written in English, using the terms 'health,' 'NHS', 'service delivery,' 'healthy,' 'medical,' 'hospital,' 'acute care,' 'chronic,' 'long-term conditions,' 'primary care,' and 'patient,' were selected. These terms were combined with the search terms 'volunteer\$' (to include such derivatives as volunteering and volunteers), 'EPP', 'expert patient'. Articles with the terms 'healthy volunteers' or 'healthy human volunteers' were excluded, because these pertained to medical trials using volunteer research participants.

EndNote version X (Thomson Scientific, 2006) was used to facilitate reference collation, retrieval, and sharing among members of the project team. The search process was thoroughly logged, and all unfiltered search results were saved.

Inclusion criteria and procedure for manual selection of articles

A manual review of the titles and abstracts thus obtained was then conducted to select and retrieve all articles representing original research on the impact of volunteers in health settings, or on the health or mental health effects of volunteering on individual volunteers (in any setting). We devised a flowchart (Appendix 1) for determining eligibility for inclusion, and entered keywords into the EndNote

database for included articles, to make data retrieval easier at the summary stage. We included evidence from existing systematic reviews where, like the primary studies, these assessed the health and/or wellbeing effects of volunteering on volunteers or patients. Only systematic reviews of empirical studies (qualitative or quantitative) were included (see Box 1). Studies evaluating volunteering programmes primarily in a developing country context were excluded at this stage, as this context falls outside the remit of Volunteering England's activities. Furthermore, to be included in this review, an evaluation of a programme involving volunteers had to investigate a health outcome in relation to the volunteering itself, and not just to the overall programme (which may have had many other facets responsible for the effects observed).

Box 1: What is a systematic review?

To be included in our analysis, reviews had only to meet the two mandatory criteria for admission to the Database of Abstracts of Reviews of Effects (DARE): they had to address a well defined question, and the authors had to have made an effort to identify all relevant literature by searching at least one named database combined with either checking references, hand-searching, citation searching, or contacting authors in the field. We defined reviews as 'systematic' if at least two components (interventions, participants, outcomes, or study designs) of the review question were explicitly or implicitly defined. Database of Abstracts of Reviews of Effects (DARE) available at <http://www.york.ac.uk/inst/crd/faq4.htm> [accessed 28th March 2008]

All manual filters were performed independently by two members of the review team, in order to ensure consistency and that relevant articles were not missed, and disagreements were resolved by discussion.

All articles meeting the search criteria from manual inspection of abstracts were ordered and read. Papers that did not meet the inclusion criteria (e.g., did not include a health outcome or did not specifically examine the effects of volunteering) were excluded.

Data extraction

Due to time constraints, it has not been possible to date for all articles to be read and evaluated by more than one reader, but all data extraction and appraisals will be checked by a second reader for the final report. However, for this interim report the following measures were taken to ensure consistency and accuracy of data extraction: all members of the review team independently read, evaluated and compared responses for an initial set of five papers, in order to refine the protocol and ensure common practice across the review team; all decisions to exclude an article were discussed among two or more members of the review team; methodologically sophisticated or complicated studies were read by at least two readers and data extraction checked by one member of the review team (CB).

Separate data extraction and appraisal forms for qualitative (Appendix 2) and quantitative (Appendix 3) studies were devised. These forms were completed for each study meeting the inclusion criteria, and included spaces to report health measures used, details of the volunteering programme (if applicable), results, and

critical evaluation. Any health-related outcomes (broadly defined, as above) of volunteering (as defined above) were transferred to the data extraction forms. For the systematic reviews, the following data were extracted and recorded: review details (authors, year), intervention, search strategy (including number of sources used, language and dates), inclusion/exclusion criteria (participants, outcomes and study designs), number of studies and bibliographic details of each study included in the review, outcomes evaluated, methods used to synthesise the findings, and the results obtained. A copy of the data extraction form for systematic reviews is in Appendix 4.

Critical appraisal

In addition to reporting the findings of the reviewed studies, we also performed a critical appraisal of the methodology and extent to which conclusions were justified by the findings. Separate assessment criteria were devised for qualitative and quantitative studies. The quality appraisal checklists (Boxes 2- 4) were used for descriptive purposes only and to highlight variations in the quality of studies, with the numbers given in the tables (Results) representing satisfactory fulfilment of the corresponding criterion. No quality score was calculated and reviews were not excluded on the basis of quality. Quality was assessed by one reviewer and checked by a second. Any discrepancies were resolved by consensus and if necessary a third reviewer was consulted.

The inclusion of qualitative research to enhance the salience and quality of a systematic review, help to define the interventions and outcome measures, and allow for data on the subject experiences of research participants to be incorporated into the review, is now widely accepted (Centre for Reviews and Dissemination, 2001). The criteria for evaluating qualitative research outlined by Whittemore, Chase and Mandle (2001) and by Popay, Rogers et al. (1998) were used to develop the quality appraisal checklist (Box 2). Qualitative papers were appraised for explicitness of research aims, appropriateness of research design; sampling (appropriateness and ability to produce generalisable or typical findings); methods of data collection and analysis; detail, authenticity and credibility of findings; conclusions (whether justified by the findings); consideration of limitations; and researcher reflexivity. A copy of the critical appraisal form for qualitative studies is included in Appendix 2.

Box 2: Critical Appraisal Checklist – Qualitative Studies

1. Was there a clear statement of the research question and aims?
2. Was the research design (qualitative) appropriate to address the aims of the research?
3. Does the sample produce the type of knowledge necessary to understand the structures and processes within which the individuals or situations are located?
4. Were the data collected in a way that addressed the research issue?
5. Are the data analysis methods appropriate to the subject matter?
6. Is the description of the findings provided in enough detail and depth to allow interpretation of the meanings and context of what is being studied?
7. Are the conclusions justified by the results?
8. Have the limitations of the study and their impact on the findings been taken into account?
9. Has the relationship between researcher and participants been

The quality of quantitative studies was evaluated using criteria appropriate for observational studies or controlled studies. Studies in which no comparison was made between volunteering and non-volunteering groups, or before and after an intervention involving volunteers, were excluded or, if appropriate, treated as qualitative. We considered whether the study was prospective, whether based on a representative sample and (for controlled studies) appropriate control group (random or appropriately matched control), baseline and follow-up response rates, substantiation of conclusions by the data in the results, exploration or adjustment for effects of potentially important confounding factors, and appropriateness of statistical tests (Box 3). A copy of the critical appraisal form is included in Appendix 3.

The methodological quality of each included systematic review was assessed using a checklist list adapted from CRD's criteria for the Database of Abstracts of Reviews of Effects (DARE). A copy of the critical appraisal form is in Appendix 4.

Box 3: Critical Appraisal Checklist – Quantitative Studies

1. Is the study prospective?
2. Is the study based on a representative sample selected from a relevant population? (include random samples, adequately justified purposive sampling, or 100% samples as 'representative')
3. Does the study use an appropriate control or comparison group? (e.g. random allocation or appropriately matched control)
4. Is the baseline response equal or greater than 60% of initial sample?
5. Is (a) the follow-up rate in a cohort study equal to or greater than 80% of the baseline response, or (b) is each follow-up survey in a repeat cross-sectional study equal to or greater than 60% of the follow-up sample?
6. Are the effects of non-responses and/or drop-outs explored?
7. Are the authors conclusions' substantiated by the data in their results (note that if the results contain insufficient data to verify the authors' conclusion, the answer is 'no')?
8. Are the effects of potentially important confounding factors explored?
9. Were all members of the study population (or intervention group)

Box 4: Critical Appraisal Checklist – Systematic Reviews

1. Is there a well-defined question?
2. Is there a defined search strategy?
3. Are inclusion/exclusion criteria stated?
4. Are study designs and number of studies clearly stated?
5. Have the primary studies been quality assessed?
6. Have the studies been appropriately synthesised?
7. Has more than one author been involved in each stage of the review process?

Summarising results

Data extraction and appraisal forms were collated separately for each of the research questions (health outcomes for volunteers and health outcomes for patients/clients), with a few studies being included under both groups.

The review offers descriptive but not quantitative synthesis, as the variety of outcome measures and study designs is not appropriate to statistical meta-analysis.

Tabulation is used to show study designs, populations, contexts, outcomes, quality, sample sizes, analytical methods, results, and whether any important information is lacking in the studies. The discussion highlighted studies deemed to be of high quality and validity, according to the criteria described above. Similarities and differences between studies were highlighted, and findings summarized across studies. Contradictory findings were discussed, and possible reasons for them sought.

Findings

The search strategy identified 24,966 articles in total (see Appendix 5), 87 of which met our criteria and were included in the final analysis. Tables summarising the design, findings and quality appraisal of each included study are provided in Appendix 6. Some studies are included in more than one table, if they addressed both the health of volunteers and of service users, or if they used multiple methods.

Effects on health of volunteers

Outcomes

The studies reviewed in this systematic review showed overwhelmingly that, at least under certain circumstances, volunteering has a salubrious effect on volunteers. Outcomes that were shown to improve with volunteering included self-rated health (Davis, Leveille et al., 1998; Van Willigen, 2000; Thoits and Hewitt, 2001; Luoh and Herzog, 2002; Morrow-Howell, Hinterlong et al., 2003; Yuen, Burik et al., 2004; Fitzpatrick, Gitelson et al., 2005; Lum and Lightfoot, 2005; Wu, Tang et al., 2005; Piliavin and Siegl, 2007), depression (Musick, Herzog et al., 1999; Thoits and Hewitt, 2001; Morrow-Howell, Hinterlong et al., 2003; Yuen, Burik et al., 2004; Li and Ferraro, 2005; Lum and Lightfoot, 2005; Li and Ferraro, 2006b; Li, 2007), mortality (Oman, Thoresen et al., 1999; Luoh and Herzog, 2002; Musick and Wilson, 2003; Lum and Lightfoot, 2005), ability to carry out activities of daily living without functional impairment (Thoits and Hewitt, 2001; Luoh and Herzog, 2002; Lum and Lightfoot, 2005), life satisfaction (Van Willigen, 2000; Thoits and Hewitt, 2001), stress (Field, Hernandez-Reif et al., 1998; Shannon and Bourque, 2005; Hulbert and Morrison, 2006), family functioning (Jirovec, 2005), social support and interaction (Hainsworth, Barlow et al., 2001; Burger and Teets, 2004; Leung and Arthur, 2004; Fitzpatrick, Gitelson et al., 2005; Messias, De Jong et al., 2005), pain (Arnstein, Vidal et al., 2002), burnout/emotional exhaustion (relative to paid professionals) (Gabassi, Cervai et al., 2002), affect (Greenfield and Marks, 2004), self-efficacy ratings (Wu, Tang et al., 2005), psychological distress (Wu, Tang et al., 2005), life satisfaction/quality of life (Coppa and Boyle, 2003; Black and Living, 2004; Yuen, Burik et al., 2004; Wu, Tang et al., 2005; O'Shea, 2006), frequency of hospitalisation (Yuen, Burik et al., 2004), self esteem/'sense of purpose' (Clark, 2003; Raine, 2003; Ramirez-Valles and Brown, 2003; Leung and Arthur, 2004; Messias, De Jong et al., 2005; O'Shea, 2006; Richards, Bradshaw et al., 2007), ability to cope with the volunteer's own illness (Hainsworth, Barlow et al., 2001; Arnstein, Vidal et al., 2002; Clark, 2003; Coppa and Boyle, 2003; Black and Living, 2004; Leung and Arthur, 2004; Shannon and Bourque, 2005), and adoption of healthy lifestyles and practices such as HIV prevention behaviours (Ramirez-Valles and Brown, 2003), physical activity (Librett, Yore et al., 2005), and healthy levels of drinking (Weitzman and Kawachi, 2000).

The only study included in this review that highlighted a negative effect of volunteering (Ferrari, Luhrs et al., 2007) found lower caregiver satisfaction among eldercare volunteers than paid employees.

Contextual factors

The majority of the studies examining the health impacts of volunteering on volunteers related to volunteering in general, rather than in any particular setting or role (MacIntyre, Corradetti et al., 1999; Musick, Herzog et al., 1999; Oman, Thoresen et al., 1999; Van Willigen, 2000; Weitzman and Kawachi, 2000; Thoits and Hewitt, 2001; Clark, 2003; Morrow-Howell, Hinterlong et al., 2003; Musick and Wilson, 2003; Greenfield and Marks, 2004; Yuen, Burik et al., 2004; Harris and Thoresen, 2005; Jirovec, 2005; Li and Ferraro, 2005; Librett, Yore et al., 2005; Lum and Lightfoot, 2005; Wu, Tang et al., 2005; Li and Ferraro, 2006b; Li, 2007; Piliavin and Siegl, 2007). However, a few of these studies did distinguish between the types of organisations in which subjects were volunteering. For instance, Musick and Wilson (2003) found that church-related volunteering had a larger effect on depression than secular volunteering, and Librett and colleagues (2005) found that volunteers working on environmental projects were more likely to meet physical activity recommendations.

For those studies that did examine specific volunteering programmes with respect to the health and well-being of volunteers, it is instructive to note how often volunteers were involved in direct care and education of patients, as opposed to more auxiliary roles in health care settings. In the studies reviewed for this section, volunteers participated in peer support/self-help groups (Davis, Leveille et al., 1998; Arnstein, Vidal et al., 2002; Brunier, Graydon et al., 2002; Coppa and Boyle, 2003; Leung and Arthur, 2004) mentoring/teaching patients (a role that often overlaps with peer support) (Hainsworth, Barlow et al., 2001; Burger and Teets, 2004), providing massage to infants (Field, Hernandez-Reif et al., 1998), social support of older people (Fitzpatrick, Gitelson et al., 2005; O'Shea, 2006; Ferrari, Luhrs et al., 2007), organising activities for people with disabilities (Gabassi, Cervai et al., 2002), palliative/hospice care provision (Hulbert and Morrison, 2006), HIV/AIDS care, activism and education (Ramirez-Valles and Brown, 2003; Crook, Weir et al., 2006), tracing patients who had defaulted from psychiatric appointments (Richards, Bradshaw et al., 2007), and cancer support (including patient care, advocacy, fundraising, education) (Shannon and Bourque, 2005).

It is worth noting that among those studies describing a volunteering intervention that was peer or lay led or had an element of peer support, this was reported as being an important element of the programme (Arnstein, Vidal et al., 2002; Brunier, Graydon et al., 2002; Coppa and Boyle, 2003; Raine, 2003; Ramirez-Valles and Brown, 2003; Shannon and Bourque, 2005; Crook, Weir et al., 2006). We found these loosely broke down into two groups, in direct or mutual support within lay-lead self-management programmes (Arnstein, Vidal et al., 2002; Coppa and Boyle, 2003), or peers providing support, namely, counselling support to renal patients (Brunier, Graydon et al., 2002), support and advice in the context of community support for HIV / Aids (Ramirez-Valles and Brown, 2003; Crook, Weir et al., 2006), breastfeeding support (Raine, 2003) or cancer support (Shannon and Bourque, 2005). While psychosocial benefits were reported for all volunteers within the category undertaking peer support, (such as reducing stress, feeling empowered, forming

valuable relationships), direct health benefits did seem to be expressed where there was evidence that a 'patient' took on a support or 'teaching' role that could act to reinforce their own coping strategies around their illnesses, be that in pain- or self-management (Arnstein, Vidal et al., 2002; Coppa and Boyle, 2003), practicing safer sex (Ramirez-Valles and Brown, 2003) or coping with having had cancer and reducing stress and anxiety (Shannon and Bourque, 2005). Indeed, in the papers on peer or lay lead support or intervention, the roles of volunteer and patient tended to merge, making it difficult to differentiate between effects of volunteering and effects of participating in a self-management programme. However, as Crook et al. (2006) and Arnstein et al. (2002) indicate, there has to be a balance between collective support provision which can be beneficial and condition management for the individual.

Other contextual factors appear to be important, as well. Older volunteers appear to derive greater benefit than younger volunteers (Van Willigen, 2000; Li and Ferraro, 2006b). Some studies showed that increasing number of hours spent volunteering yields greater health benefits up to a certain threshold (which differed among studies) (Van Willigen, 2000; Thoits and Hewitt, 2001; Li, 2007). It appears that increased time spent volunteering increases the health benefits, although at very high levels this effect may level off or even decrease (Van Willigen, 2000; Musick and Wilson, 2003). Different results were noted by Morrow-Howell et al. (2003) and by Luoh et al. (2002) with respect to the benefit of intensive volunteering (more than 100 hours per year). Whereas Morrow-Howell and colleagues found that increased volunteer hours related to greater well-being, but only up to 100 hours per year, Luoh and colleagues reported better health and lower mortality for those volunteering more than 100 hours per year, compared with both the less frequent and the non-volunteering groups. Likewise, volunteering for more than one organisation appears to have mixed effects, depending on the age of the volunteer, number of other commitments, and outcomes being measured (Musick, Herzog et al., 1999; Van Willigen, 2000; Morrow-Howell, Hinterlong et al., 2003).

Methodologies

Controlled trials

By definition, involvement in volunteering is self-motivated, so it is difficult to envisage how an experimental study would be designed. As expected, no controlled trials meeting the inclusion criteria and allocating participants to volunteering or non-volunteering groups were found. (An interesting set of papers based on the ExperienceCorps programme in Baltimore, USA, did allocate participants to groups, but were excluded because the 'volunteers' received payment (Fried, Carlson et al., 2004; Tan, Xue et al., 2006).

Uncontrolled longitudinal studies

We found seventeen papers based on longitudinal studies examining the health impact on volunteers that fitted our inclusion criteria (Table 1). All had a prospective study design. These papers were based on nine unique datasets, with several

papers performing different analyses on data from the same cohorts. The Americans Changing Lives study (Musick, Herzog et al., 1999; Van Willigen, 2000; Thoits and Hewitt, 2001; Morrow-Howell, Hinterlong et al., 2003; Musick and Wilson, 2003; Li and Ferraro, 2005; Li and Ferraro, 2006b; Li, 2007), the AHEAD study (Luoh and Herzog, 2002; Lum and Lightfoot, 2005), the Longitudinal Study of Aging (Harris and Thoresen, 2005), the Wisconsin Longitudinal Study (Piliavin and Siegl, 2007), and Oman's study of volunteering in California (Oman, Thoresen et al., 1999) were all based on representative samples from the USA and relied on self reports of volunteering activity.

Other studies were limited by very small sample sizes and observed changes in volunteers over time with no non-volunteering comparison group (Davis, Leveille et al., 1998; Field, Hernandez-Reif et al., 1998; Arnstein, Vidal et al., 2002; Brunier, Graydon et al., 2002). The failure of several of these studies to identify a significant effect of volunteering may be due to the small sample sizes involved (ranging from n=7 to n=31).

Cross-sectional studies

Ten cross-sectional studies meeting the inclusion criteria were found (Table 2). These studies investigated a range of volunteering settings. Although most of these studies did find better health measures among volunteers than non-volunteers, it must be noted that a cross-sectional study design cannot determine the direction of causation. That is, volunteers may be healthier because of the benefits conferred by volunteering, or it may be the case that healthier people are more likely to volunteer. It should also be noted that for the studies comparing stress and emotional exhaustion between volunteers and paid professionals, the workload and of the two groups were not necessarily comparable (Gabassi, Cervai et al., 2002; Hulbert and Morrison, 2006; Ferrari, Luhrs et al., 2007).

Qualitative studies

Sixteen papers presenting qualitative evidence met the inclusion criteria (Table 3). Although the methodological quality of the qualitative research was variable, as indicated in Table 3, these studies did provide in-depth detail as to the roles undertaken, and the feelings, emotions and outcomes of volunteering interventions for volunteers. Due to the diversity of the settings, cross comparisons were difficult to make. All qualitative studies detailed multiple benefits of the interventions, which were by and large related to psychosocial well-being (including feelings of well-being, self esteem or quality of life, confidence, feelings of being empowered to access additional services) rather than more directly measureable physical or mental health effects. Only four (Arnstein, Vidal et al., 2002; Black and Living, 2004; Crook, Weir et al., 2006; O'Shea, 2006) indicated any negative effects, but all of these seemed to report on balance the benefits outweighing the challenges. The qualitative reports also provided useful information on the type and range of volunteering contexts.

The other volunteering contexts included a general cross-sectional sample of volunteers from 4 voluntary organisations (Black and Living, 2004), mentoring for chronically ill patients (Burger and Teets, 2004), and community intergenerational skill sharing (Fees and Bradshaw, 2003).

Overwhelmingly, the benefits for volunteers reported in qualitative studies were of a psychosocial nature. Once the impact of these on measurable health outcomes of the volunteers is difficult to extrapolate further, although psychosocial benefits could lead to better overall quality of life and more pro-active and empowered accessing of additional services, including those that may relate directly to the health of the volunteers (see for example Coppa and Boyle, 2003). The issue of well-being related to forming positive relationships, feeling part of a wider community, and going beyond one's self and situation were detailed in the studies by Black and Living (2004) and Brunier, Graydon et al. (2002).

Effects on health of service users

Outcomes

It is more difficult to generalise about the effects of volunteering on service users than on volunteers, because the range of volunteering activities is so diverse and contextual factors are key in determining the success of volunteering interventions to improve service users' health. Nonetheless, it is possible to point to instances, documented in the studies reviewed, in which the activities of volunteers did make a difference to the health and well-being of service users. Outcomes for which an effect of a volunteer activity were shown include increased self-esteem and confidence (Hainsworth, Barlow et al., 2001), disease management and acceptance (Hainsworth, Barlow et al., 2001), increased breastfeeding uptake, duration, satisfaction or knowledge (Schafer, Vogel et al., 1998; Dennis, Hodnett et al., 2002), immunisation of children (Barnes, Friedman et al., 1999; Johnson, Molloy et al., 2000), improved mental health of children (Anderson, Lipman et al., 2006), parenting skills (Hiatt, Michalek et al., 2000; Johnson, Molloy et al., 2000; Barnett, Duggan et al., 2002), lower incidence of delirium (Caplan and Harper, 2007), longer survival times of hospice patients (Herbst-Damm and Kulik, 2005), improved cognitive function (Caplan and Harper, 2007), improved physical health and functioning (Edgar, Remmer et al., 2003; Coull, Taylor et al., 2004; Caplan and Harper, 2007), increased levels of physical activity (Parent and Fortin, 2000; Coull, Taylor et al., 2004), improved diet (Coull, Taylor et al., 2004), concordance with medications and clinic attendance (Beswick, Rees et al., 2004; Coull, Taylor et al., 2004; Richards, Bradshaw et al., 2007), reduced depression (Hainsworth, Barlow et al., 2001; Gruffy, Taylor et al., 2004), less need for hospital or outpatient treatment (Johnson, Molloy et al., 2000; Coull, Taylor et al., 2004), condom use (Hospers, Debets et al., 1999), life satisfaction (MacIntyre, Corradetti et al., 1999), social function, integration and support (Ashbury, Cameron et al., 1998; Bradshaw and Haddock, 1998; MacIntyre, Corradetti et al., 1999; Cheung and Ngan, 2000; Hiatt, Michalek et al., 2000; Burger

and Teets, 2004; Etkin, Prohaska et al., 2006; Legg, Stott et al., 2007), lower intensity of grief reactions (Ting, Li et al., 1999), mediation or improved relationships between patients and health professionals (Ashbury, Cameron et al., 1998; Taggart, Short et al., 2000; Stajduhar, Lindsey et al., 2002; Richards, Bradshaw et al., 2007), lower caregiver burden (Wishart, Macerollo et al., 2000), decreased anxiety (Dunn, Steginga et al., 1999; Cheung and Ngan, 2000; Parent and Fortin, 2000; Handy and Srinivasan, 2004; Gallagher, Tracey et al., 2005), and raised self-efficacy expectations (Parent and Fortin, 2000; Healy, Peng et al., 2008).

None of the quantitative studies found negative effects from volunteering, although a number of studies failed to demonstrate a statistically significant effect for some or all of the measured outcomes. Occasionally comments in the qualitative studies suggested minor negative aspects of a volunteering programme, primarily related to the amount of supervision required by staff (Giles, Bolch et al., 2006) or abandonment issues caused when a volunteer befriender left the programme (Goldman, 2002), but on balance the qualitative accounts were also positive about the impacts that volunteers could make in a health setting.

Contextual Factors

As in the studies assessing impacts of health on volunteers, the volunteering interventions reviewed here incorporated a wide range of settings and volunteer roles. One of the most frequently assessed roles was outreach to young or disadvantaged parents (including breastfeeding support and promotion) (Schafer, Vogel et al., 1998; Barnes, Friedman et al., 1999; Hiatt, Michalek et al., 2000; Johnson, Molloy et al., 2000; Taggart, Short et al., 2000; Barnett, Duggan et al., 2002; Dennis, Hodnett et al., 2002; Raine, 2003; Senturias, Walls et al., 2003; Graffy, Taylor et al., 2004). Two studies investigated a wide range of roles within hospitals, including fundraising and administration (Lin, Huang et al., 1999; Handy and Srinivasan, 2004). Other roles included cancer support (Edgar, Remmer et al., 2003), promotion of physical activity and exercise (Etkin, Prohaska et al., 2006; Batik, Phelan et al., 2008), tracing patients defaulting from psychiatric appointments (Richards, Bradshaw et al., 2007), visiting older people (Barnes, Curran et al., 1998; MacIntyre, Corradetti et al., 1999; Cheung and Ngan, 2000; Wishart, Macerollo et al., 2000; Goldman, 2002; Faulkner and Davies, 2005), lay health mentoring (Hainsworth, Barlow et al., 2001; Burger and Teets, 2004; Coull, Taylor et al., 2004), fall/fear of falling prevention (Giles, Bolch et al., 2006; Healy, Peng et al., 2008), befriending (Bradshaw and Haddock, 1998; Harris, Brown et al., 1999; Handy and Srinivasan, 2004; Ronel, 2006), HIV prevention and care (Hospers, Debets et al., 1999; Stajduhar, Lindsey et al., 2002), peer/lay support (Smith, McLeod et al., 1997; Ashbury, Cameron et al., 1998; Dunn, Steginga et al., 1999; Parent and Fortin, 2000; Hainsworth, Barlow et al., 2001; Campbell, Phaneuf et al., 2004; Newbould, Taylor et al., 2006; Legg, Stott et al., 2007), hospice support (Herbst-Damm and Kulik, 2005), bereavement counselling (Ting, Li et al., 1999; Gallagher, Tracey et al., 2005), and providing recreational programmes for children (Anderson, Lipman et al., 2006).

Although it was not an aim of this review to describe the managerial and training contexts of the volunteering interventions, a number of studies (e.g., Harris, Brown et al., 1999; MacIntyre, Corradetti et al., 1999; Ting, Li et al., 1999; Parent and Fortin, 2000; Fitzpatrick, Gitelson et al., 2005; Herbst-Damm and Kulik, 2005; Giles, Bolch et al., 2006; Macvean, White et al., 2008) did explicitly mention the importance of volunteer support and training, and of managers carefully matching volunteers and clients. Particularly in the qualitative studies, these contextual factors emerged as the most important determinant of the success of an intervention involving volunteers.

Methodologies

Controlled trials

Whereas we were able to find no controlled trials of the effects of volunteering on volunteers, we found fifteen controlled trials meeting the inclusion criteria and evaluating the impacts of volunteers on health service or para-health service users (Table 4). On the whole, these studies were methodologically rigorous, and many were randomised controlled trials (considered the 'gold standard' of medical research). Typically, the controlled trials compared groups receiving the volunteer intervention with groups receiving no special treatment, rather than the same intervention delivered by non-volunteers. Thus, the controlled trials lend some support to the ability of volunteers to deliver interventions that are beneficial to health, but do not address the question of whether volunteers are better or worse placed than paid staff to deliver such interventions.

Uncontrolled longitudinal studies

We found nine uncontrolled longitudinal studies assessing health outcomes of volunteering for service users (Table 5). As shown in the quality appraisal column of Table 5, the methodological quality of these studies was highly variable, with sample bias, attrition, lack of comparison group, and failure to explore confounding variables being the most common problems.

Cross-sectional studies

Only three cross-sectional studies evaluating health outcomes for service users met our inclusion criteria (Table 6). One of these studies evaluated service-level (rather than individual-level) outcomes (Allen, Klein et al., 2003), showing that nursing homes with a volunteer ombudsman (resident advisor) had higher rates of complaints than those without, but it is unclear whether a higher number of complaints is a positive outcome (because problems are more likely to be addressed) or a negative outcome (reflecting poorer service). As with the effects for volunteers, it is not possible with a cross-sectional study design to distinguish the direction of causality between volunteering and different health states.

Qualitative studies

Nineteen qualitative studies evaluating the impact of volunteering on service users were included in the review (Table 7). The quality varied widely, with two of the

studies receiving no points at all in our quality appraisal system. It is important to distinguish between those studies which deduced a health effect for service users from comments made by service users themselves (Smith, McLeod et al., 1997; Barnes, Curran et al., 1998; Bradshaw and Haddock, 1998; Dunn, Steginga et al., 1999; Lin, Huang et al., 1999; Taggart, Short et al., 2000; Goldman, 2002; Stajduhar, Lindsey et al., 2002; Raine, 2003; Burger and Teets, 2004; Faulkner and Davies, 2005; Gallagher, Tracey et al., 2005; Ronel, 2006; Legg, Stott et al., 2007), by family members (Stajduhar, Lindsey et al., 2002; Giles, Bolch et al., 2006), by volunteers (Barnes, Curran et al., 1998; Taggart, Short et al., 2000; Hainsworth, Barlow et al., 2001; Raine, 2003; Burger and Teets, 2004; Handy and Srinivasan, 2004; Faulkner and Davies, 2005; Giles, Bolch et al., 2006; Ronel, 2006), and by staff (Lin, Huang et al., 1999; Taggart, Short et al., 2000; Stajduhar, Lindsey et al., 2002; Raine, 2003; Handy and Srinivasan, 2004; Faulkner and Davies, 2005; Giles, Bolch et al., 2006). These perspectives offer different insights into the success of a volunteering programme. Volunteers reporting on the impact their own work had for their clients' well-being, may be subject to significant bias. However, volunteers occupy a unique space between patient and objective outsider, and this vantage point may give them unique insight into the effects of their activities.

More broadly, health related staff offered insight into the support in a health setting volunteers could provide (Handy and Srinivasan, 2004) and where volunteers take on a role to offer support, e.g. as 'peers' (Raine (2003) or 'intermediaries' in contexts where support between professionals and/or external agencies requires additional time/support that the volunteers could provide (Faulkner and Davies, 2005); Ronel, 2006); Giles et al., 2006). Volunteers 'taking time' to support or be with a patient, to listen, guide, feed or groom, or to provide a 'link to the outside world' etc. (see Faulkner and Davies, 2005; Handy and Srinivasan, 2004) appeared to be key and unique facets of volunteering in health settings. Although not stated directly, there were strong implications that these interventions could also lead to positive health outcomes for the participants.

Systematic review evidence

We found four systematic reviews which fitted our inclusion criteria (Table 8). All were narrative syntheses (rather than meta-analytical).

Beswick et al (Beswick, Rees et al., 2004) searched 12 databases up to 2001 and identified one study relevant to our topic, which found that visits from volunteers increased significantly the percentage of patients attending a cardiac rehabilitation appointment. The critical appraisal suggested that this was a well conducted review as it met all seven quality criteria.

Campbell and colleagues (Campbell, Phaneuf et al., 2004), examined the benefits, risks and barriers associated with peer support interventions provided by volunteer cancer survivors for current cancer patients in which health professionals had a facilitative non-directive role. They searched six databases from 1980-2002 for English language, peer review studies. They included 19 studies, eight of which were

qualitative (needs assessments, purposive interviews, focus groups) and eleven were quantitative (pre-post or post only surveys, with/without comparison groups, RCTs). The qualitative studies reported positive benefits of the intervention for both volunteers - increased empathy, hope, and reassurance - and patients - increased emotional support, empathy, hope, reassurance, understanding, and reduced uncertainty, stress and anxiety. The quantitative studies also reported improvements for patients in terms of increased social support, lower anxiety and depression, improved quality of life, and improvement in psychological morbidity. The critical appraisal suggested that this was a well conducted review as it met all seven quality criteria.

Macvean et al. (Macvean, White et al., 2008) searched 3 databases and identified 9 relevant studies on one-to-one volunteer support programmes for people with cancer. 3 uncontrolled studies found a reduction in anxiety, stress and depression, and an increase in well-being, among patients with volunteer support, while the 3 comparative studies found that the intervention group had better functioning, physical health and wellbeing, less pain and a higher quality of life, and the 3 RCTs reviewed showed mixed results, with two finding improvements in depression (and 1 in anxiety also), with the third finding no improvement in the volunteer support group (although a nurse support control did improve). The review met all quality criteria except statement of inclusion/exclusion criteria.

Finally, Newbould and colleagues (Newbould, Taylor et al., 2006) conducted a review of patients in lay-led self-management programmes, and through their search of 4 databases identified 7 relevant studies. Of these, 2 compared lay-led management programmes to professional-led programmes and found lower cost but no significant differences in self-reported disability for the intervention group. Compared with no treatment, 2 studies found sustained improvements in disability and depression. Three further studies had no comparison group but found decreases in pain and GP visits among the lay-led intervention group.

Economic analyses

Four studies reported on the financial contribution or a cost-benefit analysis of volunteering (Table 9). Most applied only a rudimentary methodology to calculate the impact of volunteering and provided only an estimate of the net value of donated time in a particular health setting. It is therefore difficult to extrapolate these findings to other settings. However, they do show that, in certain settings at least, volunteers do make a valuable and cost-effective contribution in addition to whatever health effects that they might proffer.

Discussion

Overall, this review has found qualified evidence that volunteering can deliver health benefits both to volunteers and to health service users.

Health impact for volunteers

Volunteering was shown to decrease mortality and to improve self-rated health, mental health, life satisfaction, the ability to carry out activities of daily living without functional impairment, social support and interaction, healthy behaviours and the ability to cope with one's own illness. The only study included in this review that highlighted a negative effect of volunteering (Ferrari, Luhrs et al., 2007) found lower caregiver satisfaction among eldercare volunteers than paid employees. However, the authors noted that this negative finding for volunteers may result from insufficient training of volunteers to deal with caregiver burdens in the eldercare setting, and recommend preventive programmes be put in place for volunteers.

Health impact for service users

There was also evidence of activities in which volunteers can make a difference to the health and well-being of service users. It should be stressed that the studies investigating health impacts for service users were highly context-dependent, and any success or failure of the intervention may have been a result of other aspects of the programme or of the ways that volunteers were trained and managed. Nonetheless, there was an impressive array of outcomes that volunteer activities were shown to benefit for service users. These outcomes include increased self esteem, improved disease management and acceptance, increased breastfeeding and better parenting skills, mental health, survival time for hospice patients, adoption of healthy behaviours, concordance with medical treatments, and improved relationships with health care professionals. None of the quantitative studies found negative effects from volunteering, although a number of studies failed to demonstrate a statistically significant effect for some or all of the measured outcomes. Occasionally comments in the qualitative studies suggested minor negative aspects of a volunteering programme, primarily related to the amount of supervision required by staff (Giles, Bolch et al., 2006) or abandonment issues caused when a volunteer befriender left the programme (Goldman, 2002), but on balance the qualitative accounts were also positive about the impacts that volunteers could make in a health setting.

Contextual factors

Although some of the larger studies did not distinguish between different types of volunteering, the majority make it very clear that contextual factors, such as the type of role played by the volunteer, the age and time commitment of the volunteer, and how well the volunteers are trained, managed, supported and matched with clients, are critical factors in establishing a healthy outcome from the volunteering. It is worth noting that among those studies describing a volunteering intervention that was peer or lay led or had an element of peer support, this was

reported as being an important element of the programme (Arnstein, Vidal et al., 2002; Brunier, Graydon et al., 2002; Coppa and Boyle, 2003; Raine, 2003; Ramirez-Valles and Brown, 2003; Shannon and Bourque, 2005; Crook, Weir et al., 2006). Volunteering was studied in a wide range of settings and activities, and very often volunteers were involved in direct care of patients. It is not clear to what extent these activities are representative of the full range of volunteering that currently takes place, as there may be other important forms of volunteering that have not yet attracted research attention.

Although it is outside the remit of this review to evaluate the impact of types of volunteering role on volunteers' health and well-being, it should be noted that volunteers' involvement in direct patient care is likely to have significant impacts on their health and well-being. On the one hand, this may be seen as a particularly important and valuable role, thus contributing to feelings of self-worth and 'mattering'. On the other hand, such experiences may be more demanding than auxiliary roles, and therefore render volunteers more prone to exhaustion and becoming emotionally overwhelmed. Providing adequate training and support for volunteers in such settings may therefore be particularly important.

Directions for future research

The majority of the research papers were from the USA including all of the large-scale longitudinal studies of health impacts on volunteers. Given that healthcare policy and practice are very different in the US and the UK, there might be important differences between the American findings and the UK situation. Further research on the health impacts for UK volunteers, particularly using large panel datasets, would help to evaluate how volunteering impacts on volunteers in a UK context. There is a precedent for studies testing the applicability of findings or programmes developed in one country to a different country setting: for instance, Dunn et al (1999) evaluated the Breast Cancer Support Service in Australia which has been developed throughout the world, and previously evaluated, under the name of Reach to Recovery International. Many of the context-specific studies reviewed here did not take place in the UK but could profitably be repeated in the UK to test their relevance in this context.

A further issue that was outside the remit of this review, but that emerged in many of the papers reviewed, was the significance of the training, management and support for volunteers. Observational studies of how volunteers are recruited, trained, managed and supported in UK healthcare settings would enable a description of current and best practice with respect to healthcare volunteer management. If the findings of this review are used to promote volunteering, and particularly volunteering in healthcare settings, then it will be increasingly important to ensure that there is a sound theoretical and evidence base for supporting volunteers to maximise their impact and benefit.

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Appendix 1 – Criteria for Inclusion in Volunteering and Health Systematic Review

Updated 25 Feb. 08

1. Is the article a report of original research?
 - a. **YES:** Go to Q2
 - b. **NO:** Exclude. If otherwise relevant and current, references may be searched manually. Paste to separate file for manual reference search.
2. Does the article relate to volunteers as defined for this project?
 - Unpaid
 - Activities undertaken voluntarily
 - For the benefit of the wider community
 - Excluding blood/organ donors and medical research subjects
 - a. **YES:** Go to Q3
 - b. **NO:** Exclude.
3. Does the article evaluate a health outcome?
 - a. **YES:** Enter one or both of the following code words in Research Notes field and go to Q4:
 - i. **Patient** (health outcome, including health education, mental health or wellbeing outcome, evaluated for patients/clients/service users)
 - ii. **Volunteer** (health outcome evaluated for volunteers)
 - b. **NO:** EXCLUDE.
4. Does the article describe volunteering in a health setting?
 - a. **YES:** assign to one or more of the following categories, entering the category code(s) (given in boldface below) into 'Research Notes' field in EndNote, then go to Q4
 - i. **Direct care** (direct volunteer involvement in delivery of health care)
 - ii. **Non-direct care** (volunteer involvement in a health care setting, but volunteers not directly involved with delivery of health care)
 - iii. **Education** (volunteer involvement in health education, health promotion, education or advice about access to health care)
 - iv. **Prevention** (volunteer involvement in preventative health care service delivery, e.g., smoking cessation, blood pressure monitoring)
 - v. **Patient representation** (volunteer involvement in user feedback to health service providers)
 - vi. **Self-help** (volunteer participation in self-help groups related to health)
 - vii. **NB:** Articles pertaining to **mental** health or should be assigned to one of the above categories, and have the label 'mental'

added to Research Notes field in addition to the relevant category code(s).

- viii. **NB:** If the setting is primarily economic development, then the article should be **excluded**.
- b. **NO:** Enter 'Not health setting' in Research Notes field (volunteering in a non-health setting – use this label only if Q4 answer is 'volunteer'; otherwise exclude).

This flowchart to be followed using titles and abstracts; all non-excluded articles to be obtained. The process to be repeated once articles obtained, as eligibility for inclusion cannot always be determined from abstract alone.

The Research Notes field can then be searched to identify articles relevant articles for each of the research questions:

Impact of volunteering on patient health / service delivery: Includes all articles with a health setting code (exclude articles with 'Not health setting') **AND** Patient outcome reported

Impact of volunteering on health of volunteers: Includes all articles with Volunteer outcome reported (regardless of setting)

Appendix 2 – Qualitative data extraction form

Volunteering and Health: What impact does it really have?

Qualitative Data Extraction and Critical Appraisal Form

A. Review details

1 st Reviewer	
2 nd Reviewer	
Date of extraction	
Date of checking	

B. Bibliographical details

Ctrl+K to copy and paste record from EndNote.

C. Programme details

		Page
City/region/Country		
What is the volunteer doing? (e.g. education/befriending)		
Where is the volunteer working? (e.g. hospice/community/school)		
Length of volunteering experience/programme/intervention, if known		
Background to volunteering programme (why was it		

implemented?)		
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D. Critical appraisal

			Yes/ No/ Not Sure
Research aims	Was there a clear statement of the research question and aims?	1	
Research design	Was the research design (qualitative) appropriate to address the aims of the research?	2	
Sampling	Does the sample produce the type of knowledge necessary to understand the structures and processes within which the individuals or situations are located?	3	
Data collection	Were the data collected in a way that addressed the research issue?	4	
Data analysis	Are the data analysis methods appropriate to the subject matter?	5	
Findings	Is the description of the findings provided in enough detail and depth to allow interpretation of the meanings and context of what is being studied?	6	
Conclusions	Are the conclusions justified by the results?	7	
Limitations	Have the limitations of the study and their impact on the findings been taken into account?	8	
Researcher reflexivity	Has the relationship between researcher and participants been adequately considered?	9	
Total Score			

E. Study details

		Page
Method (focus group, interviews etc)		
Design (cross-section, longitudinal)		
Sampling (e.g. snowball)		
Participant details (number, age, gender, role)		

F. Outcomes

		Page
Participant views on role of volunteering on health or wellbeing outcome for volunteers		
Participant views on role of volunteering on health or wellbeing outcome for patients/clients		
Views of volunteers about the volunteering programme		
Views of patients/clients about the volunteering programme		
Difference by demographic group or role?		

Appendix 3 – Quantitative data extraction form

Volunteering and Health: What impact does it really have?

Quantitative Data Extraction and Critical Appraisal Form

A. Review details

1 st Reviewer	
2 nd Reviewer	
Date of extraction	
Date of checking	

B. Bibliographical details

Ctrl+K to copy and paste record from EndNote.

C. Programme details

		Page
City/region/Country		
What is the volunteer doing? (e.g. education/befriending/generic)		
Where is the volunteer working? (e.g. hospice/community/school/generic)		
Length of volunteering experience/programme/intervention, if known		
Background to volunteering programme (why was it implemented?)		

D. Method and Design

Note: If no comparison is made (between volunteering and non-volunteering groups, or before and after an intervention involving volunteers), then the study should be excluded or treated as a qualitative study.

		Page no.
Design (e.g. prospective cohort – see Notes)		
Total Population (number)		
Baseline sample size (number for control and intervention groups separately)		
Method of sampling (random? stratified, etc)		
Baseline response rate (% or number)		
Time between intervention and follow-ups		
Follow-up response as % of baseline (calculate if necessary)		
Final sample size		
Is potential confounding from attrition/non-response explored? Any adjustments made?		
Other potential confounding factors (eg. volunteering only one component of intervention, not all intervention group exposed?)		
CONTROLLED STUDIES ONLY		
Control group selection (e.g. Not Specified or give method of randomisation or matching)		
Demographic confounding between intervention and control groups explored? Any adjustment made?		
Contamination between intervention and control		

group?		
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E. Outcomes

	Outcome measured for volunteer(s)	Outcome measured for patients/clients	Page no.
List any specific physical health measures used			
List any specific mental health measures used (e.g. GHQ12)			
List any general health measures used (include absenteeism, GP visits)			
List any measures of health behaviour (eg. diet, smoking, drinking, exercise etc).			
List any psychosocial measures (DCS, effort-reward, work/life balance)			
List any economic and work-related measures (eg. job satisfaction, cost-effectiveness)			

F. Results

Include p-values, se, sd, means, F ratios, CIs etc. (see Notes) Calculate if necessary. For controlled studies compare to control and give intervention group over time results.

		Page no.
Briefly summarise the key effects of the volunteering on the health measures (and scales used) for volunteers		

Briefly summarise the key effects of the volunteering on the health measures (and scales used) for patients/clients		
Briefly summarise the key effects of the volunteering on the psychosocial measures (and scales used) for volunteers		
Briefly summarise the key effects of the volunteering on the psychosocial measures (and scales used) for patients/clients		
Briefly summarise the key effects of the volunteering on the economic measures (and scales used)		

G. Critical Appraisal of Study Design

Study design description:

Is the study prospective?	
Is the study based on a representative sample selected from a relevant population? (include random samples, adequately justified purposive sampling, or 100% samples as 'representative')	
Does the study use an appropriate control group? (e.g. random allocation or appropriately matched control)	
Is the baseline response equal or greater than 60% of initial sample?	
Is (a) the follow-up rate in a cohort study equal to or greater than 80% of the baseline response, or (b) is each follow-up survey in a repeat cross-sectional study equal to or greater than 60% of the follow-up sample?	
Are the effects of non-responses and/or drop-outs explored?	
Are the authors conclusions' substantiated by the data in their results (note that if the results contain insufficient data	

to verify the authors' conclusion, the answer is 'no')?	
Are the effects of potentially important confounding factors explored?	
Were all members of the study population (or intervention group) exposed to the volunteering intervention?	
Does the study use statistical tests appropriate to the type of data?	

	Yes/no/NS
Has the volunteering intervention/programme been explicitly designed to improve health or the psychosocial well-being? Answer yes/no/, and write 'health' or 'psychosocial' and 'patient' or 'volunteer' as appropriate.	-
Does study provide any useful contextual information relevant to implementation of the intervention (e.g. political, economic or managerial?)	-
Does the study establish whether the volunteers and those implementing the volunteering programme had appropriate training and/or experience?	-
Is there a description of the development of the volunteering programme or intervention (e.g., the planning and consultation process)?	-
Is there a description of the collaborations involved in delivery?	-
Is there a description of the relative importance of volunteers in a programme involving volunteers and providers in other roles?	
Does the study describe how volunteers came to participate in the programme?	
Does study describe how the target population (i.e., patients/ clients) were identified and recruited for the programme involving volunteers?	-
Does study give information about the resources required in implementing the intervention (eg. time, money, people,	-

and equipment, required for the intervention?)?	
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Appendix 4 – Systematic review data extraction form

Volunteering and Health: What impact does it really have?

Data extraction form for systematic reviews

A. Review details

1 st Reviewer	
2 nd Reviewer	
Date of extraction	
Date of checking	

B. Bibliographical details

--

C. Review details

		Page no
Systematic review? Clearly defined question, and searched at least one named database combined with either checking references, hand-searching, citation searching, or contacting authors in the field.	Yes	
Population (Volunteers? Patients? Any age/gender/location etc restrictions)		
Relevant Outcomes		
Relevant Study N		

Database N		
Volunteering Intervention(s) what volunteer interventions are included, where are the volunteers working, length of interventions?		
time/language/country restrictions		
Types of study design included (e.g. RCTS, controlled prospective cohort, repeat cross sections)		
Method of synthesis (meta-analysis or narrative)		

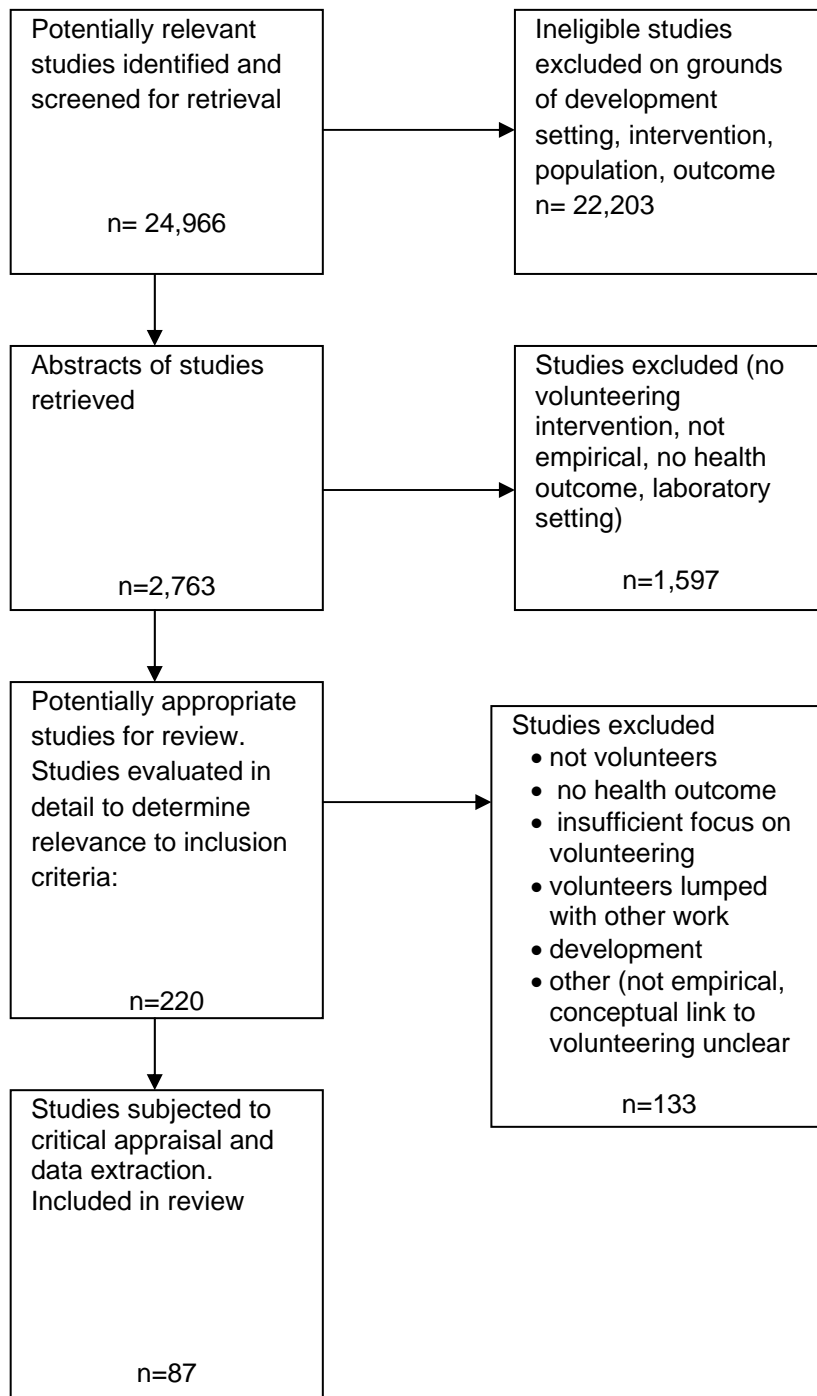
D. Main findings

Main findings	Summary of results for volunteers	Summary of results for patients	Page no
Summary for all relevant outcomes (physical, mental and general health, health behaviours, psychosocial, and economic)			

Critical appraisal form for systematic reviews

	YES/NO
1. Is there a well-defined question?	
2. Is there a defined search strategy?	
3. Are inclusion/exclusion criteria stated?	
4. Are study designs and number of studies clearly stated?	
5. Have the primary studies been quality assessed?	
6. Have the studies been appropriately synthesised?	
7. Has more than one author been involved in each stage of the review process?	

Appendix 5 – Search flow diagram



Appendix 6. Summary tables for studies included in the systematic review.

Table 1: Uncontrolled longitudinal studies of health effects on volunteers (n=17)

Study (dataset) and article reference(s)	Volunteering context	Design and sample characteristics	Outcomes measured	Potential confounding factors	Results/ Conclusions	Quality appraisal*
Americans Changing Lives study	General, self-reported. USA.	Uncontrolled prospective cohort with comparison. Stratified, multistage, area probability sample with overrepresentation of African Americans and people over age 60. Waves in 1986 (n=3617), 1989 (n=2867), 1994 (n=2348).		Reliance on self-reporting of volunteer hours and physical health and well-being.		
Li (2007)		Excluded those who remarried between Wave 1 and Wave 3 (N=9). Using time series design in which comparisons between Wave 2 and Wave 1 or between Wave 3 and Wave 2 were made, N=2,695 comparisons.	Depression (CESD-11); Self-efficacy	Heckman maximum likelihood estimation model and Markov Chain Monte Carlo multiple imputation used to correct for attrition. Controlled for survey year, formal meeting/religious attendance, informal social integration, physical activity, functional impairment, education, income, employment, age, gender and race.	Volunteer roles adopted after spousal loss protected against depressive symptoms (In one model, the effect of widowhood on depression was 0.219 for non-volunteers and -0.330 for the interaction of volunteer role and widowhood, i.e. effect for volunteers=-0.111, p<0.05 for both terms). Increases in volunteer hours were non significant for depression once interaction terms were added; however, the modest interaction effect between	1 2 3 4 5 6 7 8 9 10

					volunteer hours and widowhood ($b=-0.081$, $p<0.05$) suggests that people who had volunteered at higher levels prior to spousal loss coped better with depressive symptoms at T2. Volunteer role was not associated with an increase in self-efficacy, but spouses widowed within 3 years before the first measurement sustained greater self-efficacy at the second measurement ($0.112 + 0.092 = 0.204$) by increasing their volunteer hours after spousal loss.	
Li and Ferraro (2005)		Only persons >60 years included in this analysis. Waves in 1986 ($n=1669$), 1989 ($n=1279$), 1994 ($n=889$)	Center for Epidemiologic Studies Depression Scale (CES-D)	Socioeconomic and demographic factors used as predictors not covariates. Age, demographics etc. are not combined with effect of volunteering on health.	Formal volunteer work at wave 1 moderately reduced depression at wave 2 ($B=-0.33(0.17)$, $p<0.05$). At wave 3, B (direct effect) = $-0.036(0.027)$, n.s.; total effect = -0.41 , $p<0.05$.	1 2 3 6 7 9 10
Li and Ferraro (2006)		Aimed to differentiate between effects of volunteering on health and of health/ functional limitations for middle-aged and older adults. Subsamples aged 40-59 ($N=875$ at baseline, and 683 at final follow-up) and 60+ ($N=1,669$ at baseline)	Depression (CESD-11); Functional limitations.	Controlled for exogenous variables at baseline: chronic conditions, formal and informal social integration, self-esteem, social roles, status characteristics. Missing data was adjusted for by single and multiple imputation methods.	For the older age group, volunteering at Wave 1 reduced depression ($B=-.219$, $p<0.05$) and functional limitations ($B=-.243$, $p<0.05$) at Wave 2; depression and functional status at Wave 1 did not have a limiting effect on volunteering at Wave 2	1 2 3 4 5 6 7 8 9 10

		and 889 at follow-up).			(suggesting that for this age group, health is a benefit of volunteering not a barrier). However, health benefits of volunteering were not demonstrated for middle-aged group, possibly because they have more extensive social roles already, and possibly because their general good health means a salubrious influence of volunteering was too modest to be detected.	
Morrow-Howell et al. (2003)		Only persons >60 years included in this analysis. Waves in 1986 (n=1669), 1989 (n=1279), 1994 (n=over 900)	Depressive symptomatology Self-rated health Functional dependency	Control variables included demographics, informal social integration, and previous levels of well-being	Significant positive effect of volunteer status (yes or no) on all 3 variables: SRHealth: GEE coeff. -0.18, p<0.01; FD: GEE coeff -0.12, p<0.01, Dep. GEE coeff -0.11, p<0.01. Increased volunteer hours related to well-being, but only up to 100 hours/year (2-3 hours per week). GEE Coefficients with volunteer hours: SRH -0.0004, FD -0.004, Depr -0.003 (all p<0.01). No evidence that effect is moderated by informal social integration; effects similar for males and females and white and	1 2 3 4 6 7 8 9 10

					<p>non-white</p> <p>The association between age and FD is weaker for volunteers (i.e. negative effect of ageing is attenuated): GEE coeff for interaction age x volunteer: SH - 0.004 (n.s.), FD -0.01 (p<0.05), Depr -0.01 (p<0.10)</p> <p>No association with organisational type or number of sponsoring organisations (though vol for religious org is related to FD (GEE coeff -0.15, p<0.05))</p>	
Musick (1999)		This study included respondents >=65 years old, N=1211.	Mortality	Controlled for social integration (informal social interaction, whether live alone), physical activity, functional impairment, potentially fatal condition (lung disease, ME, diabetes, cancer, stroke), sex, age, race, and income.	<p>Respondents who volunteered in the 12 months prior to baseline were less likely to die over follow-up period. Strongest effect for those who volunteer for only 1 organisation or < 40 hours/year. (Hazard Ratio relative to no volunteering:</p> <p>volunteering for 1 org. 0.40, p<0.001; 2+ orgs. 0.65, p<0.05; volunteering <40h/yr 0.46, p<0.001; >=40 h/yr 0.58, p<0.05). But after controlling for socioeconomic, demographic and health/physical activity variables, the effect of</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>6 (n/a as mortality)</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p>

					volunteering for 1 organisation decreased slightly (HR 1 org = 0.58, $p < 0.05$; HR 2+ orgs. 1.07, not significant; HR volunteering >40 h/yr 0.68, $p < 0.05$; ≥ 40 h/yr 0.89, not significant.). Informal social interaction had a moderating effect on volunteering for 1 organisation (i.e., effect of volunteering was strongest for those with least social interaction) but living alone decreased the effect of volunteering.	
Musick and Wilson (2003)			Center for Epidemiologic Studies Depression Scale (CES-D)	The study controlled for health conditions, physical activity, church attendance, and explored the effects of mediating variables social resources and psychological resources	Volunteering had a negative effect on depression at wave 3, but only for the 65+ age group. Church-related volunteering had a larger effect than secular volunteering (among 65+, church vol. $B = -0.31$, $p < 0.001$, secular $B = -0.21$, $p < 0.05$). The longer volunteering was sustained, the greater the effect for over-65s only.	1 2 3 4 5 6 7 8 9 10
Thoits and Hewitt (2001)			Activities of Daily Living (ADL) limitation; self-rated health; life satisfaction, happiness, self-	Dropouts more likely to be male, unemployed, and with lower family incomes, less frequently attended religious services/group meetings and volunteered	Volunteer work hours in the last 12 months enhanced happiness ($B = 0.01$, $p < 0.05$), life satisfaction ($B = 0.02$, $p < 0.001$), mastery	1 2 3 4 5 6

			esteem, mastery, depression (CES-D(11)).	fewer hours. Although no significant differences in well-being variables between dropouts and follow-up group, loss of lower income and less socially integrated individuals over time may dampen differences between volunteers and non-volunteers in well-being. Several well-being indicators have uncertain reliability, and mastery scale had low internal consistency.	(B=0.03, p<0.001), and physical health (B=0.03, p<0.05), and lower depression (B=-0.004, p<0.05), even after individuals' participation in other voluntary groups and prior levels of well-being have been controlled.	7 8 9 10
Van Willigen (2000)	Various, USA.		Self-reported perceived physical health; Life satisfaction	Heckman's probit-based procedure used to adjust for attrition. Controlled for marriage, parenthod, employment, education, income, economic strain, functional impairment, social integration, social support, mastery, sex, race, attendance at religious services and physical activity.	Effect of volunteer role: Physical health increased more for older than younger adults (older B=0.154, p<0.05, younger B=0.055, p<0.05; this is not simply because healthier people were more likely to volunteer as this was also tested). Life satisfaction was only marginally more positively associated with life satisfaction among older (B=0.221, p<0.05) than younger adults (B=0.181, p<0.01, p=0.60 for difference). Hours volunteered per year: Physical health shows curvilinear curve for seniors (increase up to 100 hours/year and	1 2 3 4 5 6 7 8 9 10

					<p>decrease from 140 hours/year) but linear for younger adults ($B=0.001$, $p<0.01$). Life satisfaction shows linear curve for seniors ($B=0.002$, $p<0.05$) but curvilinear curve for younger adults (increase to 100 hours, decrease after 140 hours). Number of organisations volunteered (more than 1 vs. 1 only): Older adults had 63% greater increase in physical health than if they volunteered for only one organisation (.221 vs .136); younger adults had a slight decrease in benefit if volunteered for more than one organisation (0.053 vs. 0.57). For life satisfaction, older adults had a 26% increase in benefit if volunteered for more than 1 org. (.254 vs .202), while younger adults had a slight decrease if they volunteered for more than one organisation (.157 vs. 0.197)</p>	
Asset and Health Dynamics Among the Oldest Old	Self-reported volunteer work for religious, education, health-related or other	Uncontrolled prospective cohort with comparison Nationally representative sample. Sampling method not		Self-reported volunteering		

Study (AHEAD)	charitable organisations, 100+ hours in the last 12 months. USA.	stated (n=7322)				
Lum and Lightfoot (2005)			Mortality Self-reported physician diagnosed medical problems Depressive symptoms (modified CES-D) Self-reported health Self-reported Activities of Daily Living (ADL) limitations and IADL	Baseline health controlled for as well as demographics, marital status and socioeconomic status	After controlling for demographics, marital status, socioeconomic status, and baseline health and functioning: volunteers were 28% less likely to die before the 2000 interview than nonvolunteers (RRR 0.72, SE .07; p<.01); volunteering had led to a smaller decline in self-reported health as respondents aged (F4204=69.57, coefficient .21, SE .8, p<0.05) and also to a smaller increase in the number of difficulties in both ADLs (F4199=47.69, coefficient -.46, SE .11, p<0.001) and IADLs (F4197=51.04, coefficient -.49, SE .12, p<0.001), , and also a smaller increase in levels of depression (F3422=37.88, coefficient -.31, SE .9, p<0.001),. NS differences in medical conditions and nursing home admittance between volunteers and non-volunteers.	1 2 (but method of sampling not stated) 3 4 6 7 8 9 10

<p>Luoh et al. (2002)</p>		<p>Sampling method not stated. Baseline n=6578 (80%). Final sample size 4860 (59% of baseline).</p>	<p>Mortality Self-rated overall health Self-rated Activities of Daily Living (ADL) Limitations</p>	<p>Respondents who participated in Wave 3 differed somewhat from those in original sample – potential bias from this attrition was adjusted by use of sample weights for Wave 3 (estimates using sample weights adjusted for attrition differed only in very minor ways from estimates using the original sample weights). Attrition due to nonresponse between Wave 3 and 4 was small, and n.s. differences on sociodemographic and health variables emerged between nonrespondents and continuing and dead respondents. Potential confounding factors controlled for include selection effect that healthy older adults are more likely to participate in volunteering; sociodemographic factors; socioeconomic characteristics; and the health characteristics of chronic diseases and smoking. Although as the authors note in observational studies possibility remains that some unmeasured and</p>	<p>Bivariate analysis: respondents who had volunteered 100 hours or more in the year preceding Wave 3 were less likely: to have died by Wave 4 than those who had not volunteered or volunteered less time (5.6% v. 16.8%; p<.01); to report poor health (18.9% v. 34.4%; p<.01) and daily living limitations (22.3% v. 41.4%; p< .01).</p> <p>The effect remained significant in the multi-variate analysis even after controlling for self-rated health and other potentially confounding factors, although its strength was somewhat reduced: having spent 100 annual hours or more volunteering by Wave 3 significantly lowered the odds of reporting poor health and of dying compared to reporting good health (.35 and .19; p<.001; t -9.50 and -5.75 respectively)); controlling for self-rated health (at wave 2)</p>	<p>1 2 3 5 6 7 8 9 10</p>
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				<p>uncontrolled aspect of poor health may bias the effect of activities on health.</p>	<p>reduced the odds (.51 and .25; $p < .001$; $t = -5.02$ and -4.51 respectively); whilst controlling for other potentially confounding factors (at wave 2, socio-economic and demographic) reduced the odds further (.59 ($p < .001$ and $t = -3.95$) and .38 ($p < .01$ and $t = -2.92$)) i.e. those who volunteered were only two thirds as likely to report bad health and one third as likely to die than those who did not volunteer.</p> <p>Performance of more than 100 annual hours of volunteer work by Wave 3 significantly lowered the odds of subsequently reporting any daily living limitations or of mortality compared to reporting no limitations. ((.41 and .21; $p < .001$; $t = -8.14$ and -5.86 respectively); controlling for pre-existing daily living limitations reduced the odds but they were still statistically significant (.55 and .30; $p < .001$; $t = -5.22$ and -4.33 respectively); whilst</p>	
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					controlling for socioeconomic and health factors further reduced the effect of volunteering on daily living limitations and on survival, they were still statistically significant (.62 (p<.001 and t-4.37) and .41 (p<.01 and t-2.99).	
Longitudinal Study of Aging						
Harris and Thoresen (2005)	General, self-reported. USA.	Prospective cohort with comparison. Nationally representative sample. N=7527, data on volunteering available for 7496. Follow-up at 2, 4, and 6 years.	Mortality.	Covariates: sociodemographic (age, sex, income, ethnic group, education, employment, veteran status), health (self-rated, limitations on activities, BMI, difficulty walking ¼ mile without aid, medical conditions, physical activity), social functioning and support.	Compared to those who never volunteered, those who rarely volunteered had a 41 % reduction in risk (Hazard Ratio .59, 95% CI .40 to .86; p<.05), those who sometimes volunteered had a 42% reduction in risk (HR .58, .47 to .72; p<0.001) and those who frequently volunteered had a 53% reduction in mortality (HR .47, .40 to .55, p<0.001). After adjusting for covariates, frequent volunteers had significantly reduced mortality compared to non-volunteers. This association was greatest for those who frequently visited with friends or	1 2 3 4 5 6 (not relevant as mortality is outcome) 7 8 9 10 Self-reported data on volunteering frequency may be inconsistent.

					attended religious services.	
Wisconsin Longitudinal Study						
Pillavin and Siegl (2007)	Self-reported involvement in 5 types of 'other-oriented' organisations: parent-teacher associations, youth groups, neighbourhood organisations, community centres, and charity or welfare groups. USA.	Uncontrolled prospective cohort with comparison. One-third random sample of Wisconsin high school graduates in 1957, n=10,317. Follow-up at 7, 18, 35, and 47 years. Final N=4,000.	Self-reported overall health Psychological well-being using 6 scales developed by Ryff	Attrition over 5 waves not adjusted for, although final sample (with attrition) was healthier, happier and better off.	'Confirming previous research, volunteering was positively related to both outcome variables. Both consistency of volunteering over time and diversity of participation are significantly related to well-being and self-reported health. The relationship of volunteering to psychological well-being was moderated by level of social integration, such that those who were less well integrated benefited the most. Mattering appears to mediate the link between volunteering and wellbeing. Controls for other forms of social participation and for the predictors of volunteering are employed in analyses of well-being in 1992. We find volunteering effects on psychological well-being in 2004, controlling for 1992 wellbeing, thus	1 3 7 8 9 (self-reported) 10

					providing strong evidence for a causal effect.'	
Arnstein et al. (2002)	Peer volunteers in a cognitive behavioural chronic pain management programme. USA.	Uncontrolled prospective cohort (pre/post intervention). Convenience sample (n=7).	Pain disability index Visual analogue scale – pain intensity Chronic pain self-efficacy scale Center for Epidemiological Study – Depression scale (CES-D)	No controlling for time effects (would the volunteers have gotten better anyway?); in terms of how results were presented, all volunteers also participated in a pain management programme, i.e., they received 2 interventions (see comments in results).	Pain disability index decreased from 43 to 16.5 (p<0.001) Visual analogue scale – pain intensity decreased from 7.1 at baseline to 3.6 after intervention (p<0.001) Chronic pain self-efficacy scale Self-efficacy scores increased significantly from 147 to 225 (p<0.01). Centre for Epidemiological Study-Depression scale decreased significantly from 28 to 8 (p<.001). NB: Scores after intervention are compared to baseline, which was before the volunteers themselves participated in the pain management programme, so effectively there are two interventions: pain course and volunteering. After calculating effect sizes comparing before volunteering (end of training) with after 6 months of volunteering the only significant effect was a decrease	1 9 10

					in depression from 14 to 8 (mean difference 6 95% CI 2 TO 10). All other indicators had no significant difference after the volunteering intervention.	
Brunier et al. (2002)	Providing peer support (counselling) to renal patients. Setting unclear – possibly hospital. Length of intervention unclear. Canada.	Uncontrolled prospective cohort. Baseline n=36, follow-up at 4, 8 and 12 months. Final n=31 (86%). Total population sampling, but only counted those who attended all interviews.	Mental Health Inventory (MHI): psychological distress and psychological well being subscales	Not all the intervention group were exposed (2 volunteers did not counsel any clients). No other confounders mentioned.	No significant change reported.	1 2 4 5 7 (but no p-values or CIs provided for non-significant results) 10
Davis et al (1998)	Community peer mentoring of clients in a senior centre, peer support, socialisation, encouraging health behaviours	Pre-post measurement (1-year follow-up). N=20.	self-rated health; physical function score (SF-36), health behaviour (smoking, alcohol, walking), exercise (PACE questionnaire)	No comparison to non-volunteering group.	Compared to pre-participation measures, after 1 year of volunteering fewer participants reported fair-poor health (26.3% vs. 5.3%); no significant change in pshysical activity scores, but 28% said they were exercising more, 22% reported an increase in physical activity, and 50% an increase in chronic illness management.	1 5 7 (but no control), 9
Field et al (1998) Elder ret	Older retired volunteers giving infant massage in a nursery school	Pre-post comparison between volunteers giving infant massage and receiving massage. (n=10; 1/2 gave	Stress (cortisol, norepinephrine, epinephrine, dopamine); Duke-UNC Health Profile;		Short-term: Affect 7.7 pre, 8.7 post, p<0.05), anxiety (0.6 pre, 0.1 post, p<0.05), depression (1.4 pre, 0.7	1 5 9

		massage first, 1/2 received massage first)	Physical activity, eating and drinking habits; Affect; Depression (CES-D (20))		post, p<0.05) and cortisol (1.9 pre, 1.3 post, p<0.001) all decrease after <i>performing</i> massage. No values given for receiving massage. Long-term: between the first and last days of the intervention, depression decreased (14.4 to 11.9, p<0.05) and other changes were non significant. Norepinephrine and epinephrine decreased with a comparable or greater effect than receiving massage. (Values for receiving massage not given.)	
Oman (1999)	Various volunteering contexts. Marin County, California, USA.	Prospective cohort. Stratified random sample with approximately 500 in each of 4 age groups (55-64, 65-74, 75-84, 85+). 2021 provided data on volunteering. Follow-up after 3.2 to 5.6 years.	Mortality	Controlled for physical health (including chronic disease), functional status, health habits, income, education, employment, ethnicity, social function and support, attendance at religious meetings, depression	After controlling for health status moderate volunteering was not significant. However, high levels of volunteering (>1 organisation) were associated with a 44% reduction in mortality compared to not volunteering (RH=0.56, p=0.01) The effect was greater for those with high social support and religious attendance, and for those in the older age groups.	1 2 3 4 5 6 (n/a as mortality) 7 8 9 10

*1) Prospective study design; 2) Representative sample from a relevant population; 3) Appropriate comparison groups; 4) Baseline response rate ≥ 60%; 5) Follow-up rate ≥ 80% of baseline; 6) Effects of non-responses and/or drop-outs explored; 7) Conclusions substantiated by the data; 8) Potentially

important confounding factors explored; 9) All members of the study population (or intervention group) exposed to the volunteering intervention; 10) Appropriate statistical tests used.

Table 2: Cross-sectional studies of health effects on volunteers (n=10)

Study (dataset) and article reference(s)	Volunteering context	Design and sample characteristics	Outcomes measured	Potential confounding factors	Results/ Conclusions	Quality appraisal*
Ferrari, Luhrs et al (2007)	Eldercare (occupying residents in enriching activities and conversation). Tasmania, Australia.	Cross-sectional comparison of eldercare volunteers and employees	2 subscales of the Caregiver Scale: personal satisfaction and emotional stress	Gender, motivation for volunteering, and social desirability score toward researchers were controlled for.	Volunteers reported lower caregiver satisfaction than employees (volunteers 28.57, full-time employees 33.69, permanent part-time employees 32.49, temporary part-time employees 35.86, $F(3,201)=6.02, p<0.01$), but stress was not significantly different.	5 6 7 8
Fitzpatrick et al. (2005)	Volunteering in a senior centre (length of intervention unclear). Southern Ontario, Canada.	Cross-sectional comparison. 92 volunteers, 74 nonvolunteers.	Self-rated physical health 3 items from the Psychological General Well-Being Schedule (PGWB)	Cross-sectional study design means direction of causality cannot be ascertained.	Respondents who are volunteers perceive better physical health ($t=2.35, p<0.05$) and social support than non-volunteers: more support from friendship ($t=2.45, p=0.05$), more caregiving support ($t=2.82, p<0.01$), and more support from advice ($t=2.47, p<0.05$). (means not given)	1 2 5 (but group means not reported) 7 8
Gabassi et al. (2002)	Organising activities for people with disabilities in a community setting, length of volunteering ranged from 3-96 months. Italy.	N=50 (25 paid, 25 volunteers). Method of sampling not stated.	Maslach Burnout Inventory, with partially modified scoring method.	Cross-sectional study design means direction of causality cannot be ascertained. Paid professionals were dealing with more seriously disabled, people so may have been subject to burnout due to harder work. No discussion of this point. Length of work experience and age	Adjusting for age and work experience, volunteers had lower scores on Emotional Exhaustion subscale than paid professionals ($B=-6.73, SE=-1.77, t=-3.81, p=0.0004$); ratings for Personal Accomplishment and Depersonalisation subscales not significantly different.	7 8

				were included in the model as potential confounding factors.		
Greenfield et al. (2004)	Volunteering in healthcare setting, school or youth-related organisation, political organisation or cause, or any other organisation, cause or charity, at least once per month. USA.	Cross-sectional comparison. National probability sample of English-speaking, noninstitutionalised adults between 25 and 74 years of age. Subsample N=373 (36% reported formal volunteering at least once per month), method of selecting subsample not stated.	Negative and positive affect (two 6-item scales) 3-item version of Ryff's Purpose in Life Index	Cross-sectional study design means direction of causality cannot be ascertained.	Being a volunteer is a predictor of more positive affect (b=0.88, p<0.05). Volunteer status failed to help predict respondents' levels of negative affect and purpose in life. Volunteering was a moderator on the effect of major role-identity absences on psychological wellbeing: Significant interaction effect for volunteering and purpose in life (b=1.05, p<0.05) but not for positive and negative affect.	1 2 3 4 5 6 7 8
Hulbert and Morrison (2006)	Palliative care provision in hospice and community, length of intervention not specified. Central England/North West Wales	Cross-sectional comparison between professional and volunteer groups. 132 invited to participate (method of sampling not stated); n=36 (27.3%).	Perceived stress (PSS-14) Occupational stress (OS)	Cross-sectional study design means direction of causality cannot be ascertained. Effect of non-response not explored, though it is stated that the low response rate may itself reflect occupational stress. Hours worked and duration of work/volunteering not explored as independent variables.	Volunteers had lower levels of perceived stress (hospice professionals 26.30(4.72), NHS professionals 23.00(4.00), hospice volunteers 19.55(5.11), community volunteers 13.83(2.79), post-hoc p<0.05 between HP and HV, p<0.001 between HP and CV workers), but no significant differences were found for occupational stress.	5 7 8
Jirovec (2005)	Various. Unspecified major metropolitan centre, USA.	Cross-sectional survey. Non-probability sample (strategy not stated) of senior centre attendees. Self administered questionnaire. N=179, of	Number of visits to nurse/doctor in past 12 months, number of days housebound with illness in past 12 months, self-rated	Effects of non-response not explored. Direction of causality cannot be determined in cross-sectional study design.	Volunteers saw doctor/nurse more often (5.30 vs. 2.86, t=4.284, p<0.01), and rated their family functioning higher than non-volunteers (7.279	7 8

		whom 110 were volunteers.	health, Philadelphia Geriatric Center Morale Scale, family functioning (Family APGAR rating scale)		vs. 5.565, $t=2.744$, $p<0.01$). No other significant differences. Authors suggest that greater frequency of health care visits may be a benefit of volunteering, as it provides an opportunity for health promotion.	
Librett et al (2005)	Various. USA.	Cross-sectional survey. National sample - additional questionnaire sent to all respondents to a nationally representative lifestyle panel survey. N=2032 (63% response rate). Assessed effects of volunteering and of volunteering in environment or neighbourhood improvement projects (both presumed to involve high levels of physical activity)	Physical activity ≥ 5 days per week at 30 minutes per day, or vigorous physical activity ≥ 3 days per week at 20 minutes per day	Cross-sectional design does not show direction of causation. Controlled for employment status, race/ethnicity and income.	Those who volunteered in the past year were 1.8 times more likely (95% CI 1.5-2.2) to meet physical activity recommendations as non-volunteers. Those volunteering on environmental projects were 2.6 times more likely as those not (including non-volunteers and other types of volunteers, 95% CI 2.0-3.5). Those volunteering on neighbourhood improvement projects were 1.6 times as likely as those not (including non-volunteers and other types of volunteers, 95% CI 1.3-2.0).	5 6 7 8
Weitzman and Kawachi (2000)	Volunteering among college students. Various activities. Daily time spent volunteering in past 30 days measured for individuals, and aggregated for campus as a measure of social capital.	Cross-sectional logistical modelling of effects of individual and aggregate volunteering on college campuses. Random sample of 17,592 young adults aged 18-26 attending one of 140 institutions.	Binge drinking (5+ drinks/occasion or 4+ drinks for women at least once in preceding 2 weeks)	Social capital variable is derived from individual volunteering variable, though the two were only weakly correlated. Controlled for age, sex, race, parents' education, fraternity/sorority membership, geographical region of campus and	Those who reported no volunteering were more likely to binge drink (81.5% vs. 72.2%, $\chi^2=51.4$, $p<0.001$). Individual volunteering associated with a 5% fall in risk of binge drinking (OR=0.95, $p<0.01$) and students at campuses with high levels of volunteering are 26% less likely to binge drink	1, 2 3 5 6 7 8

				public/private campus.	(OR=0.74, p<0.001). Social capital was associated with a 32% increase in the likelihood of typically consuming only 1-2 drinks when drinking in the past month (OR=1.32, p<0.001).	
Wu et al. (2005)	General, self-reported. Length of volunteering variable. Hong Kong.	Cross-sectional analysis of variance. N=501 (107 male, 328 reporting voluntary work experience since retirement). Randomly selected community centres were contacted, and all members of agreeing centres were invited to participate.	Perceived physical health (5 point scale, higher score indicates worse health) GHQ12 Satisfaction with Life Scale Self-efficacy	Cross-sectional study design means direction of causality cannot be ascertained.	Volunteers had better self-rated physical health (mean 2.86(0.90) vs 3.36(0.93), F=33.09, p<0.001), self-efficacy (mean 2.84(0.48) vs 2.58(0.59), F=23.43, p<0.001), less psychological distress (mean 1.71(0.45) vs 2.10(0.54), F=66.19, p<0.001), greater life satisfaction (mean 3.00(0.51) vs 2.78(0.60), F=16.36, p<0.001)	5 6 7 8
Yuen et al. (2004)	Self-identified volunteers. Context not specified.	Cross-sectional analysis of survey data from participants in one wave of the Minnesota Longitudinal Study. Individuals with traumatic spinal cord injury of at least 2 year duration and not in gainful employment. N=447 (88 volunteers, 359 nonvolunteers)	Older Adult Health and Mood Questionnaire, measuring depressive symptoms. Behavioural Risk Factor Surveillance System measuring overall health. No. of hospitalizations. Life Situation Questionnaire-Revised (LSQ-R) measuring adjustment, quality of life.	Cross-sectional design means direction of causality cannot be specified. Reliance on self-report Volunteers were significantly younger and averaged more years of education	Significant differences were observed on all dependent measures between the volunteer and nonvolunteer groups. Participants who volunteered rated their overall quality of life (7.41 (SD 1.86) v. 6.30 (SD 2.20); t 4.29, p<.001), current adjustment (8.33 (SD 1.41) v. 7.27 (SD 2.04); t 4.28, p<.001), and health (3.23 (SD 1.01) v. 2.92 (SD .97); t 2.60, p<.01) to be better than those who were not engaging in volunteer activities. In contrast, nonvolunteers reported higher levels of depressive	2 4 7 9 (self reported) 10

					symptoms (4.95 (SD 4.01) v. 6.40 (SD 4.77); t -2.44, p<.05) and more hospitalisations (.92 (SD 1.65) v. 1.42 (SD 1.86); t -2.04, p<.05) over the 2 years prior to the study.	
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*1) Representative sample from a relevant population; 2) Appropriate comparison groups; 3) Response rate $\geq 60\%$; 4) Effects of non-responses explored; 5) Conclusions substantiated by the data; 6) Potentially important confounding factors explored; 7) All members of the study population (or intervention group) exposed to the volunteering intervention; 8) Appropriate statistical tests used.

Table 3: Qualitative evidence of health effects on volunteers (n=16)

Article reference(s)	Volunteering context	Study design/ methodology	Sample characteristics	Results/ Conclusions	Quality appraisal*
Arnstein (2002)	Peer volunteers in a cognitive behavioural chronic pain management programme.	Written logs by volunteers; interviews	N=7, convenience sample recruited from volunteer pain management training programme	Volunteers felt they had 'made a connection' and found a 'sense of purpose,' which has elsewhere been shown to have health and well-being benefits for chronic pain sufferers. Felt that volunteering reinforced their skills and helped them to manage their own pain. Volunteers said that they encountered some problems with the programme when their own pain re-emerged, they had problems remaining detached and not getting too involved. However, all felt positive about the volunteering programme and that the benefits outweighed the challenges.	1 2 4 6 7
Black and Living (2004)	Varied – 4 different voluntary organisations. Setting unclear – possibly London.	Questionnaire, cross sectional design.	Self-selecting members of 4 voluntary organisations: 109 volunteers, of whom 74 provided descriptions of personal experiences of volunteering	Volunteers experienced positive feelings, enhanced mood and personal development. They also obtained social contact, roles and a sense of community involvement, which contributed to emotional well-being. Some detrimental effects, such as frustration, sadness, and stress, mentioned but not discussed in detail.	5 8
Brunier et al. (2002)	Providing peer support (counselling) to renal patients. Setting unclear – possibly hospital. Length of intervention unclear. Toronto, Canada.	Open-ended question on telephone: 'what is it like for you now being a peer support volunteer?' Longitudinal design (although pooled cross-section analysis).	Total sample of people completing a volunteer training programme. n=31 (27 patients, 4 family members)	Volunteers found the relationships formed with one another to be valuable, they were able to come to terms with their own illness, they learned about or 'took their mind off their own problems' by helping others, found it rewarding and adding purpose to life.	1 2 3 5
Burger and Teets (2004)	Mentoring chronically ill patients through community faith-based organisations, Midwestern USA.	Interviews, record review, cross-sectional design.	11 patients (all women), 13 volunteers	Some volunteers mentioned improving their social interaction skills.	1 2 3 7
Clark (2003)	Various	Postal questionnaire	120 volunteers with experience	71% of respondents said an advantage	1, 7

			of mental ill-health from a national sample	of their current volunteering placement was active encouragement and support of their organisation for people with mental health problems. 81% felt that volunteering had a positive effect on their mental health. They reported volunteering gave them a sense of purpose and achievement, improved confidence, was rewarding and interesting, and taught them new skills.	
Coppa and Boyle (2003)	Mutual support for chronic illness management in self-help groups, relatively long involvement, with only 1 participant involved < 2 years.	Interviews, cross-sectional.	Self-selection from 5 groups attended by one of the researchers n=15: 9 female, 6 male, middle-aged or older, condition experienced several years or more; 5 group leaders also interviewed, but details not provided.	Identified benefits relating to quality of life, illness management, and interactions with health care professionals. Experienced enhanced ability to actively self-manage their conditions.	1 2 3 4 6 7 8 9
Crook et al. (2006)	Volunteering in a community AIDS Service Organisation, role and length of volunteering not stated. Ontario, Canada	Interviews, cross-sectional design.	18 former volunteers (16 men, 15 HIV positive) recruited through 6 AIDS service organisations.	Participants reported improved self-esteem, autonomy and self-determination. A number reported improved physical health or more optimistic view of their physical health (though reasons not explored). Role overload and burnout were reported as significant challenges for volunteers.	1 2 5 7
Fees and Bradshaw (2003)	Community intergenerational setting: Sharing talents and resources to support relationships with young people. Length of volunteering not stated. Rural Kansas, USA.	Focus groups, cross-sectional design.	All volunteers in an intergenerational community-building organisation invited to participate.	'Older adults experienced a positive sense of well-being from interacting with the youth.'	1 2 3 4
Hainsworth and Barlow (2001)	Teaching arthritis self-care classes (peer support). England and Wales.	Repeated cross-sectional; semi-structured interviews and open-ended questionnaire question	14 volunteers had delivered a course the time of follow-up interview.	Volunteers felt happier, more confident, had a different outlook on life and greater understanding of arthritis. They perceived the main benefits of volunteering as helping others, social	2 4

				interaction, involved with similar others, increased confidence and communication skills, feeling worthwhile, and they accepted the importance of exercise for arthritis management. One volunteer reported that he got as much out of teaching the class than those taking part.	
Leung and Arthur (2004)	Self-help groups for mental illness. Volunteers were both group participants and facilitators. Hong Kong.	Interviews with self-help group participants (considered volunteers in this context), professionals and volunteer facilitators.	12 group participants (2 from each of 6 self-help groups selected); 13 professionals; 12 facilitators	Volunteering in the groups increased participants' social circles, fostered emotional catharsis, restored functioning, helped them learn to give and take, brought about a sense of worthiness and being empowered, and was felt to enrich their life experiences.	1 2 3 4 5 6 7 8 9
Messias (2005)	Community volunteering (various roles and contexts). Rural midwest, USA.	Unstructured interviews ('research conversations')	Purposive sampling among women with low SES. N=8, ages 21 to 77, all white, low socioeconomic status as identified through social service agency or self-identification	Participants 'identified numerous personal benefits of their volunteer involvement. These included increased self-esteem, enhanced social skills, a sense of purpose, improved family dynamics, better parenting skills, exposure to different role models, and the personal sense of well-being that came from making a difference in the lives of others.' One participant 'lightened her own personal emotional workload,' felt better about herself and spent less time focusing on worries. Enhanced empowerment and independence.	1 2 4 5 6 7
O'Shea (2006)	Volunteers in call centres providing a telephone support/help line for older people. Ireland (nationwide service).	2 focus groups; cross-sectional questionnaire survey of volunteers.	Focus group participants selected from 2 call centres; questionnaire sent to all volunteers. Sample size not stated.	2/3 of volunteers felt life satisfactions and feelings about themselves had improved while working for the service. 1/3 said their mental health had improved. (It is not clear whether they were asked about negative effects on	1 2 8

				mental health.) Volunteers reported 'feeling great,' 'delighted to be involved,' 'uplifted.' In some cases, the volunteer experience helped volunteers to cope with problems in their own lives. Volunteers sometimes felt emotionally drained after some calls and found it difficult to forget them afterward.	
Raine (2003)	Community-based lay support to encourage breast-feeding in a UK Sure Start deprived area	Interviews Observation of meetings Diaries of supporters	Participants invited through project meetings or project coordinators and included health professionals (n=6), breast-feeding supporters (n=6 for interviews and n=7 for diaries), breast-feeding mothers (n=6).	Being asked to participate in the support programme was personally empowering.	5 8
Ramirez-Valles and Brown (2003)	HIV/AIDS volunteering and activism in the community to reduce HIV risk behaviour among the Latino gay community in Chicago	Semi-structured interviews, cross-sectional design.	6 volunteers and 7 non-volunteers recruited through advertisements in printed media and flyers at community organisations. All were Latino gay men, 2 volunteers were HIV positive.	Some volunteers experienced an increase in self-esteem, empowerment, health-related professional skills, knowledge about HIV/AIDS, and were more likely to 'practice what they preach' and practice safer sex behaviours.	1 2 4 5 7 8
Richards et al (2007)	Volunteers traced patients who had defaulted from scheduled psychiatric appointments. South African township communities.	Questionnaire. Design not explicitly stated.	Not stated	Volunteers reported gaining a sense of recognition and self-worth from their role.	7
Shannon and Bourque (2005)	Cancer support (including support, advocacy, raising funds, provision of information) in the community, approx. 12 months duration. New Brunswick, Canada.	Interview, followed by focus group 8 months later	Purposive sample of 8 women, all post-treatment (1-6 years),	Volunteers described the experience as an important part of their life and their coping, they found the emotional support and information from other volunteers to be helpful in controlling their own fears, reducing stress, and providing 'health giving benefits'.	1 2 3 4 5 8

*1) Clear statement of research question and aims; 2) Appropriate qualitative research design to address the aims; 3) Appropriate sample for the aims; 4) Appropriate data collection procedures for the research aims; 5) Appropriate data analysis methods; 6) Findings described in adequate detail and

depth to all interpretation of meanings and context; 7) Conclusions justified by the results; 8) Limitations of the study and their impact on the findings taken into account; 9) Relationship between researcher and participants adequately considered.

Table 4: Controlled studies of health effects on service users (n=15)

Study (dataset) and article reference(s)	Volunteering context	Design and sample characteristics; Control/ randomisation method	Outcomes measured	Possible confounding variables and contamination between intervention and control groups	Results/ Conclusions	Quality appraisal*
Barnes, Friedman et al (1999)	Immunisation outreach, tracking and follow-up in a low-income, highly migrant community. New York City.	RCT. Voluntary sample of children less than 24 months enrolled as patients in ambulatory paediatric clinics, with an immunisation deficiency identified by clinic chart review, and a no-show for a scheduled appointment. Randomisation by computer-generated random number. N=434 (218 intervention, 216 control).	Immunisation status 6 months after enrolment	More non-enrolled children were covered by Medicaid insurance. Self-selection bias a potential concern given low participation rate.	By the final visit, significantly more intervention children were up-to-date with vaccines compared with controls (75% vs 54%, p=0.03). Fewer intervention children were late for 1 or more vaccinations (18% vs 38%, p=0.03)	1 2 3 5 6 7 8 9 10
Barnet et al. (2002)	Weekly home visitation for adolescent mothers (mentoring), in mothers' homes but programme based in special school for	RCT. N=232 (118 intervention, 114 control). Sampling method unclear. Randomisation by permuted block design conducted by	Rand Mental Health Inventory – 5 Parenting Stress Index (PSI) Bavolek's Adult-Adolescent Parenting Inventory (to assess high-risk parenting attitudes and practices)	Demographic characteristics comparable at baseline. Adjustments made for mental health and social support. No contamination stated, but all participants	Mental health was no different between control and intervention (-4.5 mean difference 95% CI - 2.7 to 11.6) Intervention group demonstrated better scores on the parent-child dysfunctional interaction	1 3 4 6 7 8 9 10

	adolescent mothers, Baltimore, USA.	evaluation staff		attended the same school and may have discussed advice from home visits with one another.	subscale of the parenting stress index (19.5 vs 21.6, $p=0.005$) but all other sub-measures in the PSI (parental distress, difficult child) were non-significant as was the overall index. Overall score on parental behaviours was improved in the intervention group (mean difference -5.6, 95% CI 0.2 to 11.0)	
Batik et al. (2008)	Volunteers delivered a behavioural based telephone support programme for physical activity to a group of diverse, low income, community-dwelling elders with diabetes	RCT. Voluntary sample of patients with diabetes over 65 years old, visiting one of two community clinics. N=305 (135 intervention, 170 control). Randomisation method not stated.	Glycated haemoglobin (HbA1c) and physical activity (Rapid Assessment of Physical Activity questionnaire) measured at baseline and at follow-up at 6 months or more following enrollment.	No comparison of demographics between intervention and control groups. Only 21% (14) of intervention group actually participated in the intervention (data analysed on intention-to-treat basis).	No significant differences between intervention and control groups on either outcome measure.	1 2 3 4 6 7 10
Caplan (2007)	Volunteer-mediated delirium prevention programme involving daily visiting, therapeutic activities, feeding and hydration assistance, and vision and hearing protocols. Geriatric hospital wards, New South Wales, Australia.	Non-random controlled trial. Participants enrolled while volunteers were trained allocated to control group; participants enrolled after allocated to intervention group. N=37 (21 control, 16 intervention). Convenience	Mental state measured by mini-mental state examination (MMSE). Functional activities of daily living (ADL) score. Delirium (Confusion Assessment Method and, if positive, Memorial Delirium Assessment Score). Adverse events (falls, unplanned readmissions within a month, discharge to residential care).	Volunteering was only one component of the intervention. Volunteer abstenteeism was covered by a paid volunteer coordinator.	Volunteer assisted patients showed a lower incidence of delirium (intervention vs control: 6.3 vs 38.1%; 95% CI (7.9-55.7); $p=0.032$) and lower severity of delirium (mean MDAS 1.2 (SD 4.8) vs 5.1 (SD 6.7); 95% CI (-0.1 to 7.9); $p=0.045$). The intervention group had better improvement in cognitive (MMSE change +3.6 (SD 2.80) vs -0.6 (SD 6.21); 95% CI (-7.56 to -0.74); $p=0.019$) and	1 4 5 7 8 9 10

		sample of patients \geq 70 years admitted to geriatric hospitals.			physical function compared with baseline (change in ADL scores -2.0 (SD 2.9) vs -5.29 (SD 6.6); 95% CI (-6.9 to 0.3); $p=0.049$). Other differences between groups were non-significant.	
Coull et al. (2004)	Lay health mentoring older people with ischaemic heart disease, leading group discussing CVD management issues and general well-being, Falkirk and District Royal Infirmary, Scotland, UK. Each mentored group ran for 1 year with monthly 2-hour meetings.	RCT. 319 patients (aged 60+) diagnosed with IHD, 165 mentoring group, 154 control. Analysis on intention to treat basis. Follow-up at 1 year, $n=289$ (149 intervention, 140 control). Randomisation using computer-generated sealed envelopes.	Cholesterol levels Blood pressure Current medication Smoking status Non-medical support Understanding/ knowledge of IHD Health status (SF36) Mental state (Hospital Anxiety and Depression Scale) Diet (questionnaire/ food diary) Exercise (previous week's activity)	Potential referral bias introduced by focussing on fitter individuals who could complete exercise testing. Food and physical activity diaries open to recall bias. Widespread community interest in project and therefore increased awareness of CVD risk factors may have reduced effect of mentoring. Small number of significant results may be explained by multiple testing. No significant differences between attendees and non attendees in mentoring group, deprivation scores in both groups well matched with local community. No contamination mentioned.	Mentored patients had better exercise levels after 1 year (mean 388 minutes per week walking vs. 320 minutes control), better dietary intake with less total fat (27.9% v 30.5% $p<.01$), less saturated fat (10.5% v $p<.05$) and more carbohydrate (51.7% v 49.4%, $p<.05$) as a % of energy, more concordance with medication ($p<.01$), reduced cardiovascular outpatient attendance (0.96 mean appointments v 1.21, $p<.01$) than the control group. No differences in uptake of secondary prevention therapy (e.g. aspirin or beta-blockers) or other resource usage outcomes (e.g. CHD episodes, day cases, other outpatient attendances). Self assessed physical functioning on SF36 improved in the mentored group and declined in the	1 2 (but potential referral bias) 3 4 5 7 8 10 Not all intervention group exposed, analysed on intention to treat basis.

					control group (mean of 68.7 versus 63.9, p<.05). NS differences in Hospital Anxiety Depression scores or the SF36; number of smokers.	
Dennis et al. (2002)	Usual care vs. usual care plus peer telephone support to breastfeeding mothers beginning within 48 hours of leaving hospital. Toronto, Canada.	RCT. N=258 (132 support group, 126 control), total sample, blind randomisation by sealed envelopes with randomly generated numbers. F/u n=256 (132 intervention, 124 control).	Breastfeeding duration (self-reported in 24 hours prior to 12-week follow-up interview: exclusive, almost excl., high, partial, token, bottle) Maternal Breastfeeding Evaluation Scale	Demographics at baseline similar for participants and non-participants.	More mothers in the intervention group (81.1%) than the control group (66.9%) were breastfeeding after 12 weeks (OR 2.5 95% CI 1.33-4.78, p<0.001). Exclusive breastfeeding was also higher after 12 weeks (p=0.01). When asked for an overall rating of their feeding experience, fewer mothers in the peer support group (1.5%) than the control group (10.5%) were dissatisfied (p=0.02).	1 2 3 4 5 7 8 9 10
Graffy et al. (2004)	Community breastfeeding counselling, in homes or by telephone, London and south Essex, UK.	RCT. N=720 (363 intervention, 357 control). Randomisation by numbered, sealed envelopes. F/u at 6 weeks (n=336 and 336) and 4 months (n=310 and 310).	Prevalence of breastfeeding at 6 weeks Proportion of women giving any breastfeeds, or bottle feeds at 4 months, duration of any breastfeeding, time to introduction of bottle feeds Satisfaction with breastfeeding	Participation in the study may have affected motivation. 14% of women in control group attempted to contact a counsellor. Slight difference in numbers of women undecided about breastfeeding (16 in intervention group, 6 in control); performed sensitivity analysis, adjusting for breastfeeding intent. Only 63% of women in the intervention group	No significant difference in breastfeeding prevalence at 6 weeks or 4 months, duration of breastfeeding, or time of introduction of formula between intervention and control groups.	1 2 3 4 5 7 8 10 Not all intervention group exposed, analysed on intention to treat basis

				contacted a counsellor postnatally but analysis was on an intention to treat basis.		
Harris et al (1999)	Befriending for depressed women, defined as meeting and talking for at least one hour per week, acting 'as a friend,' listening and 'being there for her'. Islington, north London.	RCT. Voluntary sample allocated randomly through a sealed envelope system. N=86 (43 befriending, 43 control).	Shortened version of the Present State Examination (PSE-10)	Effects of drop-outs not explored. Not all befriending group received befriending for the full 12 months but this is explored. Analysis on intention to treat basis. No important demographic differences between groups. Not possible for interviewer to be blind to respondents' allocation to intervention or control.	Remission occurred in 65% of the befriended group and 39% of the controls (chi squared = 4.66, d.f.=1, p<0.005). Remission occurred in 56% of women who met their volunteer not at all or only once. 72% of 'completers' (those who had regular befriender contact for at least two months) experienced remission. Neither other treatments nor initial duration of chronic episode or comorbidity predicted remission, but a higher initial PSE score was predictive of non-remission.	1 2 3 4 5 7 8 9 10
Johnson, Mollow et al. (2000)	Community mothers' gave support and encouragement to first-time parents in disadvantaged areas, visiting once a month in the first year of their child's life. Ireland.	7-year follow-up of an RCT. Initial RCT N=232 (127 intervention and 105 controls). 33% of the original sample were re-contactable (38 intervention, 38 control).	Child's health (immunisation, accidents, illnesses, hospitalisations and dental checkups); Maternal self-esteem (Rosenberg Self-Esteem Scale); Nutrition (24-hour dietary recall for mother and child, categorised as appropriate/inappropriate); Parenting skills; Breastfeeding and immunisation of subsequent children.	No significant differences in baseline demographic variables or outcome measures at 1 year between those who could and could not be traced at 7 years.	The risk for having an accident requiring a hospital visit was lower in the intervention group: relative risk (RR) 0.59, 95% CI 0.31-1.11, p=0.09. Intervention children were more likely to visit the library weekly: RR 1.58, 95% CI 1.10-2.26, p=0.009. Intervention mothers were more likely to check homework every night: RR 1.23, 95% CI 1.05-1.43 (p=0.006); and to disagree	1 2 3 (though method of randomisation not stated) 6 7 8 10

					with the statement 'children should be smacked for persistently bad behaviour': RR 2.11, 95% CI 1.10-4.06, p=0.018. They were more likely to disagree with the statement 'I do not have much to be proud of': RR 1.24, 95% CI 1.04-1.40; and to make a positive statement about motherhood than controls: RR 1.53, 95% CI 1.06-2.20, p=0.018. Subsequent children of intervention mothers were more likely to have completed Haemophilus influenzae b: RR 1.26, 95% CI 1.06-1.51; and polio immunisation: RR 1.19, 95% CI 1.02-1.40.	
Leigh et al (1999)	Volunteer-supported alcohol treatment, particularly offering help with community integration and social support. Ontario, Canada.	RCT comparing volunteer-supported clients and those offered office-based treatment only. All(?) clients in an outpatient clinic, of whom 106 (52 volunteer group, 54 office-based control) had attended the requisite number of treatment sessions to be eligible.	Number of days without a drink; number of drinks per day; weeks in treatment; success in decreasing drinking; community and social integration (employment, social stability, income, use of leisure)	Effect of gender was explored. Only participants attending at least 4 treatment sessions were included, to give volunteers a time period in which to meet and start working with their clients.	No significant difference between volunteer and office-supported groups in drinking behaviour or length of treatment attendance. No significant effects on community-related variables. However, the volunteers differed in how well they managed to follow up with clients, and increased volunteer contacts and contact hours was associated with overall progress (r=0.36, p=0.01; r=0.43, p=0.002, for contacts and contact	1 3 5 7 8 10

		Randomisation method not stated.			hours, respectively; N=45). Also, volunteers with higher 'caregiving' scores were associated with greater treatment goal attainment for their clients ($r=0.38$, $p=0.01$). The authors conclude that more professional input to secure material needs would enable volunteers better to assist with leisure, social and interpersonal needs.	
MacIntyre et al (1999)	Friendly visitors' supported older people receiving homemaking or nursing care by visiting 3-4 hours per week to socialise with clients, to combat loneliness arising from isolation from social supports. Southern Ontario, Canada.	RCT. 26 new referrals in community agency were recruited but 3 were ineligible. N=22 (12 experimental, 10 control). Followed for 6 weeks of intervention, then further follow-up 6 weeks later. Randomisation method not specified.	Functional ability (Eastern Co-operative Oncology Group Performance Status Scale), self-perceived health (Health Perceptions Questionnaire), social support (Personal Resource Questionnaire), Life Satisfaction Index	Sociodemographic, social support, functional and health variables comparable at baseline. No attrition reported.	Subjects receiving friendly volunteer showed difference in life satisfaction (Mann Whitney U-test=23, $p=0.01$) and social support measures of worth ($t=2.41$, $p=0.03$) and social integration ($t=2.38$, $p=0.03$). Other clinically important improvements in health were noted but were not statistically significant.	1 2 3 4 5 6 7 8 9 10
Parent and Fortin (2000)	1-to-1 visits from a volunteer former patient to patients undergoing coronary artery bypass graft (CABG) surgery, offering emotional and informational	RCT. 70 men aged 40-69 having 1st-time coronary artery bypass surgery (CABG) were eligible, of whom N=67 (31 control, 36 experimental)	Anxiety (State-Trait Anxiety Inventory), self-efficacy expectations for general activity, walking and climbing stairs (Jenkins S-E Exp. Scales), self-reported activity for the 3 activities (Jenkins Activity Checklists).	Groups were comparable in age, occupation, smoking, previous heart history; although attrition was greater in control group there were no significant differences between	Although anxiety was initially higher in the experimental group, it decreased after the 1st volunteer visit and remained lower in comparison with controls at 24 hours (29.2 vs. 38.8, $p<0.01$), and at 5 days	1 3 4 5 6 7 8 9 10

	support 24 hours before surgery, 5 days after and 4 weeks after. The intention was to promote self-efficacy and activity, and to decrease anxiety, through vicarious experience with peer support. Montreal, Canada	agreed to participate. Final N=56 (29 control, 27 experimental). Randomisation by coin flip.		baseline demographic, physiological or anxiety variables between dropouts and completers. Some contamination possible between groups, as up to 80% of patients usually seek out another patient for information before surgery.	(25.2 vs. 36.1, $p<0.01$) and 4 weeks (25.3 vs. 31.4, $p<0.05$) post-operation. A significant decrease in anxiety occurred for this group between 48 and 24 hours pre-surgery, but anxiety did not decrease further after this time. By contrast, the control group only decreased in anxiety between 5 days and 4 weeks post-operation. Self-efficacy levels were greater for the experimental group for all 3 activities at hospital discharge. Both groups increased self-efficacy expectations over time and were not significantly different by 4 weeks post-operation. Self-reported activity levels for walking and general activity were greater in the experimental group at discharge and remained different at 4 weeks. Only walking was the same at discharge.	
Senturias et al. (2003)	Home visits, nurturing and support for young mothers, weekly visits over one year. Hartford, CT, USA (inner-city setting).	RCT. N=188 (95 intervention, 93 control), methods of sampling and randomisation not stated. 1 year f/u response rate not stated.	Having at least 5 well child care visits. Having all recommended immunisations. Number of inappropriate emergency department visits. Injuries associated with abuse or neglect.	None stated.	No significant effects on any outcome variables: 5 WCC visits: 76.7% intervention vs. 71.8% control Immunisations: 63.2% intervention vs. 66.7% control ED visits: 46.1% intervention	1 3 7 9 10

					vs. 45.8% control Abuse injury 4.3% intervention vs. 2.1% control.	
Ting et al (1999)	Bereavement counselling in a hospital A&E department and community. Volunteers were trained and supported by other professionals. Hong Kong.	Non-random controlled trial. Compares patients in study year offering volunteer service with a control year prior to the service being offered. N=130 (77 intervention, 53 control). Follow up at 3 months and 6 months.	Texas Revised Inventory of Grief (TRIG)	Clients in control and intervention years had different relationships to the deceased (more parents than siblings in study group), effects not explored.	No significant differences at 3 months. However, at 6 months, the intervention group had lower intensity of grief reactions (34.6) than control (41.8), p=0.04 for high-risk sample. No significant difference for low-risk sample.	1 2 4 5 9 10
Wishart et al (2000)	Volunteers provided assistance and companionship to an older person with cognitive impairment and supported their caretaker. 2 hours/week. Canada.	RCT. Voluntary sample from all eligible patients referred to the programme. N=24 (13 intervention, 11 control). Randomisation by block group, every four assignments; computer generated random assignments in sealed opaque envelopes. Follow up at 6 weeks.	Caregiver burden. Health and social services expenditure. Social support (functional aspects). For experimental group only, caregiver satisfaction with the volunteer service was reported.	Education of caregiver was greater in vontrol group, but this was controlled for in the caregiver burden outcome. Short follow-up time. Did not assess the cognitive impairment of older perons as an outcome.	Average caregiver satisfaction with the volunteer service was 3.62 (+/- 0.32) out of 4. Caregiver burdendecreased by 8% for the intervention group but increased by 3% for the controlg roup. (ANCOVA using education as covariate F=6.8, p=0.02).	1 3 4 5 7 8 9 10

*1) Prospective study design; 2) Representative sample from a relevant population; 3) Appropriate control group (random or appropriately matched); 4) Baseline response rate $\geq 60\%$; 5) Follow-up rate $\geq 80\%$ of baseline; 6) Effects of non-responses and/or drop-outs explored; 7) Conclusions substantiated by the data; 8) Potentially important confounding factors explored; 9) All members of the study population (or intervention group) exposed to the volunteering intervention; 10) Appropriate statistical tests used.

Table 5: Uncontrolled longitudinal studies of health effects on service users (n=9)

Study (dataset) and article reference(s)	Volunteering context	Design and sample characteristics	Outcomes measured	Potential confounding factors	Results/ Conclusions	Quality appraisal*
Anderson and Lipman (2006)	Volunteers mentoring children at risk of mental health problems participating in recreational programmes. 20-week programme in a community recreation centre, Ontario, Canada.	Prospective cohort (Uncontrolled convenience sample). Sample size not given.	Brief Child and Family Phone Interview, a parent completed, standardised measure of the 6 most prevalent children's mental health problems	Less than 50% completed two-month follow-up questionnaires, raising possibility of sample bias. Mentoring only one component of intervention; mentees also participated in recreational programme.	Improvement in emotional behavioural functioning at programme completion but results at two-month follow-up were mixed. (No figures given).	1
Cheung and Nguen (2000)	Community volunteers visiting and helping frail seniors who are living alone. Hong Kong.	Uncontrolled longitudinal panel (2 waves, 6 months apart). Baseline N=139, final N=125.	Self-rated present health, health compared with previous year, anxiety, social integration, knowledge of senior services	Unclear whether volunteer exposure occurred pre-baseline. No comparison group without exposure to volunteers. Did not examine interaction effects of previous health status and volunteering on follow-up measures (i.e., did not control for previous health status) although previous health status was more highly correlated with follow-up status than was volunteering.	No significant change in self-rated health. Average anxiety scores decreased from 26.9 to 20.7 and knowledge of senior services increased from 30.3 to 35.4 during the 6-month period. The amount of contact with a volunteer was correlated with decreased anxiety (B=-0.209, p<0.05), greater social integration (B=0.273, p<0.05) and increased knowledge of senior services (B=0.186, p<0.05).	4 5
Edgar et al. (2003)	A volunteer cancer support service, including clinic volunteers in oncology and radiation	Prospective cohort (non-random, self selection) comparison of users and non-users. N=177 (138 users and	Physical subscale on FACT Profile of Mood Status (POMS) Functional Assessment	Limitations of non-random allocation are discussed extensively. Different baseline measures in two groups;	Users showed greater improvement in physical health than non-users (users increased from 21.5 to 25.2, nonusers	1 5 8 9 10

	<p>oncology, lay counsellors, self-help groups, transportation library services, resource information, office reception, hospital visiting, bereavement counselling, educational meetings and a newsletter. Montreal, Canada</p>	39 non-users)	<p>of Cancer Therapy (FACT) Life Orientation Test (LOT) Satisfaction with services used.</p>	<p>this is included in the model (looking at differences in improvement between 2 groups); however, initially needier patients may have improved more over time anyway, regardless of intervention. Demographic confounding explored but not adjusted for.</p>	<p>from 25.2 to 26.3, p at baseline (t-test)=0.02, n.s. at T2). Interaction term of time and being a user or not was the only significant predictor in regression of physical well-being: t=3.15, df=344, p<0.0018. Difference in POMS was nonsignificant between users and nonusers at baseline and T1. Information: users mean 3.7(1.2) vs non 3.1(1.9), t=-2.42, p=0.016. Support: users 3.9(1.0) vs non 3.0(2.0), t=-4.14, p=0.000. Activities of daily living: users 2.4(2.1) vs non 1.0(1.8), t=-3.95, p=0.000. Transport: users 2.6(2.3) vs non 1.2(2.0), t=-3.69, p=0.000. Finance/job: users 1.2(1.8) vs non 0.5(1.3), t=-2.43, p=0.016</p>	
<p>Etkin et al. (2006)</p>	<p>Teaching Strong for Life exercise programme for older adults in homes, 10 diverse sites across USA. Programme already demonstrated effective when taught by professionals; this study was exploring the feasibility of using</p>	<p>Uncontrolled prospective cohort (pre- and post-comparison). N=86 at baseline, 70 at 4-month follow-up. (But instrument only completed for 56 participants at both baseline and follow-up.)</p>	<p>SF-20 overall health self-evaluation. Self-efficacy for exercise. Decisional balance.</p>	<p>No comparison made to programme not taught by volunteers, although it has been evaluated previously. Unclear whether any effects were the result of the programme or would have occurred anyway, as no comparison group.</p>	<p>Social functional scale of SF-20 improved between baseline and follow-up from 62.77 to 74.22 (p=0.003). No other significant differences in either direction.</p>	<p>1 9 10</p>

	volunteers to widen dissemination.					
Giles et al. (2006)	Observation of at-risk hospital patients in 'safety bays' to prevent falls. Duration of intervention not specified. Southern Adelaide, Australia.	Uncontrolled pre-post comparative design. Population and sample size not given, as comparing rate of falls per beds occupied in the hospital ward.	Number of falls per 1000 occupied bed days (OBD)	Possibility of underreporting falls was discussed but considered unlikely. Effect of volunteers not adequately separated from other aspects of intervention.	Despite a non-significant increase in falls per OBD during the implementation period from 14.5 per OBD to 15.5 per OBD, IRR=1.07 (95% CI 0.77-1.49), no falls occurred while volunteers were present.	1
Healy et al (2008)	Volunteer lay leaders delivering A Matter of Balance, a cognitive-behavioural health promotion programme to reduce the fear of falling in older adults. USA. The programme had previously been found to be efficacious but not widely implemented; this study aimed to examine whether it could be translated into a community-based model led by lay volunteers.	Prospective cohort (Uncontrolled convenience sample). Baseline N=349, final N=129. Follow-up at 6 weeks, 6 months and 12 months.	Fear of falling (Proximate measures: Falls Efficacy Scale, Falls Control Scale, Falls Management Scale; Distal measures: exercise, measured by Physician-Based Assessment and Counseling on Exercise)	No comparison with a non-intervention group. Possible selection bias as recruited voluntary participants who believed they may benefit from the programme. No important differences in demographic and clinically important factors found between those who did and did not return follow-up questionnaires. Self reported measures.	Significant increases from baseline to 6 weeks, 6 months, and 12 months, respectively, in falls efficacy (6 wk mean change .2221, p=0.0001, 6 mo .1950, p=0.0005, 12 mo .2045, p=0.0013), falls management (6 wk mean change .3483, p<0.0001, 6 mo .2657, p<0.0001, 12 mo .3406, p<0.0001), and falls control (6 wk mean change .1131, p=0.006, 6 mo .0857, p=0.04, 12 mo .1117, p=0.02)	1 4 6 7 8 9 10
Herbst-Damm and Kulik (2005)	Volunteer support (befriending, listening) for hospice care patients at home and in hospice, San Diego, CA, USA.	Retrospective cross section with nested case control (administrative records). N=290 (212 initially randomly selected but yielded only 16 requested and received volunteer visits; 78 additional	Longevity Kanrnofsky svore (0=death, 100=excellent health)	Marriage controlled for. Self-selection bias as patients had to request themselves.	Longevity survival times were longer in the intervention group (by 80 days). Likelihood Ratio chi square (2, N=290)= 77.68, p<0.00001. Rate of death was nearly three times (LR=2.9) higher in the control group. Even when baseline	2 3 4 5 6 (n/a as mortality study) 7 8 9 10

		patients receiving volunteer visits therefore selected purposively, yielding 94 in intervention group and 186 in non-intervention group). 25 excluded as died within 3 days.			Karnofsky scores were controlled for, this advantage remained with mean survival times of 119.0 days v 41.08 (F=40.55, p<0.001). A similar survival advantage was identified in the Karnofsky's score matched case control subgroup with a mean survival time of 119.8 days in the intervention subgroup compared to 39.2 days in the control, p<0.0001. No interaction effect for marital status.	
Hiatt et al (2000)	Volunteers provide home visitation support for new families for up to one year after the birth of the first child. Denver, CO, USA.	Pre-post measurement (Uncontrolled). Baseline N=1,144 families served by KCCP volunteers, Final N=282 (25%).	Scale of Family Functioning	Volunteers complete questionnaires. No comparison group.	Slight improvement from pre- to post testing in all areas (social support from 4.4 to 4.6, confidence a sa parent from 4.5 to 4.7, expectations from 4.6 to 4.8, affective relationships from 4.4 to 4.8, sensitivity to caretaking from 4.7 to 4.8) except family conflict and self-esteem, where no changes were noted. Statistical significance not reported.	1 9 (but varying lengths of time, differences not explored)
Schafer et al (1998)	Breastfeeding peer counsellors provided in-home one-to-one	Pre-post measurement comparing low-income rural pregnant	Intervention group: preprogramme and postprogramme	No data available for non-participants to compare demographic	Women in the intervention group significantly increased	1 4 6 (partially)

	<p>lessons about health diet and breastfeeding, and ongoing support. Iowa, USA. Length of peer counselling relationship not stated, but follow-up of intervention group at 12 weeks post-partum.</p>	<p>and postpartum women in counties with and without the volunteering intervention. N=107 (143 intervention, 64 control). Intervention group recruited by voluntary participation in programme. Control was all women meeting the study criteria in the control counties during the final 2 years of the project, divided into those who initiated breastfeeding (N=20) and those who did not (N=44).</p>	<p>nutrition knowledge and breastfeeding knowledge. Dietary intake (dietary recall for intervention group, State WIC food frequency checklist for control group). Breastfeeding initiation (defined as 'ever to breast,' including even one attempt at breastfeeding) and duration (defined as any breastfeeding).</p>	<p>and socioeconomic variables with participants. Many lost to follow-up at 12 weeks post-partum. No significant differences between clients completing only entry data and those completing both entry and exit data. Instruments and data collection methods differed between intervention and control groups. Voluntary sample more inclined to initiate breastfeeding, therefore compared with control breastfeeding initiators. No statistically significant differences in demographic or socioeconomic variables between intervention and control groups, or between two control subgroups (breastfeeding initiators and noninitiators).</p>	<p>their knowledge of breastfeeding (from 7.0+/- 1.4 to 8.8+/- 1.6 (p<0.001)) and healthy diet (from 4.6 +/- 2.8 to 5.7 +/- 2.9 (p<0.05)). Women in the intervention group reporting a 6-3-2-2 diet increased from 9% at project enrolment to 19% at project exit. The mean number of servings from the 'other' food group decreased significantly (p<0.001) from 25.9 +/-14.4 at enrolment to 13.5+/- 8.9 at exit. For the control groups dietary scores did not change significantly pre- and post-natally. Among the intervention group, 82% initiated breastfeeding compared with 31% of the control group; and breastfed for an average of 5.7 weeks compared with the initiator control group. At 12 weeks 0% of control and 43% of intervention group were still breastfeeding.</p>	<p>7 8 (some) 9 10</p>
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*1) Prospective study design; 2) Representative sample from a relevant population; 3) Appropriate comparison groups; 4) Baseline response rate ≥ 60%; 5) Follow-up rate ≥ 80% of baseline; 6) Effects of non-responses and/or drop-outs explored; 7) Conclusions substantiated by the data; 8) Potentially important confounding factors explored; 9) All members of the study population (or intervention group) exposed to the volunteering intervention; 10) Appropriate statistical tests used.

Table 6: Cross-sectional studies of health effects on service users (n=3)

Study (dataset) and article reference(s)	Volunteering context	Outcomes measured	Design and sample characteristics	Potential confounding factors	Results/ Conclusions	Quality appraisal*
Allen et al. (2003)	Volunteer ombudsmen receiving, investigating and resolving complaints made by or on behalf of residents in long-term care facilities. Connecticut, USA.	Number of complaints (though unclear which direction the effect on health is)	Cross-sectional comparison of nursing homes (n=261) with no volunteers (n=89), volunteers in one year only (n=78) and volunteers in both of 2 years (n=94).	Unclear whether increased number of complaints is a benefit (as problematic situations getting addressed) or reflects worse service. Direction of causation cannot be determined from cross-sectional design.	Nursing homes with a volunteer resident advisor had higher rates of complaints than those without. ANOVA: $F(2,258)=7.96$, $p=0.000$; post hoc: both years vs only one year, $p=0.745$, both years vs. no years $p=0.000$, 1 year vs no years, $p=0.010$ Multivariate results are inconsistent between text and table.	2 3 5 (but direction of health effect unclear) 6 8
Ashbury et al (1998)	Breast cancer survivors offered one-to-one peer support to breast cancer patients. Community setting. Canada (British Columbia, Yukon, Alberta, Northwest Territories, Manitoba, Prince Edward Island and Nova Scotia)	Items from the Functional Living Index - Cancer (FLIC), The Functional Assessment of Cancer Therapy Scale (FACT) and the Duke-UNC Functional Social Support Questionnaire	Cross-sectional comparison of programme participants with breast cancer patients who did not participate. N=375 (183 programme participants, 192 comparison group).	Method of contact, response rate, and demographic characteristics differed for the two groups. Intervention group reported better health and were more likely to have had a mastectomy. No comparison made pre- and post-intervention.	Intervention group scored significantly higher on Functional Social Support ($F=24.12$, $p<0.0001$) and had a better relationship with their doctor ($F=11.40$, $p<0.001$) than did non-participants. No significant differences between participants and non-participants on other quality of life dimensions (emotional well-being, psychological coping, social and family well-being, desire to see and be with family members and friends)	1 5 7 8
Hospers et al (1999)	Volunteers approached men in	Condom frequency use, behavioural a	Cross-sectional comparison of men in	Respondents who had refused to speak to a	Men who had conversation about HIV	2 3

	'cruise areas' where men seek men for anonymous sex, offering information on HIV/AIDS, safer sex strategies, and condoms.		'cruising areas' who had been approached by, and received advice from, volunteers with those who had not been approached but would have accepted advice. Opportunistic sample. N=362 (65% response rate; 172 had spoken to a volunteer and 190 had not).	volunteer, or who would have refused if approached, were excluded. Self-reported experience, willingness to speak to a volunteer, and risk behaviours. No significant differences in age, number of sex partners, proportion of men having sex with men and women, or men having anal sex. Proportion of men frequently visiting CAs was higher for those approached by volunteers, as expected.	prevention reported higher condom frequency use (F=5.7, p<0.05), though there was no main effect for having had a conversation or not on behavioural intention to use condoms with anal sex.	5 6 7 8
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*1) Representative sample from a relevant population; 2) Appropriate comparison groups; 3) Response rate \geq 60%; 4) Effects of non-responses explored; 5) Conclusions substantiated by the data; 6) Potentially important confounding factors explored; 7) All members of the study population (or intervention group) exposed to the volunteering intervention; 8) Appropriate statistical tests used.

Table 7: Qualitative evidence of health effects on service users (n=19)

Article reference(s)	Volunteering context	Study design/ methodology	Sample characteristics	Results/ Conclusions	Quality appraisal*
Barnes, Curran et al (1998)	Hospital aftercare service for older people. Volunteers visited clients for 14 days after discharge from hospital, helping with escorting to outpatient appointments, collecting prescriptions, housework, food preparation, and offering moral support and encouragement. UK.	Interviews, cross-sectional	Service users, volunteers and referrers. Sample size not given.	Referrers felt that the volunteer service offered 'ideal' support, particularly for patients without access to social services or family help, and cited examples of patients who had been helped by the service. One patient reported, 'I don't know how I would have coped. [The volunteer] showed me the ropes so I know how to go on.'	-
Bradshaw and Haddock (1998)	Befriending people who suffer from long-term mental illness. Community setting. Wigan, UK.	Cross-section. Semi-structured interviews.	Convenience sample of 9 people with long-term mental illness (5 male, ages 24-63 years)	Clients reported a modest increase in overall social functioning as a result of the volunteer befriending (half reported an increase in social activity, two-thirds reported increased confidence when going out socially, and half reported an increase in energy and interest to go out). All reported that overall the befriending scheme had helped and was provided a valuable service.	1 7 8
Burger and Teets (2004)	Mentoring chronically ill patients through community faith-based organisations, Midwestern USA.	Interviews, record review, cross-sectional design.	11 patients (all women), 13 volunteers	Two-thirds of patients felt they had been positively affected by the mentorship experience. Many reported increased self-awareness and social interaction skills. No outcome reported in terms of ability to self-manage the illness.	1 2 3 7
Dunn et al (1999)	Women who have themselves been treated for breast cancer provide peer support, information and a temporary breast prosthesis to women being treated for breast cancer. Visits 3-5 days after surgery, followed up by telephone support call 3 weeks later. Queensland, Australia.	Cross-section. Focus groups and questionnaire.	Convenience sample felt to be representative of women treated for breast cancer in Queensland. Focus groups N=57, questionnaire N=245.	Women felt less anxious after the volunteer visit. Women felt the visit to be very helpful, and the bond of common experience led to a decrease in isolation, an increase in optimism about the future and reassurance about personal reactions and femininity. One	1 2 3 4 5 6 7 8

				participant said, 'seeing someone still alive, well and living normally helped me see there was life after the operation.'	10
Faulkner and Davies (2005)	Scheme 1: patient psychosocial support in general practice to prevent situations/problems from deteriorating. Scheme 2: social and practical care to older hospital inpatients. Both in South Yorkshire, UK.	Scheme 1: interviews Scheme 2: observations of volunteer-patient interactions Final questionnaire completed by volunteers, patients and staff, followed up by interviews. Diary sheets completed by volunteers.	Scheme 1: 11 patients (9 female, average age 51.2 years), 8 volunteers (6 female, average age 47.9 years). Purposeful selection of patients and total volunteer sample. Scheme 2: staff n=111 (of 246 questionnaires distributed), inpatients or discharged in last 6 months n=59 (of 189 distributed), volunteers n=47 (of 75 distributed). Interviews with 36 staff, patients and volunteers. N=65 volunteer diary sheets	Scheme 1: positive appraisal of support, volunteers built rapport, were unhurried, offered greater understanding, basic information about community services and guidance. Provided emotional support when there was no one else to turn to. Scheme 2: Volunteers took time to talk through options, were easier to talk to than paid members of staff; provided guidance on leaving hospital community services and a link to the outside world; helped patients to eat, chat, groom and write letters; emotional support was appreciated.	1 2 3 4 5 6 7
Gallagher et al. (2005)	Volunteers provided bereavement counselling in agency premises (88%) or client's home (11%), working with Cruse bereavement care, which provides a service not met by the statutory sector. North-western Northern Ireland, UK.	Questionnaire (anonymous)	Purposive sample of post-counselling clients. 198 agreed to take part in the survey, were sent a questionnaire 6 weeks after the end of their counselling; 89 (45%) returned the questionnaire.	Indicated counselling provision by volunteers is possible; some decrease in feelings of anxiety and experience of fewer physical symptoms post counselling reported.	1 2 3 4 5 7
Giles et al. (2006)	Observation of at-risk hospital patients in 'safety bays' to prevent falls. The intervention consisted of creating special spaces for at-risk patients to be monitored, but volunteer monitors were only present at certain times, in 4-hour shifts. Duration of intervention not specified. Southern Adelaide, Australia.	Journals kept by volunteers, interviews with family members, staff satisfaction surveys, in cross-sectional study design.	19 volunteer journals, 16 volunteer surveys, 10 family member interviews, 24 nurse surveys.	Volunteers recorded positive comments about incidents in which they were able to prevent falls. All volunteers felt the programme should continue. Families were confused about the role of the volunteers but made no negative comments against them. 29% of nurses claimed the volunteers required too much	2 3 5 6 7

				supervision.	
Goldman (2002)	Veterans Administration Nursing Homes. Volunteers were visiting residents, socialising, sometimes providing practical help and organising activities. USA.	Cross-sectional questionnaire survey evaluating the volunteering programme	Not stated.	All residents completing the survey enjoyed the volunteers' visits. Staff noted a decrease in anxiety and depression symptoms for some residents. Residents felt that they were 'part of something - not forgotten' and appeared to have an increase in overall social interaction with peers and greater interest in other activities. Volunteers improved care by providing additional feedback about the patient to treatment teams; inter-disciplinary staff noted the positive influence for patients and creative work of the volunteers. When a volunteer left the programme this could sometimes trigger abandonment issues, but a social worker intervened in these cases.	-
Hainsworth and Barlow (2001)	Teaching arthritis self-care classes (peer support). England and Wales.	Repeated cross-sectional; semi-structured interviews and open-ended questionnaire question	14 volunteers had delivered a course the time of follow-up interview.	Volunteers felt that class participants increased their self esteem, confidence, communication skills, ability to manage arthritis, and disease acceptance, and decreased their depression.	2 4
Handy and Srinivasan (2004)	Hospital volunteers performing a wide range of roles including direct involvement with patients in befriending roles, administration and fundraising, in 31 hospitals in and around Toronto, Canada, serving urban, suburban, and rural populations. Average volunteer involvement 6.24 hours/week. Evaluation for the year 2000.	Qualitative comments on questionnaire.	Convenience sample of 805 volunteers and 49 staff completed surveys.	Quality of Patient Care: Staff members noted that their own increasing pressures, because of changes in the healthcare system, have meant less time for nonessential and nonmedical interactions. Volunteers mitigated this depersonalisation by being "excellent listeners", "relaxed and not fast paced", and "safe to speak to and disclose problems".	3

				<p>They have a "calming presence in the hospital" where patients feel very vulnerable, anxious, and often experience considerable discomfort and pain. Staff members overwhelmingly found that the role that volunteers play in anxiety reduction is an important quality of care.</p> <p>Staff Workload: Comments include: "We are so interdependent on our volunteers and value them as our best resources and we need to give feedback"; "We brag about it. We would be paralyzed without volunteers"; "Absolutely could not survive without them"; and "I am so pleased with the quality and commitment and seriousness of volunteers for healing hearts".</p>	
Legg et al. (2006)	Volunteers facilitated volunteer stroke support (VSS) groups. Group members also acted as self-help/peer volunteers insofar as they provided mutual support to one another. Scotland.	Focus groups.	N=39 participants in 7 focus groups. All had suffered stroke and were members of one of the voluntary stroke service groups. Maximum variation was used to select 7 of 82 volunteer stroke service groups; within each group, a combination of self-selection, researcher selection and nomination by group coordinators.	<p>The groups appeared to increase the quality and quantity of social contact, to reduce isolation, boredom and loneliness; provided the opportunity for close, supportive or warm relationships; a platform for exchanges with other stroke sufferers offering emotional support, informational support, practical assistance and expressions of acceptance; an opportunity to participate in a range of tasks and activities; participants worked together to complete tasks or make decisions. Sometimes the groups did make people feel self-conscious, and others expressed a developed preference for people who had</p>	1 2 3 4 5 6 7 8 9

				had a stroke over people who had not. NB: It is difficult to distinguish between benefits conferred by the volunteers' role and those from information and social support provided by other group members.	
Lin et al (1999)	Volunteers in various roles in a Buddhist hospital. Taiwan.	Structured questionnaire administered by face-to-face interview.	N=204 patients (64.8%), 240 nurses (60.8%) asked about their experiences of volunteers in the hospital.	97.5% of patients felt they'd been helped by volunteers during their hospital stay (for company, cleaning, feeding, emotional support). 73.3% felt visiting and comforting was the most helpful act. 88.6% felt volunteers brought them joy and hope. 84.5% felt the quality of their medical care was improved by volunteers. 92.5% of nurses thought volunteers had a positive impact on the medical care provided. Only 0.5% of patients and 1.3% of nurses thought volunteers were harmful to the quality of care.	
Raine (2003)	Community-based lay support to encourage breast-feeding in a UK Sure Start deprived area	Interviews Observation of meetings Diaries of supporters	Participants invited through project meetings or project coordinators and included health professionals (n=6), breast-feeding supporters (n=6 for interviews and n=7 for diaries), breast-feeding mothers (n=6).	Lay volunteers from the community have more 'street credibility' and can share their own experience of breast-feeding with new mothers.	5 8
Richards et al (2007)	Volunteers traced patients who had defaulted from scheduled psychiatric appointments. South African township communities.	Questionnaire. Design not explicitly stated.	Not stated	Volunteers traced 178 of 211 (84%) defaulting patients, of whom 120 (57%) returned to the clinic. 98% of traceable patients were contacted within 3 days. Most of the non-returning patients had died or moved away, or were in institutions, and nurses valued having this information. Volunteers also facilitated nurses working	7

				effectively in the community, and nurses reported feeling safer on community visits if accompanied by a volunteer.	
Ronel (2006)	Community outreach to street youth in a van service established to provide shelter, a place to talk, and a 'unique, non-institutionalized encounter in which therapeutic relationships can develop,' Tel Aviv and Jerusalem, Israel.	Interviews Participant observation Longitudinal design – participant observation over 1 year, interviews over several months	5 van workers, 3 adolescents	Interactions with volunteers gave adolescents an exposure to altruism, which sometimes shifted their view of the world. The enhanced perception of the volunteers sometimes transferred to the entire service, including professionals. Adolescents accessed health services that would otherwise have been taboo, such as mental health and dental care. Time constraints of volunteers and rapid volunteer turnover constituted obstacles created by the volunteer work.	1 2 5 6 7 8 9
Smith (1997)	Volunteers helped stroke patients in 25 schemes across Scotland.	Cross-sectional questionnaire survey evaluating the volunteering programme	572 client respondents (61%), under-represented from people over 75 years old; 55% female	75% were 'very satisfied' and 21% 'quite satisfied' with the volunteering service. 78% acknowledged help to improve their ability to communicate, 74% felt increased self-confidence, 61% increased social activities as a result of participating in the programme and 95% had made new friends (with other patients or volunteers).	3
Stajduha (2002)	Volunteers provided a variety of services for people with HIV/AIDS, especially providing respite care in their homes. Victoria, Canada. Although most of the evaluation looked at the service as a whole (which was not exclusively volunteer-provided), the main respite care activity was provided by volunteers	Individual interviews and focus groups.	Purposive sample of 19 people living with HIV/AIDS, 12 family members, 20 volunteers, 14 AIDS service organisation employees, 15 health care agency employees, and 5 social service agencies.	Volunteers were considered 'front line carers' supporting people with HIV/AIDS and their caregivers, were seen as more sensitive and providing more appropriate care than health services and often provided mediation with or information about these services; they facilitated suitable and	1 2 3 4 5 6 7 8 9

	and the reported outcomes relate to the volunteer activities.			affordable housing for clients, played a key role in combatting loneliness. The care of the volunteers was deemed 'excellent.'	
Taggart (2000)	Volunteers provided home visits to low-risk mothers needing extra support due to additional stressors: befriending, listening, helping with day-to-day practical skills of mothering. Sutherland, Australia.	Semistructured and group interviews; attendance at group meetings. Cross-sectional (except multiple interviews of coordinator).	Random sampling from network database: N=15 mothers (clients), 1 coordinator, 10 volunteers	The volunteers 'became a lifeline for many isolated mothers,' who were often depressed. Emotional support provided was a key issue, also bolstered by practical help. Interface with professionals (e.g. Link/referral to a social worker or health professional) worked very well. Volunteers were more trusted / better related to than health professionals.	2 3 4 5

*1) Clear statement of research question and aims; 2) Appropriate qualitative research design to address the aims; 3) Appropriate sample for the aims; 4) Appropriate data collection procedures for the research aims; 5) Appropriate data analysis methods; 6) Findings described in adequate detail and depth to all interpretation of meanings and context; 7) Conclusions justified by the results; 8) Limitations of the study and their impact on the findings taken into account; 9) Relationship between researcher and participants adequately considered.

Table 8: Systematic review evidence of health effects on service users (n=4)

Review details	Volunteering Intervention(s)	Main findings	Quality appraisal*
<p><i>Citation:</i> Beswick et al (2004) <i>Population:</i> heart outpatients <i>Relevant Study N:</i> 1 <i>Databases searched N:</i> 12 <i>Time/language/country restrictions:</i> No language restrictions, studies up to 2001. <i>Study designs:</i> All evaluative studies <i>Synthesis method:</i> Narrative</p>	<p>Weekly home visits by trained lay volunteers and accompaniment to first cardiac rehabilitation session</p>	<p>The one relevant UK study in this review was a comparison of heart patients in two different areas. One district received the intervention whilst the other acted as a comparison group. In intervention area 71% of patients attended a first rehabilitation appointment at compared with 47% in the control area ($p = 0.02$).</p>	<p>1 2 3 4 5 6 7</p>
<p><i>Citation:</i> Campbell et al 2004 <i>Population:</i> Cancer patients and volunteers <i>Relevant Outcomes:</i> Benefits, risks and barriers of the programmes including psychosocial, psychological and health e.g. Quality of life, anxiety, depression, social support, affect, self-esteem. <i>Relevant Study N:</i> 19 <i>Database N:</i> 6 <i>Time/language/country restrictions:</i> English language, peer-review, 1980-2002 <i>Study designs:</i> Qualitative (n=8, Needs assessments, purposive interviews, focus groups) and quantitative (n=11, pre-post or post only surveys, 3 with comparison groups, 3 RCTs). <i>Synthesis method:</i> Narrative</p>	<p>Peer support interventions provided by volunteer cancer survivors for current cancer patients in which health professionals had a facilitative non-directive role.</p>	<p><i>Volunteer results:</i></p> <p>Only one qualitative study examined volunteers. It found positive benefits in terms of increased empathy, hope, and reassurance.</p> <p><i>Service user results:</i></p> <p>Qualitative: All studies reported positive benefits - sharing feelings, emotional support, empathy, hope, reassurance, understanding, reduced uncertainty, stress and anxiety.</p> <p>Quantitative: Studies all reported positive outcomes - increased social support, lower anxiety and depression, improved quality of life, improvement in psychological morbidity.</p>	<p>1 2 3 4 5 6 7</p>
<p><i>Citation:</i> Macvean, M. et al (2008). <i>Population:</i> People with cancer (and volunteers in the programmes). <i>Relevant Study N:</i> 9 <i>Databases searched N:</i> 3 <i>Time/language/country restrictions:</i> English language. No other restrictions mentioned. <i>Study designs:</i> Relevant studies were RCTs, controlled and uncontrolled before and afters. <i>Synthesis method:</i> Narrative</p>	<p>One-to-one volunteer support programmes (psychological, emotional or educational support)</p>	<p>Uncontrolled studies (3): One study of people with cancer found a reduction in anxiety, another study of people with cancers and the volunteers found a reduction in stress and an increase in wellbeing amongst patients, and no change in these measures for the volunteers. A study of women with breast cancer found that depression and menopause symptoms decreased after 3 months.</p> <p>Comparative studies (3): One study of people with cancer found that in comparison to no treatment, the intervention group</p>	<p>1 2 4 5 6 7</p>

		<p>reported better functioning. Another generic study found that the physical health and wellbeing of the intervention group improved after 12 months. A further study found that there was less pain and a higher quality of life in the intervention group after 6 weeks.</p> <p>RCTs (3): One RCT of people with cancer found that after 2.5 months pain, depression and anxiety improved. Another RCT with a 12 month follow-up found that general health, anxiety and depression did not improve in the intervention group, although they did improve in the nurse support control. A smaller RCT found significant improvements in depression after 4 weeks, but not 8 weeks.</p>	
<p><i>Citation:</i> Newbould, J. et al (2006); Bury, M. et al (2005) <i>Population:</i> Patients in lay-led self management programmes <i>Relevant Study N:</i> 7 <i>Databases searched N:</i> 4 <i>Time/language/country restrictions:</i> English language, published since 1960. No country restrictions but all relevant studies were from the UK and USA. <i>Study designs:</i> Relevant studies were RCTs, and controlled and uncontrolled before and after studies. <i>Synthesis method:</i> Narrative</p>	<p>Condition specific (arthritis or back pain) and generic lay-led self-management programmes (similar to expert patient programme) Studies generally compared lay-led self-management groups with professional-led groups or no treatment.</p>	<p>Compared to professional led (2): A controlled USA study with a four month follow-up found ns differences in self-reported disability between the intervention and the control group (arthritis). However, costs were significantly lower for the intervention of between \$40 and \$600 per course. These ns results were similar to those in another USA study (back pain). Compared to no treatment (2): A UK RCT (arthritis) found that after 4 months there were significant improvements in depression ($p < 0.0005$) amongst the intervention compared to the control group. An uncontrolled follow-up was conducted after 12 months, this found that the improvements in depression were sustained and there was also a decrease in visits to the GP ($p < 0.0005$). A USA RCT (generic) with a 6 month follow-up found significant improvements in the intervention group in disability ($p = 0.002$) and hospital visits ($p < 0.05$) although there were ns differences in pain, visits to GP, or wellbeing. Average patient cost was \$820 less in the intervention group than the control. A further follow-up to this study found that these improvements (except in disability) were sustained, but not increased, after 1 and 2 years. No comparisons (3): An uncontrolled USA study (arthritis) with a 4 year follow-</p>	<p>1 2 6</p>

		<p>up, found significant decreases (15-20%) in pain and a reduction in GP visits amongst the intervention group. However, an uncontrolled UK study (arthritis) found no improvements in disability. An uncontrolled UK study (generic) with a four month follow-up found small significant decreases in anxiety, depression and health distress. No changes were recorded for pain or health care visits.</p>	
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* 1) Well-defined question; 2) Defined search strategy; 3) Inclusion/exclusion criteria stated; 4) Study designs and number of studies clearly stated; 5) Primary studies quality assessed; 6) Studies appropriately synthesised; 7) More than one author involved in each stage of the review process.

Table 9. Economic / cost-benefit analysis of volunteering in health settings (n=3)

Article reference(s)	Volunteering context	Study design/ methodology/ sample characteristics	Limitations	Results/ Conclusions
Browne (2000)	Volunteers in a in a combined acute and community trust, UK.	Economic cost-benefit analysis of volunteering using the VIVA methodology to quantify costs of involving volunteers in an organisation and a survey (N=15 out of 165 regular volunteers)of volunteer activities to establish value of their contribution	Small sample used to estimate value of volunteer activities. Sampling strategy not stated.	Ratio of cost to benefit from volunteering activity was 1:55 (i.e., every £1 invested in volunteering yielded a return of £5.57).
Caplan (2007)	Volunteer-mediated delirium prevention programme involving daily visiting, therapeutic activities, feeding and hydration assistance, and vision and hearing protocols. Geriatric hospital wards, New South Wales, Australia.	Rudimentary cost-effectiveness analysis based on the reduced length of stay among patients exposed to volunteering intervention and reduced use of nursing assistants to sit with delirious patients.	No comparison of cost savings from LOS and nursing assistant use to the cost of employing volunteers. Result based on different unit measures (one per patient, one per month) and cannot be extrapolated to other settings.	This programme involving volunteers is estimated to result in a total annual saving of A\$129,186.
Field, Ingleton and Clark (1997)	Hospice voluntary staff in a range of roles, including day care, in-patient or nursing station, reception, tea bar and transport. Mansfield, UK.	Cross-sectional economic analysis computed value of donated hours @£3 per hour (1993 values), offset against costs of administering and training volunteers	Value of volunteering hours is arbitrarily set without reference to costs the hospice would incur without volunteers.	Net benefit of the volunteering programme to the hospice was approximately £81,000. Ratio of cost to donated time value was 1:3.95.
Handy (2004)	Hospital volunteers performing a wide range of roles including direct involvement with patients in befriending roles, administration and fundraising, in 31 hospitals in and around Toronto, Canada, serving urban, suburban, and rural populations. Average volunteer involvement 6.24 hours/week. Evaluation for the year 2000.	Cross-sectional economic evaluation (cost-benefit analysis). Convenience sample of 805 volunteers and 49 staff completed surveys.	Volunteers returning questionnaires are likely to be more committed. Hours estimated from managers' responses. Problems with methods of analysing cost and benefits of volunteer time but these are discussed.	Estimated hours donated by volunteers Estimated monetary valuation of volunteer hours and costs of running volunteer programme Net financial benefit of volunteers. Impact on quality of care and staff workloads based on surveys of volunteer managers, staff and volunteers.