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-Non-pharmacological interventions for wandering of people with dementia in the domestic setting (Review)

Hermans D, Htay UH, Cooley SJ

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[Intervention Review]

-Non-pharmacological interventions for wandering of people with dementia in the domestic setting

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ABSTRACT

Background

A number of studies exist of interventions for wandering in the institutional setting, but much less work has been done on wandering in the domestic setting. The prevalence of wandering by people with dementia is difficult to assess; wandering is not a simple or static behaviour and the reasons why people wander remain unclear. In the absence of a theory of wandering and an agreed definition of wandering, it is difficult to discover effective strategies for managing wandering and difficult to design appropriate intervention strategies. Also, the same behaviour or type of wandering might occur for different reasons in different individuals; any theoretical formulation is going to have to allow for different triggers for the behaviour and so to get a 'one size fits all' kind of explanation is unlikely. Thus what we mostly encounter in this field is a 'trial and error' approach which does not always do justice to the complex interactions of personal and environmental factors that lead people with dementia to wander. While there seems to be a consensus in the literature that in the majority of cases non-pharmacological approaches may work as well as drug treatment and with fewer side effects, in practice clinicians often resort to drugs as the first line of treatment. This review reports the lack of evidence from RCTs and discusses the range of non-pharmacological interventions that have been carried out using other study designs.

Objectives

To evaluate the effectiveness and safety of non-pharmacological interventions in reducing wandering in the domestic setting by people with dementia. The secondary objective is to highlight the quality and quantity of research evidence available and to set an agenda for future research.

Search methods

The Specialized Register of the Cochrane Dementia and Cognitive Improvement Group (CDCIG), *The Cochrane Library*, MEDLINE, EMBASE, PsycINFO, CINAHL and LILACS were searched on 11 June 2009 using the terms:exit* OR wander* OR elopement OR ambulat* OR walk*. The CDCIG Specialized Register contains records from all major health care databases (*The Cochrane Library*, MEDLINE, EMBASE, PsycINFO, CINAHL, LILACS) as well as from many trials databases and grey literature sources.

Selection criteria

Randomised clinical trials comparing intervention with no intervention or usual treatment ('standard care') or another intervention.

Data collection and analysis

No suitable trials of non-pharmacological interventions for the prevention and management of wandering in the domestic setting were found.

Main results

As no randomised controlled trials were found, no results can be reported.

Authors' conclusions

There is an urgent need for randomised controlled trials of non-pharmacological interventions for wandering in the domestic setting.

PLAIN LANGUAGE SUMMARY

No evidence of the efficacy of non-pharmacological interventions for domestic wandering in people with dementia due to lack of trials

No randomised controlled trials were found that proved or disproved the efficacy of non-pharmacological interventions for the prevention or management of wandering in the domestic setting. Trials of music therapy, bright light therapy, reality orientation, physical therapy, occupational therapy, and therapeutic touch have been carried out with participants in institutional settings. This review discusses these interventions in the light of their relevance to the domestic setting. Trials of non-pharmacological interventions in the domestic setting are urgently needed.

BACKGROUND

Wandering by people with dementia can be problematic. Wandering away from home places people with dementia at risk of injury (falls and fractures), may lead to weight loss, accelerated decline of language skills, victimization and premature mortality (Algase 2005) and is often worrying, time-consuming and exhausting for carers (e.g. Miyamoto 2002).
Wandering may precipitate institutionalisation or restriction of the autonomy of people with dementia (Althus 2000). On the other hand, wandering promotes circulation and oxygenation, is a form of exercise and can be an indicator of good physical health (Lai 2003). Within a safe environment wandering could be beneficial; the aim should be to provide a safe level of wandering without a risk of injury by wandering away from the premise (Coltharp 1996).

The prevalence of wandering by people with dementia is difficult to assess. Klein 1999, in a US study of community-residing persons with dementia, found that wandering behaviour occurred in 17.4% of participants. Cohen Mansfield 1986 reports a figure of 38% in people with dementia. Hope 1994 reports 63% in community dwellers with dementia in the UK while the prevalence of wandering among patients with Alzheimer's disease living in the community in France was 12.6% (Rolland 2003). A study in 53 Alzheimer's disease Special Care Units in the States reports 6.5% wandering among residents (although the proportion of residents exhibiting this behaviour varied from 1% in some units to 38% in one unit) (Sloane 1998).

Wandering is not a static or simple behaviour. For example, one longitudinal study of behaviour of people with dementia in the domestic setting (McShane 1994a; Hope 2001; Hope 1994) found that over the ten year period of the study over two-thirds of patients were affected by some form of abnormal walking at some stage, but different patients were affected by different forms of the symptom at different stages of the disease. Changes in wandering behaviour were not generally related to gender, age, or time since onset of dementia. Onset of different types of wandering behaviour showed some relationship with cognitive state. Various forms of increased walking first appeared during moderate dementia, each type typically persisting for 1 to 2 years. Late dementia was characterized by decreased walking and mobility. At the earlier stages of the disease some people in this study 'pottered' but the majority were 'checking and trailing'; in the later stages of the disease 'checking and trailing' tended to give way to aimless hyperactivity and restless legs. This would suggest that the wandering has more to do with a restless urge to keep moving than with a need for reassurance. And in such cases the disorder may be alleviated by pharmaceutical interventions (McShane 1994a).
Subjects who got lost were more likely to become permanently resident in institutions (odds ratio = 7.3; 95% confidence interval: 3.0 to 17.8). Patients who performed better on a behavioral test of topographical memory were less likely to get lost over the subsequent 5 years (negative predictive value: 90%). The authors concluded that the risk of patients with dementia getting lost is substantial and requires frequent intervention by caregivers and that this risk is a major reason for institutionalization (McShane 1998b)

Three major approaches to the causes of wandering can be identified: biomedical (e.g. Rolland 2005), psychosocial and person-environment interaction perspectives (e.g. Yao 2006). However, the aetiology of wandering, the reason why people wander, remains unclear (Lai 2003) and many studies highlight the unpredictable and varied nature of unattended wandering (e.g. Rowe 2001). We lack an understanding of what causes wandering and how combinations of these perspectives lead to particular types of wandering that are clinically noticeable (Algase 2005). The same behaviour or type of wandering might occur for different reasons in different individuals. This makes it hard to discover effective strategies for managing wandering and difficult to design appropriate intervention strategies. Any theoretical formulation is going to have to allow for different triggers for the behaviour and we are unlikely to get a 'one size fits all' kind of explanation. Thus what we mostly encounter in this field is a 'trial and error' approach (Kolanowski 2001). Algase (Algase 2005) suggests that the chance of success in this trial and error process can be markedly enhanced through close observation of the wanderer's behaviour and careful interviewing of caregivers. Family can be asked to keep a behaviour log that documents the time, location and circumstances surrounding wandering episodes. Sometimes, just this process of keeping a log will give the caregiver insight into what makes the person with dementia wander; such a log can also guide the clinician to the discovery of a promising approach. Algase makes the point that "approaches aimed at mitigating the cause(s) will be more effective than approaches aimed at managing the symptoms or at preventing its consequences" (Algase 2005).

This review did not find any randomised controlled trials (RCTs) of non-pharmacological interventions that specifically studied the prevention or reduction of wandering in the domestic setting.

RCTs of interventions aimed at behavioural difficulties in general in people with dementia in the domestic setting do exist (for example Gitlin 2000; Gitlin 2001; Gitlin 2002; Gitlin 2003a; Gitlin 2003b; Gitlin 2005; Thorgrimsen 2002; Wisniewski 2003) but none of these collected data on wandering as an outcome measure and so we cannot use them in this review.

A number of studies exist of wandering in the institutional setting as opposed to the domestic setting and it would seem useful to review briefly some of the evidence here to see what interventions are used and what we can learn. We will not discuss or comment on the validity of the methodology used in the trials reported below nor on the conclusions drawn from them: the place for that is a future Cochrane review of non-pharmacological interventions for wandering in the institutional setting.

Interventions aimed at the prevention and reduction of wandering can be put in the following categories:

Exercise and walking therapies

Walker's group **:** Cott 2002 describes a randomised trial in an institutional setting with three groups: walk-and-talk group, talk-only group and no intervention group. Residents who received the walk-and-talk intervention did not demonstrate statistically significant differences in ambulation measured posttest when compared with residents who received the talk-only intervention or no intervention, even after controlling for individual differences.

Exercise therapy *:* A group of dementia patients were randomly assigned to one of three intervention/control groups: exercise, sedentary activity, and control. No significant difference was found in frequency of the targeted behaviours (wandering, rummaging,

and aggressive behaviours) after twelve weeks of intervention when compared to base frequency for each group or when twelve-week frequencies for each group were compared (Gillogly 2006).

A number of studies of walking/exercise therapies have been carried out in both in the community and the institutional setting, e.g. treadmill training, activity training to reduce fear of falling (Toulotte 2003), planned walking (Friedman 1991), combined walking and conversation therapy (Tappen 2000b; Tappen 2000c), self-paced resistance training (Rooks 1997), 'special steps' (Wishart 2000) and so on. However, these are all aimed at cognition, communication and mobility. These interventions do not measure the impact on wandering.

Wander gardens : While there is growing interest in the addition of wander gardens to existing and new dementia care units, the literature describing the benefits for patients with dementia in long-term care settings is largely anecdotal (Detweiler 2002).

Environmental modification interventions

Subjective barriers like mirrors, floor grids, camouflaging door knobs. More information on these can be found in the Cochrane review of 'Subjective barriers to prevent wandering of cognitively impaired people' (Price 2001 - last updated 2005).

Home environmental programs : several RCTs of a home-based therapy intervention versus usual care were designed to enhance the skills of caregivers in using the physical and social environment to address troublesome behaviours and dependency associated with the progression of dementia (Gitlin 2001; Gitlin 2005). The intervention in each trial involved a number of 90-minute home visits by occupational therapists who worked with families to identify care giving issues (wandering was frequently identified by caregivers as problematic) and generate environmental-based solutions. Solutions ranged from no cost recommendations (e.g., removing clutter, simplifying the environment), to resource dependent recommendations (e.g., installing grab bars or handrails) (Corcoran 2001; Gitlin 2000). Usual care consisted of education materials and a booklet describing home environmental safety tips at conclusion of study. While these studies were a success in the sense that carers did adopt a lot of the strategies, the outcomes in terms of behavioural difficulties or carer stress and institutionalisation are not at all clear. Wandering was not measured as an outcome and so no data are available which would allow us to look at the efficacy of these interventions with regards to wandering.

Safety home is the use of safety devices (alarms, child proof locks and dead bolts out of sight of the person with dementia) to prevent people with dementia hurting themselves. No studies using this type of intervention were found at all.

Behavioural modification interventions

Behavioural nursing intervention: this was a multiple case study to determine if the systematic use of a behavioural nursing intervention would have an effect on mealtime behaviour of wanderers in terms of time spent sitting at the dining table and food intake and body weight. The intervention required a trained intervener to 'administer' systematic behavioural conditioning: this involved systematic reinforcement of sitting-at-table behaviour by the person with dementia using two communication strategies: focused conversation about the meal, eating and social comments related to the mealtime experience and specific elements of social behaviour (smiling, eye contact). The intervention was successful in that all participants were able to sit at the table longer and eat more food during the intervention. However, their body weight remained stable throughout the study (Beattie 2004)

Occupational therapy

Therapeutic recreation activities **:** in a randomised crossover pilot study carried out by Kolanowski 2001 activities for people with dementia in a nursing home were tailored so that they matched the cognitive physical abilities as well as their style of interest in the hope that this would result in greater engagement, more positive mood and less disruptive behaviour (wandering being one such behaviour) as compared to the standard treatment which consisted of activities that matched skill level only. Although the study did not find any difference between self-reported mood, negative affect or extent of participation between the experimental treatment and control treatment, subjects had fewer days when any disruptive behaviour was exhibited during the experimental treatment activities.

Cochrane reviews of Complementary and Psycho-social therapies

The Cochrane reviews of Aroma therapy (Thorgrimsen 2003), Validation therapy (Neal 2003), Reminiscence therapy (Woods 2005), Music therapy (Vink 2003), Snoezelen and multi-sensory therapy (Chung 2002), Reality orientation (Spector 2000), Light Therapy (Forbes 2004) and Transcutaneous Electrical Nerve Stimulation (Cameron 2003) would cover wandering as an outcome if such data had been available. All but one of them so far include only studies with patients in institutional settings and none of them has any data specifically on wandering although most of them use behavioural outcome scales that do contain wandering components. The Cochrane review of Aromatherapy does contain one study with people with dementia in the domestic setting (Thorgrimsen 2002) and includes behaviour as an outcome but no separate data for wandering are available.

Safe Return registration and identification program: this is a program of the American Alzheimer Association whereby the person with dementia or the carer fills out a form, supplies a photograph and chooses the type of identification product (a necklace, bracelet etc) that the registrant will wear or carry. This info is then entered on a confidential database available 24 hours a day, 7 days a week. This program can assist in the timely return of people with dementia. No studies were found which compared this program to another intervention or no intervention.

Electronic tagging

There are two separate tagging systems for wandering: one sets boundaries and when these are breached, carers are alerted to the fact that the patient may be in danger. This type of tagging does not tell you where a person is. The second one, ethically much more controversial, is a true tracking device: using a Global Positioning System (GPS) somebody can keep track of where exactly the person with dementia is at all times. Much has written about this but few experimental studies have been carried out.

Electronic tagging used to restrain a person within a limited area : Takada 1998 reports a new system used in the institutional setting to prevent an elderly person with dementia from wandering. When a patient carrying a very small transponder (325 mm * 385 mm in size) reaches a gate where receiving equipment is set up, the computer which is connected to the receiver identifies the patient and triggers the playing of music while alerting staff. By playing music, the wandering could be interrupted for several minutes. This system is very compact and cheap and the weak electric wave used does not affect any medical equipment. As this system prevents the patient from leaving through the gate, patients are kept safe. In addition, it is possible to analyse the patient's specific wandering pattern, which can be useful for his care. Miskelly 2004 reports a non-randomised study with similar technology in a nursing home and points out that such a system requires no permanent wiring, is easy to install and only generates an alarm when wearers of the bracelet approach a pre-defined area of risk. The bracelet is specially constructed so as to require two hands for its removal (but one resident out of the 39 managed to remove it). An equivalent system, using one bracelet, one pager and one monitor, was tested by clients and relatives who lived at home in the community. The system was successful in detecting potential wandering events and no untoward incidents have occurred.

Electronic tagging used to locate a person: McShane 1998areports the first feasibility study of electronic tracking devices. The likely demand for an electronic tracking device was assessed by means of a telephone survey of 99 carers; 24 people with dementia took part in the feasibility study but only 9 of them used the device consistently. The telephone survey revealed that a substantial degree of risk to people with dementia is tolerated (e.g. 44% of those who went out alone had a poor record of road safety but 42% of those who had already got lost continued to go out unaccompanied) most likely because 78% of these people did not stray too far from home. An electronic device would have been helpful in reducing risk in 18%. There are barriers to the use of tracking devices that are not technical or ethical: someone needs to recognize that the person with dementia is at risk, someone will need to ensure that the device is attached to the person with dementia and go and fetch them when the device bleeps. In this study a direction-finding system was used (adapted from use for animals in the wild): the receiving device was too large for some carers to use and in urban settings it was only reliable over short ranges. Cooperation of patients in the use of the device was variable (although of course all had expressly agreed to participate, the researchers concluded that intolerance of the device was a practical bar to its continued use).

Miskelly 2005 describes a pilot study in the community in which mobile phone technology was used to track patients electronically. There are of course technical constraints but in this study these were not a problem. But user compliance was a problem: when carers had trouble using the phone correctly and became frustrated then this led to neglect and rejection of the system. However when compliance was high, the tracking system was highly reliable and accurate and most participants were located within 10 minutes. The ethical issues relating to tracking people with dementia were discussed extensively at the local research ethics committee before the trial began. It was felt that this technology, if successful, would be the least restrictive method of helping the problem of wandering in dementia and would be preferable to chemical alternatives.

In this context it is worth mentioning the US-based Project Lifesaver (www.projectlifesaver.org). By forming partnerships with local law enforcement and public safety organizations, Project Lifesaver deploys specially trained teams with the most reliable technology available to quickly locate and return wandering adults and children to their families and caregivers. Project Lifesaver relies on proven radio technology and a specially trained search and rescue team. Clients who are enrolled in the Project Lifesaver program wear a personalized wristband that emits a tracking signal. When caregivers notify the local Project Lifesaver agency that the person is missing, a search and rescue team responds to the wanderer's area and starts searching with the mobile locater tracking system. Search times have been reduced from hours and days to minutes. In over 1000 searches, there have been no reported serious injuries or deaths. Recovery times average less than 30 minutes.

However, to date no randomised controlled trials have been carried out to prove or disprove the efficacy of electronic tagging.

OBJECTIVES

To evaluate the effectiveness and safety of non-pharmacological interventions in reducing wandering in the domestic setting by people with dementia. The secondary objective is to highlight the quality and quantity of research evidence available and to set an agenda for future research.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised clinical trials comparing intervention with no intervention or usual treatment ('standard care') or another intervention.

Types of participants

Elderly people with any type of dementia assessed and diagnosed by validated criteria such as DSM III-R, DSM-IV or ICD-10 (APA 1987; APA 1994; WHO 1992) in domestic settings.

Types of interventions

Interventions may include planned walking, pet therapy, electronic monitoring, functional skills training, music therapy, exercise, electrostimulation, visual barriers, light therapy, night-time bathing, and the use of sensory stimulation products. All interventions will be evaluated as to their effectiveness and any potential adverse effects.

Types of outcome measures

Outcomes of interest are increase or decrease in wandering, quality of life, activity in daily tasks, behaviour, mood, communication, stress and anxiety levels and institutionalisation. We are also interested in the effects on the carers of people with dementia, including level of strain, quality of life, stress and depressive mood.

Search methods for identification of studies

The Specialized Register of the Cochrane Dementia and Cognitive Improvement Group (CDCIG) was searched on 11 June 2009 from January 2008 up to June 2009. The following search terms were used: exit* OR wander* OR elopement OR ambulat* OR walk*.

The Cochrane Dementia and Cognitive Improvement Group's Specialized Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. Monthly searches of a number of major healthcare databases: Medline, Embase, Cinahl, Psycinfo and Lilacs
2. Monthly searches of a number of trial registers: meta Register of Controlled Trials; IFPMA; Umin Japan Trial Register; WHO portal (which covers ClinicalTrials.gov; ISRCTN; Chinese Clinical trials Register; German Clinical trials register; Iranian Regsitry of Clinical trials and the Netherlands National Trials Regsiter, plus others)
3. Quarterly search of The Cochrane Library's Central register of Controlled trials (CENTRAL)
4. Monthly searches of a number of grey literature sources: ISI Web of knowledge Conference Proceedings; Index to Theses; Australasian Digital Theses

Details of the search strategies used for the retrieval of reports of trials from the healthcare databases, CENTRAL and conference proceedings can be viewed in the 'specialized register' section within the editorial information about the Cochrane Dementia and Cognitive Improvement Group.

Additional searches were run in each of the sources listed above to cover the timeframe from the last searches performed for the Specialized register to 11 June to ensure that the search for the review was as up-to-date as possible. The search strategies used can be seen in Appendix 1.

In addition MEDLINE, EMBASE, CINAHL, PsycINFO and AMED were searched for further evidence of non-randomised studies for the prevention of wandering in the domestic setting. These non-randomised data are discussed in the light of their implications for further research (see the 'Discussion' section of this review and the section 'Reviewers' conclusions').

Data collection and analysis

Selection of Studies

No suitable randomised controlled studies for inclusion were found at all. If at future update searches suitable studies will be identified, then the titles, abstracts and descriptors of citations identified by the search will be examined by two reviewers (DH and UHH) independently; those deemed to be clearly irrelevant will be discarded. Full text copies of the remaining citations will be retrieved and assessed independently by DH and UHH for inclusion in the review using the criteria described above. Consensus will be reached by referral of disagreements at any stage of study selection to the third reviewer (RM).

Quality Assessment

The internal validity of trials is related to how successfully selection, performance, attrition and detection biases are eliminated. If and when suitable trials are identified at future update searches, the quality of included trials will be assessed using one of the Cochrane approaches (Mulrow 1997):
Grade A: Adequate concealment (randomizations; placebo-controlled; concealed allocation).
Grade B: Uncertain.
Grade C: Inadequate concealment; no randomizations.
The rating of quality will be described in the table of included studies.

Data Extraction

If and when suitable trials are identified at future update searches, 'Intention to treat analysis' will be applied to data obtained on every randomised patient, without exception. In the absence of ITT data, data for 'on-treatment analysis' will be extracted and indicated as such.

- For continuous variables, or ordinal variables approximated to continuous variables, outcomes of interest will be the assessment score at the time point considered, and the change from baseline (i.e., pre-randomizations or at randomisation) at this point.
- Data on adverse effects and dropouts will be recorded.
- For some binary and ordinal outcomes (i.e., improved versus not improved) the end-point itself will be of clinical relevance; because all patients, by definition, will have had the same initial score.
- Where present numerical scores will be used to assess response to treatment; in some instances, because of variation in the way response to treatment may be measured, it may necessary to operationalize outcomes as 'improved' versus 'not improved', regardless of the scale used by the authors.

Data Analysis

If and when suitable trials are identified at future update searches:

- Missing data and drop-out rates will be assessed for each of the included studies. The number of participants who are included in the final analysis will be reported as a proportion of all participants in the study.
- For binary outcomes a standard estimation of the odds ratio and risk ratio with a 95% confidence interval will be calculated.
- Continuous data with a normal distribution (or approximating to a normal distribution) will be analysed using RevMan Analyses software if means and standard deviations are available or are obtainable from the authors of studies. Appropriate non-parametric tests will be used to analyse data not normally distributed.
- If there are sufficient data and it is appropriate to do so, one or more meta-analyses will be performed. Decisions on whether to combine studies for meta-analyses will be made depending on the comparability of interventions and comparators used in individual studies. Statistical analyses will be performed using Review Manager Analyses software. Raw data from cluster randomised studies will not be entered if the units of randomisation and analysis differ.

RESULTS

Description of studies

Results of the search

The search brought up 13 references. Of these, there were ten references excluded due to their observational nature, one review and two intervention studies with no control.

Included studies

The search did not reveal any randomised controlled studies of interventions to prevent or manage wandering in the domestic setting. Several trials of interventions for wandering in institutional

settings were found and these are briefly discussed in the background and discussion sections.

Excluded studies

Ten studies were excluded due to their observational nature, one review and two intervention studies with no control.

Risk of bias in included studies

There are no included studies at present.

Effects of interventions

As no suitable trials for inclusion were found, there are no results to discuss.

DISCUSSION

There is no information available on the effectiveness of non-pharmacological interventions for wandering in the domestic setting. Literature searches revealed a total absence of randomized controlled trials in this area. Wandering is rarely studied in itself, even in institutional settings, despite a growing interest in the behavioural disturbances caused by dementia: wandering is usually included among the various aspects of 'agitation' or 'aberrant motor behaviours' or 'BPSD' (Behavioural and Psychological Symptoms of Dementia).

The fact that wandering is not a static or simple behaviour and the lack of a 'theory' of wandering makes it hard to discover effective strategies for managing wandering and difficult to design appropriate intervention strategies. Thus what we mostly encounter in this field is a 'trial and error' approach often without due consideration of the complex interactions of personal and environmental factors that lead people with dementia to wander.

The studies that are available suggest that it might be useful to distinguish between 'wandering at home and in the garden' and 'getting lost from one's own dwelling'. The solution to the latter type of wandering may be the use of electronic tagging. As McShane points out, if it is ethically proper to search for people with dementia, then surely it would be proper to do so with help of a tracking device (McShane 1994a; McShane 1994b).

AUTHORS' CONCLUSIONS

Implications for practice

In the absence of any randomised controlled trials, there is no evidence to draw any conclusions about the efficacy of non-pharmacological interventions for wandering in the domestic setting.

Implications for research

Wandering of people with dementia in the domestic setting is often what leads to institutionalisation, which is costly and not necessarily what the people involved would wish. Randomised controlled trials of electronic tagging and home environmental interventions, possibly along the lines of Project Lifesaver, are urgently needed.

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CHARACTERISTICS OF STUDIES

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Algase, DL 2009	An observational study
Cohen-Mansfield, J. 2007	An observational study
Detweiler, MB 2008	No control
Greiner, C 2007	An observational study
Harada, T 2008	An observational study
Lim, YM 2008	An observational study
Marcus, JF 2007	An observational study
Molinari, V 2008	An observational study
Robinson, L 2007	Review
Song, J 2008 a	An observational study
Song, J 2008 b	An observational study
Spring, HJ 2009	An observational study
Thomas, DW 2006	No control

Characteristics of studies awaiting assessment *[ordered by study ID]*

Anon 2008

Methods	Implementation of 30 minutes walking in daily care of older people with dementia

Anon 2008 *(Continued)*

Participants	Older people with dementia
Interventions	Older people with dementia will walk 30 minutes a day as part of daily care. In nursing homes this will be 5 days of the week, in day care for elderly this will be 3 days of the week.
Outcomes	Primary outcome - Improved condition Secondary outcome - Cognition - Circadian rhythm - Mood - Activities of daily living - Quality of life
Notes	

Anon 2009

Methods	
Participants	Veterans over age 60 with an Alzheimer's-like dementia diagnosis.
Interventions	Device: door mat and door camouflage subjective exit barriers Door mat - a 4'X 4' black, rubberized mat with an overlay of very thin strips of 2" white duct tape placed at 2" intervals. To avoid introducing a tripping hazard, the mat will be nonskid and will be fastened securely to the floor.Door covers - a neutral-colored canvas cloth that cover the entire interior surface of the door and is attached to the door using a combination of Velcro® and double-faced tape
Outcomes	Primary Outcome Measures: decrease in pre-elopment (exit door shadowing and lingering) behavior [Time Frame: eight weeks] [Designated as safety issue: Yes] Secondary Outcome Measures: reduction in CG burden [Time Frame: eight weeks] [Designated as safety issue: No] increase in pre-elopement behaviors occurring in proximity to other potential exit doors and windows within the same area [Time Frame: eight weeks] [Designated as safety issue: Yes] increase in persons with dementia agitation [Time Frame: eight weeks] [Designated as safety issue: No]
Notes	

APPENDICES

Appendix 1. Sources searched and search strategies used

Source Searched	Search strategy

(Continued)

Medline (Ovid SP)	1. Delirium, Dementia, Amnestic, Cognitive Disorders/ or Dementia, Vascular/ or Dementia, Multi-Infarct/ or Dementia/
	2. Alzheimer Disease/
	3. Delirium/ or Wernicke Encephalopathy/
	4. Delirium, Dementia, Amnestic, Cognitive Disorders/
	5. Huntington Disease/
	6. Lewy Bodies/
	7. Creutzfeldt-Jakob Syndrome/
	8. Korsakoff Syndrome/
	9. Cerebral Infarction/ or CADASIL/ or Cerebrovascular Disorders/
	10. Kluver-Bucy Syndrome/
	11. "Pick Disease of the Brain"/
	12. Brain Ischemia/
	13. dement*.mp.
	14. alzheimer*.mp.
	15. "lewy* bod*".mp.
	16. huntington*.mp.
	17. cerebrovascular.mp.
	18. wernicke*.mp.
	19. (CADASIL or "cerebral autosomal dominant arteriopathy").mp.
	20. korsakoff syndrome.mp.
	21. delerium.mp.
	22. Kluver bucy.mp.
	23. "pick* disease".mp.
	24. arterioslerosis.mp.
	25. "ischemic white matter".mp.
	26. (CJD or JCD or "creutzfeldt jakob").mp.
	27. (memory adj2 (complaint* or impair* or problem*)).mp.
	28. (exit* or wander* or elopement or ambulat* or walk* or stray or ambl*).mp.
	29. 11 or 21 or 7 or 26 or 17 or 2 or 22 or 1 or 18 or 23 or 16 or 13 or 27 or 25 or 6 or 3 or 9 or 12 or 20 or 14 or 15 or 8 or 4 or 24 or 19 or 10 or 5
	30. 28 and 29
	31. randomized controlled trial.pt.
	32. controlled clinical trial.pt.
	33. randomized.ab.

(Continued)

	34. placebo.ab.
	35. drug therapy.fs.
	36. randomly.ab.
	37. trial.ab.
	38. groups.ab.
	39. 35 or 33 or 32 or 36 or 38 or 34 or 37 or 31
	40. (animals not (humans and animals)).sh.
	41. 39 not 40
	42. 30 and 41
	43. 2008*.ed.
	44. 42 and 43
Embase (Ovid SP)	1. Delirium/ or Dementia/ or Organic Brain Syndrome/ or Cognitive Defect/
	2. Alzheimer Disease/
	3. Wernicke Encephalopathy/
	4. Huntington Chorea/
	5. Creutzfeldt Jakob Disease/
	6. Korsakoff Psychosis/
	7. Brain Infarction/
	8. Binswanger Encephalopathy/ or Cadasil/ or Cerebrovascular Disease/ or Autosomal Dominant Disorder/
	9. Kluver Bucy Syndrome/
	10. Pick Presenile Dementia/
	11. dement*.mp.
	12. alzheimer*.mp.
	13. "lewy* bod*".mp.
	14. huntington*.mp.
	15. cerebrovascular.mp.
	16. wernicke*.mp.
	17. (CADASIL or "cerebral autosomal dominant arteriopathy").mp.
	18. korsakoff syndrome.mp.
	19. delerium.mp.
	20. Kluver bucy.mp.
	21. "pick* disease".mp.
	22. arterioslerosis.mp.

(Continued)

	23. "ischemic white matter".mp.
	24. (CJD or JCD or "creutzfeldt jakob").mp.
	25. (memory adj2 (complaint* or impair* or problem*)).mp.
	26. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25
	27. (exit* or wander* or elopement or ambulat* or walk* or stray or ambl*).mp.
	28. 27 and 26
	29. randomized controlled trial/
	30. controlled clinical trial/
	31. randomized.ab.
	32. placebo.ab.
	33. randomly.ab.
	34. trial.ab.
	35. groups.ab.
	36. random*.ab.
	37. 35 or 33 or 32 or 34 or 36 or 30 or 31 or 29
	38. 28 and 37
	39. 38
	40. limit 39 to human
	41. 2008*.em.
	42. 2009*.em.
	43. 42 or 41
	44. 40 and 43
Psycinfo (Ovid SP)	1. exp Dementia/ or exp Senile Dementia/ or exp Presenile Dementia/ or exp Dementia with Lewy Bodies/ or exp Vascular Dementia/
	2. exp Alzheimers Disease/
	3. exp Delirium/
	4. exp Wernickes Syndrome/ or exp Encephalopathies/ or exp Korsakoffs Psychosis/
	5. exp Huntingtons Disease/
	6. exp Creutzfeldt Jakob Syndrome/
	7. exp Cerebrovascular Accidents/
	8. exp Cognitive Impairment/
	9. exp Kluver Bucy Syndrome/
	10. exp Picks Disease/
	11. dement*.mp.

(Continued)

	12. alzheimer*.mp. 13. "lewy* bod*".mp. 14. huntington*.mp. 15. cerebrovascular.mp. 16. wernicke*.mp. 17. (CADASIL or "cerebral autosomal dominant arteriopathy").mp. 18. korsakoff syndrome.mp. 19. delerium.mp. 20. Kluver bucy.mp. 21. "pick* disease".mp. 22. arterioslerosis.mp. 23. "ischemic white matter".mp. 24. (CJD or JCD or "creutzfeldt jakob").mp. 25. (memory adj2 (complaint* or impair* or problem*)).mp. 26. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 27. (exit* or wander* or elopement or ambulat* or walk* or stray or ambl*).mp. 28. 27 and 26 29. random*.mp. 30. "clinical trial".mp. 31. study.mp. 32. groups.ab. 33. 32 or 30 or 31 or 29 34. 33 and 28 35. limit 34 to yr="2008 -Current"
LILACs (Bireme)	(exit$ or wander$ or elopement or ambulat$ or walk$ or stray or ambl$) [Palavras] and (dement$ or lewy$ or alzheimer$ or creutzfeldt or huntington$ or korsakoff or cognit$) [Palavras] and (2008 or 2009) [País, ano de publicação]
mRCT	1. wander% and dement% and (2008 or 2009) [all active registers] = 15 2. exit% and dement% and (2008 or 2009) [all active registers] = 18 3. elopement% and dement% and (2008 or 2009) [all active registers] = 1 4. ambulat% and dement% and (2008 or 2009) [all active registers] = 103
IFPMA	“wandering around” AND (dementia OR “dementia vascular” OR “dementia Lewy Body” OR “dementia due to Huntington’s Disease” OR “dementia multi-infarct” OR “dementia senile” OR “dementia Alzheimer’s type”
UMIN	Walk or wander or wandering or abulat or stray

(Continued)

WHO Portal	Condition: (dement OR lewy OR alzheim%) AND Intervention: (track OR garden OR non-pharm OR exit OR walk OR exercise%)
Australaisian Digital theses	Wandering OR exit OR walking OR tracking
Index to Theses	(wander* or walk* or track* or exit* or wandering& or tracking& or stray&) and (dement* or alzheimer* or dementia& or alzhiemers& or cognit* or memory) and (2008 or 2009)
CDCIG SR	(exit* or wander* or elopement or ambulat* or walk* or stray or ambl*) AND (2008 or 2009)

WHAT'S NEW

Date	Event	Description
23 June 2009	New search has been performed	A new update search was run resulting in 20 references which were screened; no trials were eligible for inclusion. Excluded trials section updated.

HISTORY

Protocol first published: Issue 1, 2006
Review first published: Issue 1, 2007

Date	Event	Description
4 April 2008	Amended	Converted to new review format.
30 March 2008	New search has been performed	A new update search was performed for the review on 30 March 2008
13 November 2006	New citation required and conclusions have changed	New studies sought but none found: 5 October 2006

CONTRIBUTIONS OF AUTHORS

DGH: drafting protocol; search for review; in-exclusion of studies, data extraction, data analysis, drafting review, updates of review; all correspondence

UHH: drafting protocol; in-exclusion of studies, drafting review

RM: drafting review

Contact editors: Linda Clare and Lon Schneider
Consumer editor: Susan Harris

DECLARATIONS OF INTEREST

None known.

SOURCES OF SUPPORT

Internal sources

- University of Oxford, Oxford, UK.

External sources

- NHS R&D, UK.

INDEX TERMS

Medical Subject Headings (MeSH)

Confusion [*rehabilitation]; Dementia [*psychology]; Exercise Therapy; Walking [psychology]

MeSH check words

Aged; Aged, 80 and over; Humans