

The impacts of Intergenerational Programmes on the Physical Health of older Adults: A review

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Abstract

Background: The ageing population is growing and the dependency ratio is increasing. It is vital to promote healthy ageing of older people to relieve pressure on society. The aim of this study is to explore the effects of community-based intergenerational programmes on older adults' physical health in terms of their general self-rated health, level of physical activity and physical functioning.

Methods: A rapid literature review was performed to identify studies of intergenerational programmes for community-dwelling older adults. The search included peer-reviewed articles published in English from 1986 to 2014 with no country restriction. However, interventions for older people with dementia, as well as for anyone living in residential care were excluded. Supplementary searches were performed and a narrative synthesis was conducted.

Results: Seven studies met these inclusion criteria. Intergenerational activities, including volunteering and reminiscence components, have been associated with an overall positive trend in physical health outcomes. Individuals reported having better health, as well as decreased body aches and pain. In addition, participants reported a feeling of being "more active", with improved energy consumption, increasing the numbers of streets walked and stairs climbed. For physical functioning, older volunteers tended to show less decline in hand grip strength but inconsistent results for walking speed.

Conclusion: More studies with longer time horizons and sufficient statistical power are required to determine the optimal level of participation and to address potential barriers to maximising the benefits of intergenerational programmes for socially marginalised groups. More formal evaluations of the costs and benefits of programmes are needed, taking account of broader societal benefits to inform practice and policy for active ageing.

Keywords: Community; Intergenerational programmes; Older people; Physical activity; Physical function; Physical health; Self-reported health; Volunteering

Introduction

The ageing population is growing across the world and the dependency ratio is rising [1]. Frail older adults can be heavy users of health and social care services, making it imperative to help older people maintain independent living [2]. The ageing of populations also implies an additional care burden to families and society. While some older people experience declines in physical functioning at a normal rate as part of the natural degenerative process, the speed of ageing can be negatively affected by increases in perceived social isolation, especially after retiring from paid work and/or being bereaved of close friends and relatives [3].

It is therefore vital to encourage active and healthy aging for all older people, both for their sake and that of society. A growing number of studies report the potential benefits of active ageing as a result of formal volunteering programmes that allow older adults to participate in various forms of civic engagement and religious activity [4]. The positive links between such community-based activities and health outcomes have been well documented, such as delayed morbidities, lowered mortality, better cognitive health and enhanced

longevity [5,6,7]. According to the theory by Erik Erikson, generativity was defined as older people's desire to expand their care beyond oneself, towards others in broader societal contexts by passing their wisdom and knowledge accumulated over years to younger generations [8]. Based on the concept of generativity, intergenerational activities such as volunteering may help to promote better health [9]. However, there are relatively few studies looking at the physical health benefits from intergenerational interventions.

The purpose of this study is to review the literature on the effectiveness of interactive activities between different generations on older adults' physical health in terms of general self-rated health, physical functions and physical activity levels.

Methods

The search was restricted to the PubMed database. Studies had to be published in a peer-reviewed journal between 1986 and mid-2014 and written in English. There were no country restrictions. The results of the database search were supplemented by snowballing citations in relevant papers. Medical Subject Headings terms were combined with free text words as indicated:

("intergenerational program*") OR ("Intergenerational Relations/epidemiology"[Mesh] OR "Intergenerational Relations/

ethnology"[Mesh] OR "Intergenerational Relations/statistics and numerical data"[Mesh])) OR ("intergenerational intervention*")

Interventions and study designs covered

Any studies looking at volunteering programmes that brought older people into contact with other generations were included. Older participants in programmes had to be aged 60 and over; they could be healthy or have any pre-existing physical and/or mental health problems, with the exception of dementia. They also needed to be living independently in the community. Studies looking at interactions and support within a family, for instance between grandparents and their grandchildren, were excluded.

All studies had to report impacts on physical health. Volunteering was defined as an activity without financial rewards, although interventions with some modest financial support such as the reimbursement of lunch or travel expenses were permissible. Randomised controlled trials (RCTs), non-randomised controlled trials and before and after observational studies were included. Studies could have a mixture of quantitative and/or qualitative methods of evaluation.

Results

251 papers were initially identified. Based on titles and abstracts, 230 studies were excluded and 20 papers were potentially relevant. After reading the full texts of papers, 15 studies were excluded. Four studies involved direct family members and their relatives. Three studies were excluded for only reporting outcomes for children, five studies looked at older adults with dementia, while two studies reported outcomes not related to physical health. One supplementary study was added from snowballing the literature. Therefore in total, seven studies were included in this present review.

All studies included a reminiscence element in the intervention delivered by older adult volunteers either at school or in community settings. Three studies were American, three were from Brazil, with one from Japan. The follow-up periods varied from three months to three years but four studies had follow-up times lasting less than eight months.

Three studies involved randomised controlled trials (RCTs), two controlled trials without randomisation (CT), and two observational studies comparing outcomes at pre and post-intervention points.

Impacts of intergenerational activities on physical health

The effects of intergenerational programmes on self-reported health: Four studies looked at measures of self-reported health [10,11,12] or reduced body aches and pain [13].

De Souza et al (2007) in a randomised controlled trial from Brazil [10] assessed the effects of a reminiscence intervention to encourage interactive activities between generations. 134 students aged 13 to 15 were randomly allocated to the experimental group and 119 students to the control group. The students, whose parents tended to have low formal education, were from five classes. 32 older people aged 60 and over (60-69, 58.4%, 70-79, 32.3%, 80+, 9.8% and 60.4% women) were divided into groups with a ratio of ten students to two volunteers. After the volunteers were trained for 20 hours, interactive sessions took place for two hours every week at school. Over 14 weeks, the intervention included a series of small group-based activities between

older people and students, using photographs, and antique objects, which helped remind older people of their own school days, marriage and migration. During class time, the students were expected to write down what the volunteers talked about and to draw pictures for the various life events. After 14 weeks, there was an increase in people in the intervention group reporting their health to be good or very good from 36.2% to 40.4%. In contrast, there was a non-significant decrease in the proportion of controls perceiving their health as very good or good from 46.2% to 41.7%.

De Souza (2003) in an earlier study in Brazil [13] looked at the effects of a pilot intergenerational programme including outings, parties and reminiscence with a discussion guide between 84 adolescents, aged 13 to 19 and 26 older people aged 60 and above (no details on a mean age or range). In a before and after study, after six months, the results of focus group interviews showed that the older volunteers had a better perception of their health states. They all reported an alleviation of body aches and pain at follow-up.

De Souza (2011) in another Brazilian observational study [11] with a pre and post-test study design [8] also investigated the impact of a school based intergenerational reminiscence programme on the health status of older volunteers, using qualitative approaches. 32 older adults aged 60 and over (no more details on an average age or range) from the catchment area of the chosen school participated in the programme alongside 111 secondary school children aged 12-18 years. They shared life stories for two hours per week over four months in groups of 2 older people and 10 students. In focus group discussions from ten student and four older peoples' groups, some older ladies reported improved health states due to decreased use of emergency care services after participating in the programme. In general older women were more positive than older men who felt that there was no apparent improvement in their health state after intervention.

In a randomised controlled study from Japan, Fujiwara and colleagues [12] examined the effects of an intergenerational health promotion programme called REPRINTS (Research of Productivity by Intergenerational Sympathy) at childcare centres or schools. The intervention involved 69 older volunteers with a mean age of 68.2(85% women) who completed a training course lasting 3 months and 72 older adults with an average age of 68.7 (77% women) in the control group. They read picture books to children at kindergartens and public elementary schools before the first morning class. At nine months, 56 volunteers showed a non-significant increase in self-rated health scores, while 56 individuals in the control group showed a decrease in these scores. However, in a longer term follow-up assessment, after 21 months, 37 volunteers, who continued to participate in these intensive volunteering activities in the REPRINTS programme, had greater improvements in self-reported health compared to 60 controls (p-value not reported).

Effects of intergenerational programmes on physical activity: Regarding levels of physical activity, older volunteers were found to be "more active" [14,15], having increased energy consumption, measured in kilocalories consumed per week [7,14] as well as walking more streets and climbing more stairs [11].

A pilot randomised controlled evaluation by Tan and colleagues (2006) [15] reported a change in physical activity levels among 113 older volunteers aged 59 to 86 with an average age of 69 in the Experience Corps Baltimore programme. Nearly all the participants were African American (96%) and 94% were women on incomes of less than \$15,000 per year. There was a significant difference in the

changes in physical activity levels between the intervention and control groups. More than half of the older volunteers (53%) self-reported that they became more active than in the previous year, while only less than a quarter of those (23%) in the control group were more active ($p < 0.01$). Interestingly, older people in the programme who initially reported “low activity” improved their physical activity by 110% over a four to eight month follow-up period. In sharp contrast, those in the waiting-list control group only showed a 12% increase in physical activity ($p = 0.03$), while for previously active older people, no significant difference was found over time ($p = 0.30$).

A controlled trial by Tan and colleagues (2009) from the USA [7] also investigated the impact of high-intensity volunteering in the Baltimore Experience Corps programme on physical activity among older African American women aged 65 to 86 in the long-term. Over 3 years, 71 African American women in the programme were matched with 150 African American women in the Women’s Health and Ageing Studies (WHAS) I and II using a propensity score. Older volunteers maintained their improved physical activity levels, relative to the control counterparts. At pre-test, physical activity for people with a median propensity score was 420 kcal on a weekly basis. However, at post-test, older volunteers reported higher weekly energy consumption levels than those in the control group (670 kcal vs. 410 kcal) ($p = 0.04$). In other words, in the intervention group, older volunteers increased their physical activity by 250 kcal every week by the end of study follow-up, while those in the control cohort showed a decline by 10 kcal, compared with their baseline figures.

Another study by Fried and colleagues (2004) from the USA [14] investigated the effects of a social model to promote health for older volunteers, based on a RCT of the Experience Corps (EC) programme. 128 older people with ages ranging from 60 to 86 with an average age of 69 were randomly assigned to intervention (69) and control (56) groups. The majority of the participants (95%) were African American and 92% were women. After taking part in the EC programme over a four to eight month period, there were significant increases in physical activity. At post-test assessments, a higher proportion of older people (63%) reported that they were “more active” than prior to their participation in the programme, relative to 43% of those in the control group ($p = 0.04$). There was a non-significant improvement in the average number of streets walked on a weekly basis in the EC group, whereas there was a reduction of 9% in controls. More people in the EC group reported greater increases in the number of stairs that they climbed every week than their counterparts in the control group (19% vs. 8%). The levels of physical activity, measured in kilocalories consumed per week showed a 25% increase in the EC, compared to a 5% reduction in the control group (p -value not reported).

Effects of intergenerational programmes on physical functioning:

Regarding physical functioning, older volunteers tended to show less decline in hand grip strength [14], and some studies showed mixed results for walking speed [12,14].

The impacts of the Experience Corps programme on physical functioning were explored by Fried and colleagues-(2004) looking at whether the intervention could make a difference in grip strength and walking speed [14]. Although declines in grip strength were reported in both experimental and control groups, faster deterioration (26%) was found in people not volunteering compared to the EC group (21%). Similarly, even if decreases in the speed of walking were reported in both groups, a significantly smaller decline was shown among the older volunteers in the EC group from 0.95 to 0.92 meters

per second compared to 1.06 to 0.86 meters per second ($p = 0.001$) in the control group.

The Japanese REPRINTS study based discussed earlier [12] also examined the effects of an intergenerational programme to promote physical functioning such as grip strength and walking speed. At follow-up, there were non-significant differences between the two groups were observed in usual walking speed, measured as meter per minute and grip strength per kilogram.

Discussion

Overall there was a positive trend in older adults who took part in intergenerational encounters through volunteering to have improvements in physical health outcomes. There was a better perception of health states, decreases in bodily pain and aches. In addition, positive benefits were found such as feeling “more active”, improvements in energy consumption, increases in the numbers of streets walked and stairs climbed. Regarding physical functioning, older volunteers tended to show less decline in hand grip strength, and mixed results for walking speed.

However, there is insufficient evidence to make any firm conclusions on the effects of intensity and duration of intergenerational interventions, due to the short time horizon of less than eight months in follow-up periods in most studies reviewed. One exception is the Japanese study [12], where although there was no significant difference in self-reported health between volunteers and controls at nine months, a significant improvement was found at 21 months. In other words, older people who actively take part in volunteering appear to maintain health benefits. The longer the duration of the intervention the greater the benefit participants may receive.

These results should be interpreted with caution as good health can be an outcome of effective interventions. At the same time, it can be a consequence of better health. Volunteers by nature are a self-selected group and they may be more healthy and younger than the general older population. In other words, those who survive long enough and remain fit, also in turn have had an opportunity to do something better for their health. Older people in good physical health are more likely to be willing and able to volunteer than those with acute or chronic illnesses. This can cause a kind of bias of healthy volunteer effects.

Another study [15] suggests that a high intensity volunteer programme can be used for older people with low physical activity levels as a health promotion strategy. It could have been expected to generate more health gains for people who have more room for improvement than those who were already active. It might therefore be more appropriate to take a targeted approach to promoting the physical health of physically inactive older people through community-based volunteering.

In addition, the study of the Experience Corp by Fried showed that health benefits can be realised in older people with chronic physical diseases. The majority of the older participants in this study had multiple chronic conditions, officially diagnosed by medical professionals. Those in the intervention group had a slightly higher number of health problems than controls (2.7 vs. 2.4). More than two-thirds of the volunteers had high blood pressure (62.6%), over half had arthritis (52.1%), more than one-third had vision problems (36.1%), and 61.9% had difficulties in climbing stairs. Older adults who

participated in the EC programme tended to show more favourable outcomes in terms of delaying functional decline in hand grip as well as walking speed.

This can be interpreted as indicating that although intergenerational programmes won't stop the natural ageing process, they can play an important role in delaying the speed of the rapid progression of degenerative/chronic diseases. In other words, in the absence of participation in programmes, as with the control groups, people may face a deterioration in their health at a faster rate than those who volunteer. It suggests that intergenerational interactions can at least be helpful in slowing down some aspects of the ageing process.

Moreover, there is a possibility for intergenerational programmes to be cost-effective. The De Souza (2011) study also suggests intergenerational activities may contribute to a decrease in the use of acute emergency care visits [11]. There are some concerns about over-consumption of unnecessary or avoidable care services, especially given the rapid growth of the oldest old. Therefore, there is a potential for interactions between different generations to be part of a strategy to avoid some health care costs for older people.

Similarly, in De Souza's 2003 pilot intergenerational reminiscence programme in Brazil [13], participants had less aches and pains. This also suggests potential for intergenerational programmes to be helpful in reducing the utilisation of medical resources by older adults.

Old women, in particular, at advanced ages are more likely to seek medical help, which could have been prevented by timely attention and care. Active listening, while older people talked about their life stories, may have had a therapeutic effect on their physical pain and aches as there are well established links between physical and mental health. Physical health can be affected by mental health and vice versa. The impact of enhanced social capital on positive physical health is well researched in other fields [16], partly due to improved immune system functions and more resources available for resilience. Programmes involving interactive conversations can increase social capital as indicated in responses such as improved self-worth and a sense of being valued. Therefore, there is a potential chance for intergenerational communications to facilitate more efficient use of health care resources as a preventive measure.

One challenge is that women seem to make up the bulk of those participating in intergenerational programmes. Moreover, in some studies [10], low attendance rates were mentioned as one of the barriers to successful implementation of these programmes. In future studies, it would be worth investigating the reasons for gender disparities, whether it is due to favourable survival effects of women as they enjoy better longevity than men, or other differences in psychological and/or cultural aspects in gender roles [17]. It will also be important to look at ways of encouraging more men to participate.

There are some limitations of this present study, including its reliance solely on the PubMed Medline database which may not have picked up some more non clinical literature. The limited number of robust studies with long time frames also limits what can be concluded from this review. More studies with various study designs including cross-sectional studies are needed with sufficient power to detect statistically significant differences in physical health outcomes and longer-term follow-up periods to confirm the effects on mortality.

More can also be done to help identify appropriate amounts of volunteering activities for intergenerational encounters. While they can do more good than harm, excessive involvement may be

detrimental to health in later life and reduce subjective well-being [18]. Although there is no confirmed consensus on the optimal amount of volunteering at older ages, a study of hospital volunteers aged 62 and over showed that those who volunteered 500 hours per year had the highest "contentment" scores. Better than those who volunteered less or more [19]. However, in this review, high-intensity volunteering (15 hours per week over a full academic year) in the EC Baltimore projects at school was found to be durable to older African-American women and could generate positive health benefits. More studies are required to confirm the optimal level of volunteering activities by older people with diverse socio-economic backgrounds in different settings.

Conclusion

In this review, the potential for interactive programmes between generations was explored as a public health promotion strategy to improve the physical health of older adults in later life. It is important to consider what would facilitate the participation of more volunteers from diverse backgrounds. For instance the levels of engagement could be increased by providing older adults with reimbursement for transport and other expenses. In particular, offering collective transportation may be helpful for older people with difficulties in mobility.

There is also a potential for the intergenerational interventions to be a cost-effective option from a broader societal perspective. Future research should be more inclusive in developing innovative public health approaches to promote healthy ageing and maximise societal benefits.

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