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Personal Assistance for Adults (19-64) with Physical Impairments

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Colophon

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Personal assistance for adults (19-64) with physical impairments

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REVIEW



The Campbell Collaboration Social Welfare Group

This review is co-registered within both the Cochrane and Campbell Collaborations.
A version of this review can also be found on Cochrane Library.

Personal assistance for adults (19-64) with physical impairments

Review information

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Abstract

Background

There is a high incidence of impairments among working age adults. Many countries offer personal assistance in the form of individualised support for people living in the community by a paid assistant other than a healthcare professional for at least 20 hours per week.

Objectives

To assess the effectiveness of personal assistance for adults with physical impairments, and the impacts of personal assistance on others, compared to other interventions.

Search methods

Electronic databases including CENTRAL, MEDLINE, EMBASE, CINAHL, PsycINFO, ERIC, Dissertation Abstracts International and a variety of specialist Swedish databases were searched from 1980 to June 2005; reference lists were checked; 345 experts, organisations, government bodies and charities were contacted in an attempt to locate relevant research.

Selection criteria

Adults (19-64) with physical impairments living in the community who require assistance to perform tasks of daily living (e.g., bathing and eating) and participate in normal activities due to permanent impairments. Controlled studies of personal assistance in which participants were prospectively assigned to study groups and in which control group outcomes were measured concurrently with intervention group outcomes were included.

Data collection and analysis

Titles and abstracts were examined by two reviewers. Outcome data were extracted. Studies were assessed for the possibility of bias. Results and potential sources of bias are presented for included studies.

Results

One randomised controlled trial involving 817 participants compared personal assistance versus usual care was identified. Whilst personal assistance was generally preferred over other services, some people prefer other models of care. This review indicates that personal assistance may have some benefits for some recipients and may benefit caregivers. Whilst paid assistance probably substitutes for informal care and may cost government more than alternatives, the total costs to recipients and society are currently unknown.

Authors' conclusions

Research in this field is limited. When implementing new programmes, recipients could be randomly assigned to different forms of assistance. While advocates may support personal assistance for myriad reasons, this review demonstrates that further studies are required to determine which models of personal assistance are most effective and efficient for particular people.

Plain language summary

One study shows promise for Personal Assistance delivered to adults with physical impairments: more research is needed.

Personal assistance is here defined as paid support of at least 20 hours per week for people with impairments. This review investigated the effectiveness of personal assistance versus any other form of care for adults with physical impairments. A literature search identified one study that met the inclusion criteria, which included 817 participants. It suggests that personal assistance may be preferred over other services; however, some people prefer other models of care. This review indicates that personal assistance may have some benefits for some recipients and their informal caregivers. Paid assistance might substitute for informal care and cost government more than alternative arrangements; however, the relative total costs to recipients and society are unknown.

Background

Description of the condition

Definition of impairments

The International Classification of Impairments, Activities, and Participation (ICIDH-2) refers to *impairment* as loss or abnormalities at the level of body, body part or organ. People may have difficulty performing particular *activities* as a result of impairments, and a person's *participation* in education, social life, work, and other areas may be limited as a result of interactions among impairments, activities, and environment ([WHO 2003](#)). Except with reference to studies using specific definitions of other terms, this review follows the classification in ICIDH-2, which does not include the terms *disability* or *handicap*.

This review includes adults (19-64) with physical impairments. Intellectual impairments and physical impairments affect activities and participation differently, and interventions to improve participation differ according to user needs. Furthermore, impairments affect people differently over the course of their lives. This is part of a series of reviews conducted with the Cochrane and Campbell collaborations; adults with both physical and intellectual impairments, children and older adults are considered separately ([Mayo-Wilson 2008a](#), [Montgomery 2008a](#), [Mayo-Wilson 2008b](#), [Montgomery 2008b](#), [Mayo-Wilson 2008c](#)).

Prevalence of impairments

Previous reviews have identified inconsistencies in the measurement of impairments and activity limitations ([UN 1990](#)). In 2003, the European Year of People with Disabilities, a survey found that 16% of Europeans between 16 and 64 have a long-standing health problem or impairment and 5% of Europeans have a 'very severe' long-standing health problem or impairment ([Dupré 2003](#)), but variability in responses across nations suggested that people in different countries interpreted and responded to a standardised questionnaire differently ([Dupré 2003](#)).

As is likely to be true in any developed country, the incidence of impairment in America is highest among adults between 18 and 65 years, but the prevalence of impairment among working age adults is much lower than the rate among older adults (50% versus 17%; [CDC 2001a](#)). Though the working adult population is larger than

the older adult population, most impairments are acquired with age. For example, the vast majority (82%) of Europeans with impairments or long standing health problems acquired their impairment after birth ([Dupré 2003](#)).

Population estimates in the U.S. and other censuses do not usually indicate the prevalence of severe impairments. Among Americans over 18 years, arthritis and back problems are the most common types of impairments (18% and 17% respectively). Causes of severe limitations are less frequent, including head or spinal cord injury (1%), paralysis (0.8%) and missing limbs (0.7%). Americans who report difficulty with activities of daily living (8 million) represent only a quarter of those with some functional limitation (32 million; [CDC 2001b](#)).

About 2% of working age adults report some difficulty with activities of daily living. About 0.3% report difficulty eating ([CDC 2001b](#)); people who have difficulty eating are most likely require assistance and to have severe impairments ([LaPlante 2002](#)).

As far as possible, this review uses internationally accepted definitions of impairments and refers to impacts that are likely to occur across cultures. However, many epidemiological studies have been conducted in the United States and Western Europe. Readers should consider the applicability of epidemiological data to other settings.

Impacts

Limited participation in activities may negatively impact quality of life, health and family functioning.

Proponents of the *social model of disability* regard activity restrictions as caused by societal and structural barriers and stress the need for their removal ([Abberley 1987](#); [Oliver 1990](#)). In addition to structural and environmental changes (e.g., making buildings accessible), the social model emphasises changes in public attitudes towards impairments to encourage increased participation and improved self-esteem. In this paradigm, independence is defined not as doing things alone but as making decisions for oneself and exerting control over how help is provided ([Morris 2001](#)).

Participation in activities may be limited for adults with physical impairments when physical, social and attitudinal environments restrict their involvement in activities in which they wish to take part. For example, about 11% of older working age Americans are unable to work and about 7% experience limitations in their work. Roughly 3% of younger working age Americans are unable to work and about 3.5% are limited in the amount or kind of work they can perform ([Kaye 1996](#)). Limited participation in activities may have negative impacts on other areas, including mental and physical health.

In the U.S., more than 13.2 million adults living in the community received assistance in activities of daily living (ADLs) or instrumental activities of daily living (IADLs) in 1996. Of those, most received help with only IADLs (which include items like using a telephone, preparing meals, and grocery shopping) and received 16.3 hours of assistance per week; people requiring assistance with ADLs received 57 hours of help per week. Most recipients are female (65%) and less than a quarter receive paid assistance. More than 20 billion hours of assistance are provided each year in the U.S., estimated to be worth \$200 billion at 1996 prices ([LaPlante 2002](#)).

Description of the intervention

Increased participation (inclusion in activities of daily life) may have positive effects on social functioning, happiness and physical health.

There are many ways to increase participation by adults with physical impairments. For example, building codes may require that people who use assistive devices can access offices and shopping malls. Clinicians and policymakers can work together to influence policy, discourse, and planning and to apply the social model in support of adults with physical impairments (Colver 2005). However, broad interventions may not be sufficient to meet all needs. People with severe impairments require interventions tailored to their unique impairments, lifestyles, living arrangements, etc. Assistive devices, physical therapy, education, and human support help people control their lives appropriately and engage in normal activities.

Personal assistance

Personal assistance is paid support given adults with impairments in various settings to enable them to participate in mainstream activities. Assistants might help with bathing, dressing, moving around during the day, shopping, etc. Personal assistance may aim to improve mental and physical health, but it differs from services by professional healthcare providers (e.g., nurses) with whom users have very different relationships. Personal assistance is designed for people with permanent impairments and differs from rehabilitative services and from services provided for fixed periods of time in that it is indefinite and ongoing.

Some form of personal assistance is now available (often by statutory right) in all Nordic countries, most Western European countries, Australia, parts of Asia, the U.S. and Canada. The naming of personal assistance may vary from country to country, which is often related to legislative categories rather than types of interventions. Rules about who may be a personal assistant also vary. For example, some countries allow users to employ family members (e.g., spouses) while others do not. Advocates of personal assistance argue that personal assistants should be chosen, trained and managed by users or their representatives. However, the organisation of services and the degree of user control varies around the world and may be affected by the administration of payments, employment laws, etc. For example, personal assistance may be provided through agencies or through individual budgets.

How the intervention might work

Compared to other interventions, personal assistance may have unique benefits and potential drawbacks. High staff turnover rates, low wages, and lack of training are potential problems (Keigher 2000). When it is possible to do so, many people prefer to use assistive devices to complete activities of daily living rather than receive help in performing those tasks (Verbrugge 1997). Compared to other ways of compensating for particular activity limitations, personal assistance may create unnecessary dependencies for some adults (Agree 2003).

Even if personal assistance is clearly preferred over other services by working adults with physical impairments, other recipients may be more susceptible to abuse and less able to manage employees. Groups that are underrepresented in the public discourse about the rights of people with impairments may prefer other services. Direct payments for personal assistance may not be ideal for people who have difficulty finding an assistant, administering their services, negotiating or giving instructions

(Pijl 2000). 'Many people requiring personal assistance in one form or another do not want and/or are incapable of assuming complete control over service delivery' (Nosek 1991).

Why it is important to do this review

There have been non-systematic reviews of studies of personal assistance services for people with different types of impairments, for example spinal cord injury (Hagglund 2004). However, traditional reviews have failed to locate many evaluation studies and have not offered a definitive account of international research on personal assistance. A recent report by the Swedish National Board of Health and Welfare (Socialstyrelsen) highlighted the need for a sensitive and exhaustive search for trials and a systematic synthesis of existing studies (Socialstyrelsen 2005).

Objectives

To assess the effectiveness of personal assistance for adults (19-64) with physical impairments, and the impacts of personal assistance on partners, families and carers, compared to other interventions.

Methods

Criteria for considering studies for this review

Types of studies

Randomised controlled trials, quasi-randomised controlled trials and nonrandomised controlled studies of personal assistance compared to other forms of support or to 'no-intervention' (which may include unpaid care) in which participants were prospectively assigned to study groups and in which control group outcomes were measured concurrently with intervention group outcomes.

Types of participants

Adults (19-64) living in the community who require assistance to perform tasks of daily living (bathing, eating, getting around, etc.) due to permanent physical impairments.

With the exception of people living in student accommodation (e.g. residential schools or dormitories), adults living in institutions for people with impairments were excluded.

Adults with intellectual impairments were excluded because these impairments affect activities and participation differently.

Types of interventions

In consultation with experts and the reference group (see Acknowledgements), the reviewers sought to determine what minimal amount of assistance could be offered and still follow the personal assistance model for this population. Twenty hours of assistance is the minimum required to qualify a person for personal assistance in several countries with national schemes.

This review defines personal assistance as individualised support for people living in the community by a paid assistant other than a healthcare professional for at least 20 hours per week, which is provided for an indefinite period of time (i.e., not

rehabilitation or respite care).

Comparisons could have included, either singly or in combination, informal care (which might be delivered by partners or other family members), institutionalisation, service housing (cluster housing), on-demand services, night patrols, transportation services, and other alternatives to personal assistance. 'No-treatment' and 'waiting list' groups were eligible even if other services received were not described. Studies examining different forms of personal assistance (e.g., assistance organised by users compared to assistance organised by others) were included. These were treated as separate comparisons.

Types of outcome measures

Primary outcomes

- 1) Global quality of life, both (a) generic measures (e.g., the Short-Form Health Survey; Ware 1992) and (b) impairment specific measures. Generic QoL measures are often appropriate for people with physical impairments (Meyers 2000).
- 2) User satisfaction. For example, measures might have included the Client Satisfaction Inventory (McMurtry 2000).
- 3) Participation, including sense of control, employment, social life, sexual participation, ability to engage in spontaneous activities, time outside the home, and mobility. For example, measures might have included the Craig Handicap Assessment and Reporting Technique (Whiteneck 1992).

Secondary outcomes

- 1) Unmet needs, particularly the inability to perform activities of daily living.
- 2) Health outcomes, including direct measures of muscle strength, disease, injuries, abuse or pain and indirect measures such as hospitalisation, emergency room visits or need for institutionalisation.
- 3) Functional status measured using either generic or impairment-specific tools. Measures might have included the Functional Independence Measure (FIM; Heinemann 1993; Linacre 1994), Barthel Index (Mahoney 1965) or the Patient Evaluation and Conference System (Harvey 1981).
- 4) Psychological outcomes, including psychological disorders (e.g., anxiety and depression), self-harm, suicide and substance abuse. Generic measures are likely to be appropriate for adults with physical impairments (Meyers 2000) and might have included the Beck Depression Inventory (Beck 1961) or the State Trait Anxiety Inventory (Spielberger 1983).
- 5) Impact on others, including family (spousal and parental) employment, satisfaction, and quality of family life.
- 6) Direct and indirect costs, both immediate and long-term.

Outcome intervals

Outcomes were grouped by length of follow-up.

Search methods for identification of studies

As we anticipated many relevant documents would be unpublished, a three-part search strategy was undertaken in order to maximise chances of capturing all relevant literature.

Electronic searches

Databases were searched for published and unpublished studies. All electronic searches were limited to research reported since 1980 because scoping for this project, including a review of relevant laws and policy documents and contacts with international experts, found that widespread personal assistance programmes began in the mid 1990s. Experts have noted that personal assistance was available in some form before the introduction of programmes in the 1990s, but they and the reviewers believed it was unlikely that any relevant trials were conducted before 1980.

No language restrictions were imposed on any results from any search attempts, although most databases were searched in English. Latin American and Caribbean Health Sciences Literature (LILACs) were searched using Spanish and Portuguese terms and Scandinavian databases were searched in appropriate languages.

No filters based on methodology were applied because test searches indicated that such filters might eliminate relevant studies.

The authors worked with the reference group of users, clinicians, policymakers, and analysts (Jackson 2005) to develop this protocol and search strategy. The group recommended a highly sensitive search (one that was likely to capture all relevant reports) rather than a more specific one (a search that would identify fewer irrelevant papers).

The following databases were searched electronically from 1980 to June 2005:

Biomedical databases

Cochrane Central Register of Controlled Trials (CENTRAL)

MEDLINE

CINAHL (Cumulative Index to Nursing and Allied Health Literature)

EMBASE

LILACs (Latin American and Caribbean Health Sciences Literature)

Social sciences databases

ASSIA (Applied Social Science Index & Abstracts)

BIDS (International Bibliography of the Social Sciences [IBSS] on Bath Information and Data Services [BIDS])

C2-SPECTR (The Campbell Collaboration's Social, Psychological, Educational and Criminological Trials Register)

Dissertations Abstracts A (Dissertation Abstracts International A: The Humanities and Social Sciences)

EconLit

ERIC (Educational Resources Information Center)

PsycINFO

Sociological Abstracts

SIGLE search (System for Information on Grey Literature in Europe)

Scandinavian databases

Artikelsök

DIVA

Handicat

Hicat

LIBRIS

LIBRIS Uppsök
SveMed+
Danbib

The search strategies used to search CENTRAL, MEDLINE, EMBASE, ASSIA, Sociological Abstracts, C2-SPECTR, EconLit, PsycINFO and SIGLE can be found in [Appendix 1](#), [Appendix 2](#), [Appendix 3](#), [Appendix 4](#), [Appendix 5](#), [Appendix 6](#), [Appendix 7](#), [Appendix 8](#). Similar terms were used to search the other databases.

Scandinavian databases were searched using index terms or free text terms, depending on the database's functionality, including:

ADL (Svenska MeSH)
Assistansreformen
Assistenter: handikappade
Dagliga livets aktiviteter
Funktionshindrade (Svenska MeSH)
Handikapplagstiftning
Handikappolitik
Handikappreformen
Lagen om assistansersättning
Lagen om stöd och service till vissa funktionshindrade
Lagstiftning Handikappade
LASS LSS LSS-insatser
Personer med funktionshinder - hem och bostäder (Svenska ämnesord)
Personer med funktionshinder - vård och omsorg (Svenska ämnesord)
Personlig assistant
Personlig assistans (Svenska ämnesord)
Personliga assistenter: handikappade
Psykiskt funktionshindrade (Svenska MeSH)
Psykiskt utvecklingsstörda (Svenska MeSH)
Psykiatireformen
Rörelsehindrade (Svenska MeSH)

Searching other resources

I. Personal communications

Appropriate government departments, non-governmental organisations, non-profit groups, advocacy groups, user groups, and experts in the field were contacted (June to November, 2005). These approaches and any replies were documented by the authors. Additionally, impairment-oriented email lists (list-servs) were sent a letter requesting assistance in locating studies.

The reviewers contacted authors of all included and excluded studies to request details of ongoing and unpublished studies.

II. Reference lists

Reference lists from previous reviews and from all included and excluded studies were searched.

Relevant websites, including those maintained by users, governments, other agencies, and academics were searched.

Data collection and analysis

Selection of studies

A highly sensitive search for this review was conducted concurrently with the searches for five related reviews covering different types of impairments and age groups. Based on their titles or abstracts, one reviewer (EMW) eliminated most citations. Two reviewers (EMW and PM) reviewed remaining citations and full articles were acquired and reviewed if one author felt a paper might be relevant.

Data extraction and management

Data extraction was conducted independently by two authors (EMW and PM).

The following data were collected for all trial arms:

- 1) Descriptive data, including participant demographics (age, gender, types and extent of impairments, living arrangements, social and economic status);
- 2) Intervention characteristics (including delivery, duration, and within-intervention variability);
- 3) Other interventions received; and
- 4) Outcome measures listed above (including multiple measures of outcomes where available).

The following data were collected for all studies:

- 1) Programme differentiation, i.e. differences in the services received by participants in different arms ([Dane 1998](#); [MRC 2000](#)), including crossover between groups; and
- 2) Context.

Assessment of risk of bias in included studies

Two reviewers (EMW and PM) independently assigned the one included study to a quality category described in the Cochrane Handbook (Higgins 2005) where:

- (A) indicates adequate concealment of the allocation (for example, by telephone randomisation, or use of consecutively numbered, sealed, opaque envelopes);
- (B) indicates uncertainty about whether the allocation was adequately concealed (for example, where the method of concealment is not known);
- (C) indicates that the allocation was definitely not adequately concealed (for example, open random number lists or quasi-randomisation such as alternate days, odd/even date of birth, or hospital number); and
- (D) indicates that random allocation was not used.

Studies in all quality categories were considered for inclusion in the review and meta-analyses.

Though well-designed nonrandomised studies sometimes come to the same conclusions as randomised trials, nonrandomised studies are most likely to arrive at different conclusions about an intervention's effects when groups are different at the outset (Deeks 2003). Therefore, the pre-treatment assessment and the allocation of participants is described in the Table of Included Studies to identify differences between intervention and control groups that may have existed at baseline.

Existing scales for measuring the quality of controlled trials have not been properly developed, are not well-validated and are known to give differing (even opposing) ratings of trial quality in systematic reviews. At present, evidence indicates that 'scales should generally not be used to identify trials of apparent low quality or high quality in a given systematic review. Rather, the relevant methodological aspects

should be identified a priori and assessed individually' (Juni 2001; see also Moher 1995).

The following components are considered in the Description of Studies and in the 'Risk of bias' section of the 'Characteristics of Included Studies' table:

- 1) Allocation bias (Was group assignment determined randomly or might it have been related to outcomes or the interventions received?);
- 2) Performance bias (Could the services provided have been influenced by something other than the interventions being compared?);
- 3) Detection bias (Were outcomes influenced by anything other than the constructs of interest, including biased assessment or the influence of exposure on detection?);
- 4) Report bias (Were the outcomes, measures and analyses selected a priori and reported completely? Were participants biased in their recall or response?);
- 5) Attrition bias (Could deviations from protocol, including missing data and dropout, have influenced the results?) (Delgado 2004; Juni 2001); and
- 6) Outcome validity (Were the outcome measures objective, validated for the population, reported directly by the user or obtained through official records, etc.?).

Measures of treatment effect

Meta-analysis was not possible in this version of the review. Methods archived from the protocol, for use in subsequent versions of this review, are preserved in [Appendix 9](#).

Dealing with missing data

See [Appendix 9](#).

Assessment of heterogeneity

See [Appendix 9](#).

Assessment of reporting biases

See [Appendix 9](#).

Data synthesis

See [Appendix 9](#).

Subgroup analysis and investigation of heterogeneity

See [Appendix 9](#).

Sensitivity analysis

See [Appendix 9](#).

Results

Description of studies

Results of the search

After removing duplicates electronically, 58,431 citations were retrieved for this and related reviews. Based on their titles or abstracts, one reviewer (EMW) eliminated most citations. Two reviewers (EMW and PM) reviewed 14,712 citations independently. Full-texts were reviewed for 130 citations identified through electronic databases (often because we could not access abstracts or other information that would allow us to exclude a citation).

Additionally, staff at the CDPLPG contacted by email or letter the 300 research organisations and charities listed at the website of the Independent Living Institute (Sweden; <http://www.independentliving.org/donet/>) between November 2005 and January 2006, and a further 31 other organisations and experts/practitioners in the field of disability were contacted following leads supplied by those who responded to this first call. In June 2006, we contacted relevant government offices of 14 countries wherein personal assistance was known to be common (UK, Denmark, Italy, Switzerland, Sweden, France, Austria, Finland, Belgium, USA, Hungary, Federal Republic of Germany, Norway); 66 responses were received.

Four prospective studies were considered for inclusion in this review; one was included.

A flowchart of the process of trial selection was made in accordance with the QUOROM statement ([Moher 1999](#)) (see [Figure 1](#)).

Included studies

One included study randomised 817 participants to personal assistance or usual care (Carlson 2007).

Carlsson 2007 conducted a study involving children, adults and the elderly in three states. Inclusion criteria, contextual factors and implementation differed across sites. In this and related reviews, results for each group at each site are treated as individual trials to allow inclusion of data in the appropriate reviews, to facilitate subgroup analyses and to permit tests for homogeneity across sites. The review includes data for adults in New Jersey (NJ).

Eligible Medicaid beneficiaries were randomly assigned to receive a monthly payment (personal assistance) in lieu of other Medicaid services or to receive usual care from 1999 to 2003. All participants or their representatives - 404 in the intervention group and 413 in the control group - completed a baseline survey (30% by proxy). Participants in the intervention group or their representatives were contacted by a counsellor who helped them develop spending plans, provided advice and monitored services. Personal assistance participants received more paid care than control participants, who often paid for care out of pocket (38.8 versus 33.2 hours over two weeks).

After assignment, the authors describe the intervention enrolment process as complex and discouraging; only 31% of participants received cash assistance within 3 months, 30% never received assistance, and 33% disenrolled during the following year (of

whom, 70% withdrew before the assistance started). The average monthly payment at enrolment was \$1069. Of those still living in the community, 61% of the personal assistance group was receiving cash at 9 month follow-up. At 9 months, 92% and 78% of participants in the personal assistance and control groups reported receiving paid care in the previous two weeks ($p < 0.01$). They received 145 hours and 150 hours in total ($p = 0.28$), 39 and 31 of which was paid ($p < .01$).

Excluded studies

Three studies were excluded. This included two Cash and Counseling sites in Arkansas (AK) and Florida (FL), which were evaluated much like the included NJ site (Carlson 2007). In AK, participants did not receive a sufficient amount of assistance. In FL, most participants had intellectual impairments and are included in a related review.

In Sherwood 1983, adults with physical impairments under 65 years were grouped with the elderly, who were the majority of the study group. These results are reported in a related review.

Risk of bias in included studies

In Carlson 2007, the risk of bias overall was low, as described in the Description of Studies and in the 'Characteristics of Included Studies' and 'Risk of bias' tables.

Performance bias

The study was somewhat vulnerable to performance bias. Participants were probably unsatisfied with existing services and control participants may have been motivated to report negative outcomes. Satisfaction with the intervention was a primary outcome of this review and insofar as satisfaction with one's care influences one's perception of other outcomes, it may be impossible to disentangle these variables.

Detection bias

Most outcome measures did not appear particularly vulnerable to detection bias; the direction of such effects could not be determined in any case. Short follow-up makes it impossible to detect benefits or harms that occur as a result of continued use of personal assistance. Particularly, cost data should be interpreted with caution as these refer to charges to a specific government programme; no effort was made to estimate total costs.

Report bias

There was some evidence of report bias in publications, though further data are available online. Details presented here are based on published reports and available manuscripts (see: www.mathematica-mpr.com). As more information from this trial emerges, we plan to include it in updates of this review.

Attrition bias

The risk of attrition bias appeared low, though the number of participants in different analyses at the same interval varies considerably; means are predicted using ordinary least squares regression or logit models.

Outcome validity

The study used a mix of objective outcomes and other outcome measures, some of which were not validated.

Effects of interventions

Primary outcomes

Quality of life

Carlson 2007 used a single question to measure satisfaction with the way participants were spending their lives. In the intervention and control groups, 38% and 21% ($p < 0.01$) were 'very satisfied'.

User satisfaction

Overall, participants appeared satisfied with personal assistance, though personal assistance was not clearly superior to other models of care.

There were 'large' and significant relationships favouring the treatment group for rude and disrespectful behaviour by a paid caregiver and satisfaction with: the relationship with the paid caregiver, daily living assistance (e.g. eating, dressing, toileting, transferring and bathing), help around the house/community (excluding transportation), transportation assistance, and overall care arrangements. There was a 'modest' and significant relationship favouring the treatment group for paid caregivers taking something without asking. For two measures of satisfaction, there were not significant effects in favour of the treatment group: satisfaction with routine health care assistance and paid caregiver giving unwanted help. In the treatment and control groups, 52% and 35% ($p < 0.01$) of participants were 'very satisfied' with overall care arrangements.

Of those participants who dropped out of the intervention, the most common reasons for leaving were dissatisfaction with the amount of cash assistance, difficulty acting as an employer, and satisfaction with traditional agency care.

Participation

The study measured participation, but these data are not yet reported.

Secondary outcomes

Unmet needs

Some evidence suggests personal assistance may reduce unmet needs.

There was a 'large' and significant relationship favouring the treatment group for unmet needs for help with routine health care (e.g. medication, checking blood pressure and doing exercises). For unmet needs for help with ADLs (e.g. eating, dressing, toileting, transferring and bathing) and unmet needs for help with transportation (e.g. to and from a physician's office, shopping, school, work, and social and recreational activities), there were 'modest' and significant relationships favouring the treatment group. There were not significant effects in favour of the treatment group for unmet needs for help with IADLs (e.g. preparing meals, doing laundry, doing housework and doing yard work) and neglect by a paid caregiver. In the treatment and control groups, 46% and 55% ($p < 0.01$) of participants reported an unmet need with an activity of daily living.

Physical health

Though not a goal of the intervention, data suggest that that personal assistance had no comparative impact on mortality. Data on other health outcomes were mixed, suggesting personal assistance might have some beneficial impacts on health. There was no evidence of detrimental impacts.

Mortality

About 4% of intervention participants died. Data for controls were not reported.

Morbidity and Medical Care

Several adverse health outcomes were measured. The control group was not superior to the intervention group on any measure. There were some differences favouring the intervention group, for example between the number of intervention and control participants who had a fall (19% and 28%, $p=0.01$). Differences on other measures were not significant, including bedsores that developed or worsened (7.2% and 7.1%, $p=0.97$), contractures developed or worsened (25% and 28%, $p=0.27$), and urinary tract infections (15.7% and 15.8%, $p=0.97$).

Mental health

Measures of mental health were not reported.

Impact on others

Impacts on caregivers were measured through a caregiver survey administered 10 months after the baseline interview. Results for caregivers of older adults and non-elderly participants were reported together ($N=1042$). Personal assistance increased the amount of total assistance provided by the primary informal caregiver in the previous two weeks (123 hours versus 113 hours, $p=0.06$) and the between group difference was reduced by including the elderly in this analysis. Nonetheless, caregivers increased their satisfaction with overall care arrangements (52% and 32% were very satisfied, $p<0.01$), decreased their emotional strain (42% and 49% experienced a great deal of strain, $p=0.02$) and decreased feelings that caregiving limited their privacy (41% and 51%, $p<0.01$) or free time (55% and 60%, $p=0.06$). Personal assistance reduced financial strain (30% and 39% said caregiving caused a great deal of strain, $p<0.01$), reduced the chance that a person who wanted outside work would not seek employment due to caregiving (34% and 44%, $p<0.01$), and reduced absenteeism (54% and 66%, $p<0.01$). It further reduced the chance of experiencing a great deal of physical strain (32% and 42%, $p<0.01$) and experiencing negative health outcomes due to caregiving (31% and 40%, $p<0.01$).

Abuse and Neglect

Across sites in Carlson 2007, counsellors periodically contacted participants and representatives to detect abuse, fraud and neglect. 'There was no evidence from consumers, counsellors, or state program staff that participation in Cash and Counseling led to any adverse effects on consumers' health or safety'.

Costs

The program increased participants' ability to receive care to which they were entitled, which increased costs to a single government programme, Medicaid. Estimated costs to Medicaid were \$26863 and \$26049 per client in the first year, \$24425 and \$21539

in the second year. Notably, these estimates do not account for costs to other government agencies, private charities, family and friends or consumers.

Discussion

Summary of main results

This review identifies some evidence that personal assistance recipients may express greater satisfaction and fewer unmet needs than participants receiving other services, with possible benefits in physical health. Further data would be required to draw conclusions about mental health and cost.

The substantial amount of paid assistance received by participants in the control group in Carlson 2007 underscores the fact that people receive both unpaid and paid assistance without external intervention. These data suggest that providing personal assistance is likely to raise government or insurance costs by paying for work that users would otherwise hire themselves and by paying for time that people would otherwise spend providing assistance for free.

Overall completeness and applicability of evidence

This review included 817 participants in one U.S. state ([Carlson 2007](#)). More trials would be required to demonstrate if these results generalise to other countries and populations. Furthermore, the follow-up period was short and this review does not provide information about the long term impacts of personal assistance.

The study compared a very large amount of personal assistance (e.g., 90 hours per week) to another form of service. Large amounts of assistance are increasingly common in Europe, particularly in Scandinavia. As a result, the conclusions of this review may not extend to users with very severe impairments or to more intense models of personal assistance.

Cost data have limited generalisability. Data from [Carlson 2007](#) are not comprehensive and implications for different stakeholders may be quite different; the relative costs of personal assistance and other services may be contextually dependent, varying from country to country.

Quality of the evidence

[Carlson 2007](#) has high internal validity, but low uptake and non-response raise questions about the external validity of these results. Dropout may suggest that some people who wish to try personal assistance eventually determine they prefer other services or it may indicate that they become unable to manage personal assistance. For this reason, Nosek suggests that personal assistance be offered to some individuals on a trial basis for a limited time so that 'both consumers and providers of services could assess the feasibility of management arrangements and mutually define the parameters of management responsibilities' ([Nosek 1991](#)). When intervention participants can choose to return to other models of support rather than receive personal assistance, it may not be surprising that consumers select the option that leads to the best outcomes for them. Consequently, it is difficult to separate the benefits of personal assistance per se and the benefits of consumer choice.

Authors' conclusions

Implications for practice

There have been relatively few controlled studies of personal assistance for adults who require a great deal of assistance. Existing evidence suggests that personal assistance is generally preferred over other services by consumers and their representatives who agree to participate in research; however, some people prefer other models of care. This review indicates that personal assistance probably has some benefits for some recipients, their friends and families; however, the relative total costs to recipients and society are unknown.

This review does not indicate that personal assistance would be superior to other services for people who are already satisfied with the assistance they receive.

Implications for research

In 1986, Ratzka noted that 'there has been surprisingly little in the way of policy evaluation. The work that has been done in this area is restricted to gathering descriptive statistics on number of hours provided by one type of service, number of consumers, staff, and expenditures' ([Ratzka 1986](#)). While several studies have been conducted since the 1980s, few studies have compared directly personal assistance and other services and further evaluations are required to determine the relative merits of different ways of organising assistance. It would be possible to compare personal assistance to other services or to different forms of personal assistance in locations implementing new programmes. Similarly, new users might be assigned to different models of personal assistance in locations with long-standing personal assistance services.

Services for adults with impairments are organised differently around the world. While advocates may support personal assistance for myriad reasons, this review demonstrates that further studies are required to determine (i) what marginal benefits are gained from personal assistance (i.e. the added value compared to other services that exist today), (ii) at what total relative cost and (iii) which models of personal assistance are most effective and efficient for particular people.

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Contributions of authors

EMW wrote the background and methods with PM and JD. JD developed the search strategy with EMW and PM. EMW and PM conducted data extraction. EMW wrote the results and discussion with PM and JD.

Declarations of interest

This review was funded by a grant from the Swedish government, the Unit for Disabilities Issues and the Institute for Evidence-Based Social Work Practice, the Swedish National Board of Health and Welfare (Socialstyrelsen). The reviewers have no known conflicts of interest.

Differences between protocol and review

Published notes

This review is co-registered within the Campbell Collaboration.

Characteristics of studies

Characteristics of included studies

Carlson 2007

Methods	Allocation was random. Participants were assessed by telephone at baseline and 9 months. Carers were assessed at 10 months.
Participants	Participants had to be current users of the state's personal care benefit. Overall, 66% were female, 50% white and 30% Hispanic (regardless of race). Few had attended college (17%) and many (43%) were in poor health. The majority (65%) lived with at least one other person and few (10%) lived in a rural area. Most participants were dependent in several ADLs; 66%, 69% and 86% were not independent in transferring, toileting and bathing; 74% expressed a need for more help with personal care.
Interventions	Participants received a monthly allowance that could be used to hire caregivers. Intervention participants received approximately 19 hours of paid care per week compared to 17 hours of paid care per week in the control group.
Outcomes	Quality of life User satisfaction Unmet needs Physical health Impact on others Costs
Notes	

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Yes	<p>Description: The report implies that randomisation was conducted by a person not connected to the administration of the measures or intervention. Randomisation created balanced groups.</p> <p>Comment: Sequence generation was adequate.</p>
Allocation concealment?	Yes	<p>Description: The report indicates that the generation of the allocation sequence was unconnected to its administration</p> <p>Comment: Allocation was adequately concealed.</p>
Blinding?	Unclear	<p>Description: It would have been impossible to blind participants or personnel. Many outcomes included questions that required assessors to know a participant's allocation and it would have been practically difficult to blind them</p> <p>Comment: The nature of the intervention prevented blinding most individuals involved. Given the nature of the assessments, this probably introduced little bias.</p>
Incomplete outcome data addressed?	Yes	<p>Description: Data are available online (www.cashandcounseling.org); however, in current published reports, many scales with four options were collapsed to create dichotomous outcome measures of the most extreme options and data for most outcomes are not reported numerically.</p> <p>Minimum detectable differences are reported. Participants were excluded from certain analyses if relevant conditions were met (e.g. paid caregivers acting as proxy respondents were not asked about consumer satisfaction with care). This was designed to prevent detection biases that would overestimate programme effects and might result in biases that underestimate program impacts (e.g. impacts on informal caregivers might be biased as a result of excluding those caregivers who became paid caregivers). The authors sent a 26 page survey to all participating consultants (who were also involved in trials of cash and counselling for older</p>

		<p>adults) 18 months after enrolment began, which included many open-ended questions; 37 of 50 consultants responded. This may have increased the probability of detecting problems in the intervention group and strengthens the claim that consumer-directed personal assistance is safe.</p> <p>None of the main outcomes included all participants randomised. Some outcomes were measured through program records while others were measured through client interviews or interviews with proxies. Consequently, the number of participants in different analyses at the same interval varies considerably; outcome measures included 341 and 332 participants for service use, 255 and 219 for satisfaction with paid caregivers, 310 and 327 for unmet needs, 339 and 329 for adverse events, and 291 and 287 for overall satisfaction with care. At nine months, survey response rates in the intervention and control groups were 85% and 82%, 36% and 382% of which were completed by proxies (9% and 1% by paid caregivers). The authors report that they attempted to contact participants in the intervention group who disenrolled from the intervention, most of whom returned to agency-directed services. Means are predicted using ordinary least squares regression or logit models.</p> <p>Comment: Reasons for exclusion are well-documented and logically justified. Appropriate models appear to have been used to account for missing data. Criteria for including participants in particular analyses may have impacted the results, though the resultant biases were not consistent in direction. Incomplete outcome data were adequately addressed.</p>
Free of selective reporting?	No	<p>Description: Most results are not reported in detail (though simplified presentation of outcomes is understandable given the number of outcomes measured). Complete study data are available online, but we have not been able to reanalyse them. The authors indicate that reported outcomes are representative of other outcomes. We have not located reports of participation outcomes, which were measured and could have been included in this review.</p> <p>Comment: The data may be vulnerable to reporting bias, particularly with regard to participation outcomes.</p>

Footnotes

Characteristics of excluded studies

Carlson 2007 (AK)

Reason for exclusion	Participants did not receive a sufficient amount of assistance.
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Carlson 2007 (FL)

Reason for exclusion	Most participants had intellectual impairments.
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Sherwood 1983

Reason for exclusion	Most participants were over 65 years old.
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Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

References to studies

Included studies

Carlson 2007

Published and unpublished data

Brown RS, Dale SB. The research design and methodological issues for the cash and counseling evaluation. *Health Services Research* 2007;42(1):414-45.

* Carlson BI, Foster L, Dale SB, Brown R. Effects of cash and counseling on personal care and well-being. *Health Services Research* 2007;42(1):467-87.

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Schore J, Foster L, Phillips B. Consumer enrollment and experiences in the cash and counseling program. *Health Services Research* 2007;42 (1 S1):DOI: 10.1111/j.475-6773.2006.00679.x.

Excluded studies

Carlson 2007 (AK)

Published and unpublished data

Brown RS, Dale SB. The research design and methodological issues for the cash and counseling evaluation. *Health Services Research* 2007;42(1):414-45.

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Carlson 2007 (FL)

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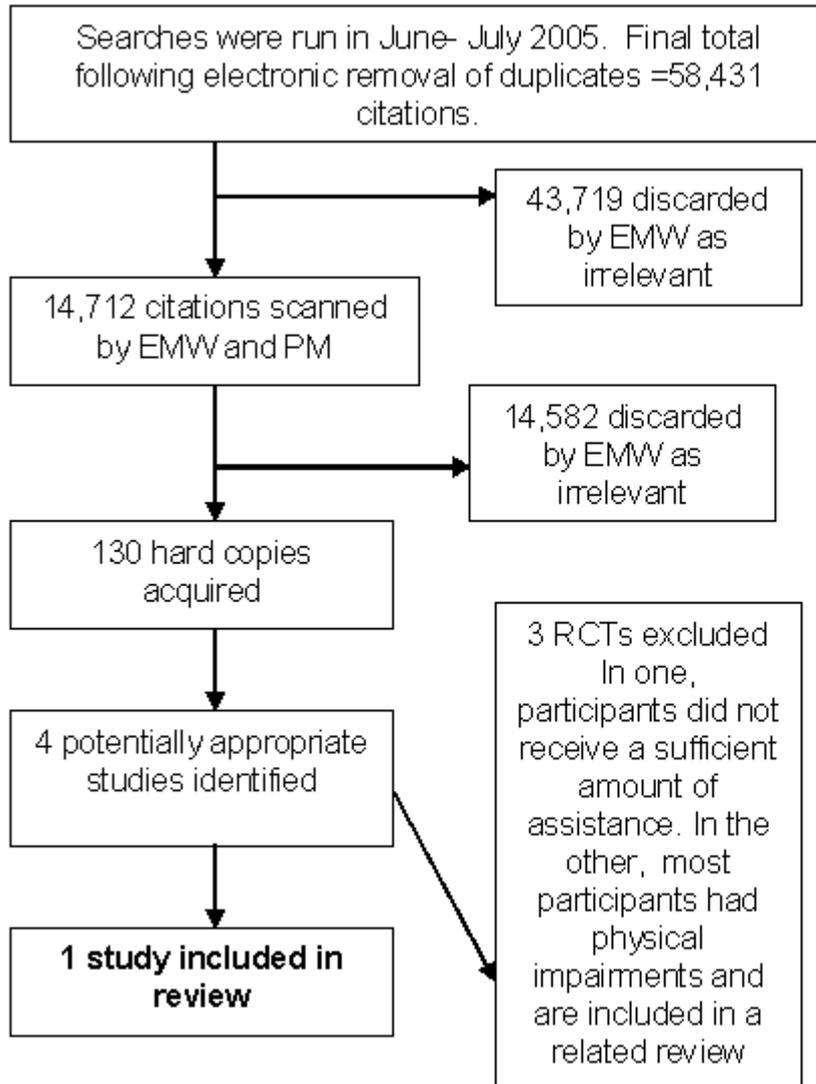
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Data and analyses

Figures

Figure 1 Flowchart of study selection



Sources of support

Internal sources

- Centre for Evidence-Based Intervention, University of Oxford, UK

External sources

- Unit for Disabilities Issues, The National Board of Health and Welfare (Socialstyrelsen), Sweden
- The Institute for Evidence-Based Social Work Practice, The National Board of Health and Welfare (Socialstyrelsen), Sweden

Appendices

1 CENTRAL search strategy

CENTRAL searched Issue 2, 2005

- #1 HOME CARE SERVICES
- #2 ACTIVITIES OF DAILY LIVING
- #3 PERSONAL HEALTH SERVICES
- #4 (personal near/2 assist*)
- #5 (personal near/2 care*)
- #6 exp HOMEMAKER SERVICES
- #7 independent living
- #8 direct assistance
- #9 direct payment
- #10 attendant care
- #11 in home
- #12 CAREGIVERS
- #13 (allowance* or fee or fees or finance* or fund* or money* or monies* or pay* or paid or remunerate* or salar* or wage*)
- #14 state-support*.
- #15 state support*.
- #16 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11
- #17 #12 and (#13 or #14 or #15 or #16)
- #18 #16 or #17

2 MEDLINE search strategy

MEDLINE searched via OVID 1980 to June 2005

- 1 Home Care Services/
- 2 Activities of Daily Living/
- 3 Personal Health Services/
- 4 (personal adj2 assist\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
- 5 (personal adj2 care\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
- 6 exp Homemaker Services/
- 7 independent living.mp.
- 8 direct assistance.mp.
- 9 direct payment.mp.
- 10 attendant care.mp
- 11 in home.mp
- 12 Caregivers/
- 13 (allowanc\$ or fee or fees or financ\$ or fund\$ or money\$ or monies\$ pay\$ or paid or remunerat\$ salar\$ or wage\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
- 14 state-support\$.mp. [mp=title, original title, abstract, name of substance word, subject heading word]
- 15 state support\$.mp. [mp=title, original title, abstract, name of substance

word, subject heading word]
16 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
17 12 and (13 or 14 or 15 or 16)
18 16 or 17

3 EMBASE search strategy

EMBASE searched via OVID 1980 to June 2005

1 *Home Care Services/
2 *"Activities of Daily Living"/
3 *Personal Health Services/
4 (personal adj2 assist\$).mp.
5 (personal adj2 care\$).mp.
6 exp Homemaker Services/
7 independent living.mp.
8 direct assistance.mp.
9 direct payment.mp.
10 *CAREGIVERS/
11 (allowanc\$ or fee or fees or financ\$ or fund\$ or money\$ or monies\$ or pay\$ or paid or remunerat\$ salar\$ or wage\$).mp.
12 state-support\$.mp.
13 state support\$.mp.
14 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 (21553)
15 10 and (11 or 12 or 13 or 14) (360)
16 14 or 15 (21674)

4 ASSIA and Sociological Abstracts search strategy

ASSIA searched 1987 to June 2005 and Sociological Abstracts searched 1980 to June 2005. Both searched via CSA.

((personal assistance) or (personal care) or (home care)) or ((independent living) or (direct (pay* or assistance))) or (((care-giver* or caregiver\$) and (allow* or fee or fees or financ* or fund* or money or moneys or pay* or paid or remunerat* or salar* or wage*)))

5 C2-SPECTR

C2-SPECTR was searched in June 2005 using the terms: Personal care OR personal assistance OR home care OR direct payment OR direct assistance OR caregiver* OR care-giver*

6 EconLit search strategy

EconLit searched via SilverPlatter 1980 to June 2005

#12 ((home-care) or (personal-care) or (home care) or (independent living) or (personal assistance) or (independent living) or (direct assist*) or (direct pay*) or (personal care) or (caregiver* or care-giver*)) and (PY:ECON = 1980-2005)

7 PsycINFO search strategy

PsycINFO searched via SilverPlatter 1980 to June 2005

#28 (personal assistance) or ((allowanc* or fee or fees or financ* or fund* or money* or monies or pay* or paid* or remunerat* or salar* or wage* or (state-support*) or (state support*)) and (("Caregivers-" in MJ,MN) or (caregiver*) or (care-giver*))) or ("Independent-Living-Programs" in MJ,MN) or ("Assisted-Living" in MJ,MN) or ("Home-Care-Personnel" in MJ,MN) or (explode "Home-Care" in MJ,MN) or (home care) or (independent living) or (direct assistance) or (direct pay*) or (personal care)

#27 (allowanc* or fee or fees or financ* or fund* or money* or monies or pay* or paid* or remunerat* or salar* or wage* or (state-support*) or (state support*)) and (("Caregivers-" in MJ,MN) or (caregiver*) or (care-giver*))

#26 allowanc* or fee or fees or financ* or fund* or money* or monies or pay* or paid* or remunerat* or salar* or wage* or (state-support*) or (state support*)

#25 ("Caregivers-" in MJ,MN) or (caregiver*) or (care-giver*)

#24 home care

#23 independent living

#22 direct assistance

#21 direct pay*

#20 personal care

#19 personal assistance

#18 "Independent-Living-Programs" in MJ,MN

#17 "Assisted-Living" in MJ,MN

#16 "Home-Care-Personnel" in MJ,MN

#15 explode "Home-Care" in MJ,MN

#14 (personal assistance) or ((allowanc* or fee or fees or financ* or fund* or money* or monies or pay* or paid* or remunerat* or salar* or wage* or (state-support*) or (state support*)) and (("Caregivers-" in MJ,MN) or (caregiver*) or (care-giver*))) or ("Independent-Living-Programs" in MJ,MN) or ("Assisted-Living" in MJ,MN) or ("Home-Care-Personnel" in MJ,MN) or (explode "Home-Care" in MJ,MN) or (home care) or (independent living) or (direct assistance) or (direct pay*) or (personal care)

#13 (allowanc* or fee or fees or financ* or fund* or money* or monies or pay* or paid* or remunerat* or salar* or wage* or (state-support*) or (state support*)) and (("Caregivers-" in MJ,MN) or (caregiver*) or (care-giver*))

#12 allowanc* or fee or fees or financ* or fund* or money* or monies or pay* or paid* or remunerat* or salar* or wage* or (state-support*) or (state support*)

#11 ("Caregivers-" in MJ,MN) or (caregiver*) or (care-giver*)

#10 home care

#9 independent living

#8 direct assistance

#7 direct pay*

#6 personal care

#5 personal assistance

#4 "Independent-Living-Programs" in MJ,MN

#3 "Assisted-Living" in MJ,MN

#2 "Home-Care-Personnel" in MJ,MN

#1 explode "Home-Care" in MJ,MN

8 SIGLE search strategy

SIGLE searched via SilverPlatter 1980 to June 2005

#12 ((independent living) or (direct assist*) or (direct pay*) or (personal care) or (caregiver* or care-giver*) or (home-care) or (personal-care) or (home care) or (independent living) or (personal assistance)) and (PY:SI = 1980-2005)(385 records)

#11 (independent living) or (direct assist*) or (direct pay*) or (personal care) or (caregiver* or care-giver*) or (home-care) or (personal-care) or (home care) or (independent living) or (personal assistance)(388 records)

#10 independent living(84 records)

#9 direct assist*(1 records)

#8 direct pay*(56 records)

#7 personal care(24 records)

#6 caregiver* or care-giver*(36 records)

#5 home-care(1 records)

#4 personal-care(1 records)

#3 home care(193 records)

#2 independent living(84 records)

#1 personal assistance(9 records)

9 Methods from protocol archived for use in updates of this review

Issue	Method
Multiple measures	If we conduct meta-analyses in which only one effect estimate can be used from each study, we will select one measure if it is more valid or reliable than the others. For example, if a single respondent completes both a validated scale assessing multiple domains of quality of life and an unvalidated visual analogue scale, we will select the validated scale. If a study includes several equally valid measures and only one effect estimate can be used for meta-analysis, we will calculate the average effect for this purpose (e.g. the average SMD or RR weighted by variance).
Multiple arms	If two or more eligible intervention groups are compared to an eligible control, thus requiring that the reviewers choose a single intervention group for comparison or inclusion in a meta-analysis, the most intense service or the service that best follows the goals of personal assistance (e.g., services that give users more control) will be included in the meta-analysis. If a single eligible intervention group is compared to multiple eligible control groups, 'no-treatment' controls will be chosen over other groups for comparison and inclusion in meta-analyses. For studies that do not have no-treatment

	condition, the most common intervention in clinical practice will be chosen to maximise the external validity of the results.
Data synthesis (Outcome data)	Meta-analyses may be conducted to combine comparable outcome measures across studies. All overall effects will be calculated using inverse variance methods. Random-effects models will be used because studies may include somewhat different treatments or populations.
Continuous data	Mean differences, standardised mean differences (SMDs) and 95% CIs will be calculated for comparisons of continuous outcome measures.
Dichotomous data	Within studies, relative risks (RRs) and 95% confidence intervals (CIs) will be calculated for comparisons of dichotomous outcome measures. Dichotomous outcome measures may be combined by calculating an overall RR and 95% CI.
Continuous outcomes	Continuous outcome measures may be combined when means and standard deviations or complete significance testing statistics are available, unless statistical tests assuming normality would be inappropriate. For example, for scales beginning with a finite number (such as 0), effect estimates will not be combined unless a mean is greater than its standard deviation (otherwise the mean would be very unlikely to be an appropriate measure of the centre of the distribution). If continuous outcomes are measured identically across studies, an overall weighted mean difference (WMD) and 95% CI may be calculated. If the same continuous outcome is measured differently across studies, an overall standardised mean difference (SMD) and 95% CI may be calculated (Higgins 2005). SMDs will be calculated using Hedges g.
Types of analyses	Studies in which participants are analysed as members of the groups to which they were originally assigned (intention-to-treat analysis), studies that include only those participants who were willing or able to provide data (available-case analysis), and studies that analyse participants who adhered to the study's design (per-protocol analysis; Higgins 2005) will be analysed separately. Studies in which the reasons for excluding participants from analyses can not be determined from relevant reports or through contact with the authors will be considered with per-protocol analyses.
Homogeneity	The consistency of results will be assessed using the I-squared statistic (Higgins 2002 ; Higgins 2003). If there is evidence of heterogeneity (Q-statistic p less than or equal to 0.1 coupled with an I-squared value of 25% or greater), the authors will consider sources according to pre-specified subgroup analyses and sensitivity analyses (below) but will

	not report an overall estimate of effect size. If heterogeneity remains within these subgroups, the review will report the results on a trial-by-trial basis, in a narrative summary.
Subgroup analyses	Large numbers of subgroups may lead to misleading conclusions and are best kept to a minimum (Counsell 1994 ; Oxman 1992 ; Yusuf 1991). If possible, this review will include separate effect estimates for the following subgroups: 1) Organisation of services 2) Place of residence 3) Acquisition of impairment 4) Amount of assistance
Assessment of bias	Sensitivity analyses will investigate the influence of lower quality studies (i.e., those rated C and D on allocation concealment) on the results of the review. To investigate the possibility of bias, including publication bias, funnel plots will be drawn (Deeks 2005 ; Egger 1997 ; Sterne 2001). In the event of asymmetry, the reviewers will seek input from methodologists, including the Cochrane and Campbell Collaboration Methods Groups, on appropriate analyses.
Graphs	When meta-analyses are performed, data will be entered into RevMan in such a way that the area to the left of the line of no effect indicates a favourable outcome for personal assistance.