

## SYSTEMATIC REVIEW

# A systematic review and meta-analysis of interventions designed to prevent or stop elder maltreatment

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## Abstract

**Background:** elder maltreatment is a major risk for older adults' mental health, quality of life, health, institutionalisation and even mortality.

**Objectives:** to perform a systematic review and meta-analysis of interventions designed to prevent or stop elder abuse.

**Methods:** Studies that were posted between January 2000 and December 2014, written in English, specifically designed to prevent or stop elder maltreatment were included.

**Results:** overall, 24 studies (and four records reporting on the same participants) were kept for the systematic review and the meta-analysis. Studies were broadly grouped into three main categories: (i) interventions designed to improve the ability of professionals to detect or stop elder maltreatment ( $n = 2$ ), (ii) interventions that target older adults who experience elder maltreatment ( $n = 3$ ) and (iii) interventions that target caregivers who maltreat older adults ( $n = 19$ ). Of the latter category, one study targeted family caregivers, five targeted psychological abuse among paid carers and the remaining studies targeted restraint use. The pooled effect of randomised controlled trials (RCTs)/cluster-RCTs that targeted restraint use was significant, supporting the effectiveness of these interventions in reducing restraint use: standardised mean difference:  $-0.24$ , 95% confidence interval =  $-0.38$  to  $-0.09$ .

**Interpretation:** the most effective place to intervene at the present time is by directly targeting physical restraint by long-term care paid carers. Specific areas that are still lacking evidence at the present time are interventions that target (i) elder neglect, (ii) public awareness, (iii) older adults who experience maltreatment, (iv) professionals responsible for preventing maltreatment, (v) family caregivers who abuse and (vi) carers who abuse.

**Keywords:** *abuse, neglect, older people, interventions, prevention, evidence base, systematic review*

## Introduction

Elder maltreatment or elder abuse is broadly defined as 'a single or repeated act or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person' [1]. Within this broad category, there are various types of elder abuse, such as physical (non-accidental acts that result in pain and injury), emotional (screaming, insulting or threatening), financial (illegal use of financial resources) or sexual abuse (unwanted sexual acts) and neglect, which is defined as 'intentional or unintentional withholding of food, medication or other necessities that result in the older person's failure to

thrive' [2]. In addition, both physical and chemical restraints are considered abusive [3].

The prevalence of abuse and neglect varies based on the type of maltreatment assessed and the population. A recent systematic review reported a prevalence rate of significant elder abuse of 6% among the general population and 25% among vulnerable older adults [4]. Neglect and psychological and financial abuse are the most common types of elder maltreatment [5]. Elder maltreatment is particularly high among physically or cognitively vulnerable older adults [6].

Elder maltreatment is considered a violation of human rights and therefore should be prevented. The urgency to prevent elder maltreatment is further heightened given its well-known

negative effects on the quality of life, well-being and physical health of older adults [7]. Elder maltreatment is a known risk for institutionalisation [8] and even for mortality [9].

Although several systematic reviews and/or meta-analyses on the topic exist, these are either narrowly focused on a particular area (e.g. restraint or intimate partner violence) [10, 11] or provide a broad qualitative overview of the field [12, 13]. In addition, some of the reviews [10] employed rigorous review criteria which might be appropriate for medical research, but are often deemed inadequate for public health interventions [14]. Whereas a randomised controlled trial (RCT) is the gold standard in medical research, this may not be the case for public health interventions, which aim to evaluate the effect of a new national policy for instance. Moreover, even when an RCT is conducted, some of the rigorous requirements proposed by medical science, such as treatment concealment, are impossible in social research [15].

The present study was designed to systematically review and appraise current knowledge based on interventions for the prevention of elder maltreatment. This review is designed to guide administrators, clinicians, family caregivers and older adults in making informed decisions concerning the prevention and elimination of elder maltreatment. To the best of our knowledge, this provides the first systematic review and meta-analysis of the entire field of elder maltreatment interventions.

## Methods

The study was funded by ESHEL—The Association for the Planning and Development of Services for the Aged. Supplementary data, Appendix 1, available in *Age and Ageing* online provides a detailed description of the methods. Three independent researchers (S.L., O.G., U.N.) searched the selected databases, using predefined keywords. Subsequent snowballing searches were conducted. All titles and available abstracts were reviewed for relevance by at least two independent researchers (L.A., S.L., O.G.). Disagreements were resolved through a consensus, while relying on predefined selection criteria. Data extraction was conducted independently by at least two investigators (L.A., S.L., O.G.). Disagreements between reviewers were discussed and a consensus agreement was established. Predefined abstraction guidelines were used. We appraised the risk for bias, using pre-specified guidelines. We used Comprehensive Meta-analysis Version 2 [16] to calculate effect sizes and to assess for publication bias.

## Results

Figure 1 demonstrates the study flow. A total of 24 studies and 4 additional records reporting on the same participants [17–20] were kept for the systematic review and the meta-analysis. These were broadly grouped into three main categories: (i) interventions designed to improve the ability of professionals to detect or stop elder maltreatment ( $n = 2$ ), (ii) interventions that target older adults who experience elder maltreatment ( $n = 3$ ) and (iii) interventions that target caregivers

who maltreat older adults ( $n = 19$ ) (plus four additional records on the same population). Given inherent differences between these three categories, all further analyses were conducted separately within each category. Because different research designs result in different effect sizes [21], pooled effects within each category were calculated based on study design: RCT/clustered RCT, non-RCT and pre–post.

### Professionals responsible for preventing elder maltreatment

Two studies: one from Japan [22] and one from the United States [23] fell under this category. One study assessed the impact of a legal policy intervention [22], whereas the other assessed the impact of an educational intervention that advocated for the use of an integrated system of clinical assessment, service planning and outcome measurement in a community mental health centre [23]. Table 1 outlines their characteristics. One study employed a pre–post design [22] and one employed a non-RCT comparative group design, using clustering [23]. Both studies employed a fidelity check (i.e. implementation assessment). Blind assessment was not reported. Effects were non-significant.

### Interventions that target older adults who experienced maltreatment

Three studies: from Canada [24], the United States [25] and Iran [26] fell under this category (See Table 1). These studies offered psychoeducational/case management interventions to older adults at risk. One study tested the presence or absence of abuse as an outcome [24], one study assessed readiness to make a change among older adults who had experienced maltreatment [25], whereas the third study focused on perceived threat [26]. Two studies used an RCT design [24, 26] and one relied on a pre–post design [25]. Studies were ranked as high risk or unclear risk with regard to blind assessment and fidelity check. One study [24] had a non-significant effect and another study [26] had a significant effect, disfavours the intervention. The third study had a significant effect favouring the intervention [25].

### Interventions that target carers who maltreat

This was the largest category with 19 studies and 4 additional records based on the same populations [17–20]. Five studies examined interventions that targeted psychological abuse by paid carers [19, 20, 27–31] and one examined physical abuse by family members [32]. The remaining 13 studies examined educational/consultation/structural interventions to reduce physical restraint in institutions [17–20, 31, 33–45]. Because of the inherent differences between studies that target family members as carers versus studies that target paid carers, these two groups were examined separately. In addition, we examined separately studies that targeted psychological abuse versus studies that targeted restraint use as outcomes.

The study that targeted family caregivers was conducted in the United Kingdom and employed an RCT design. This

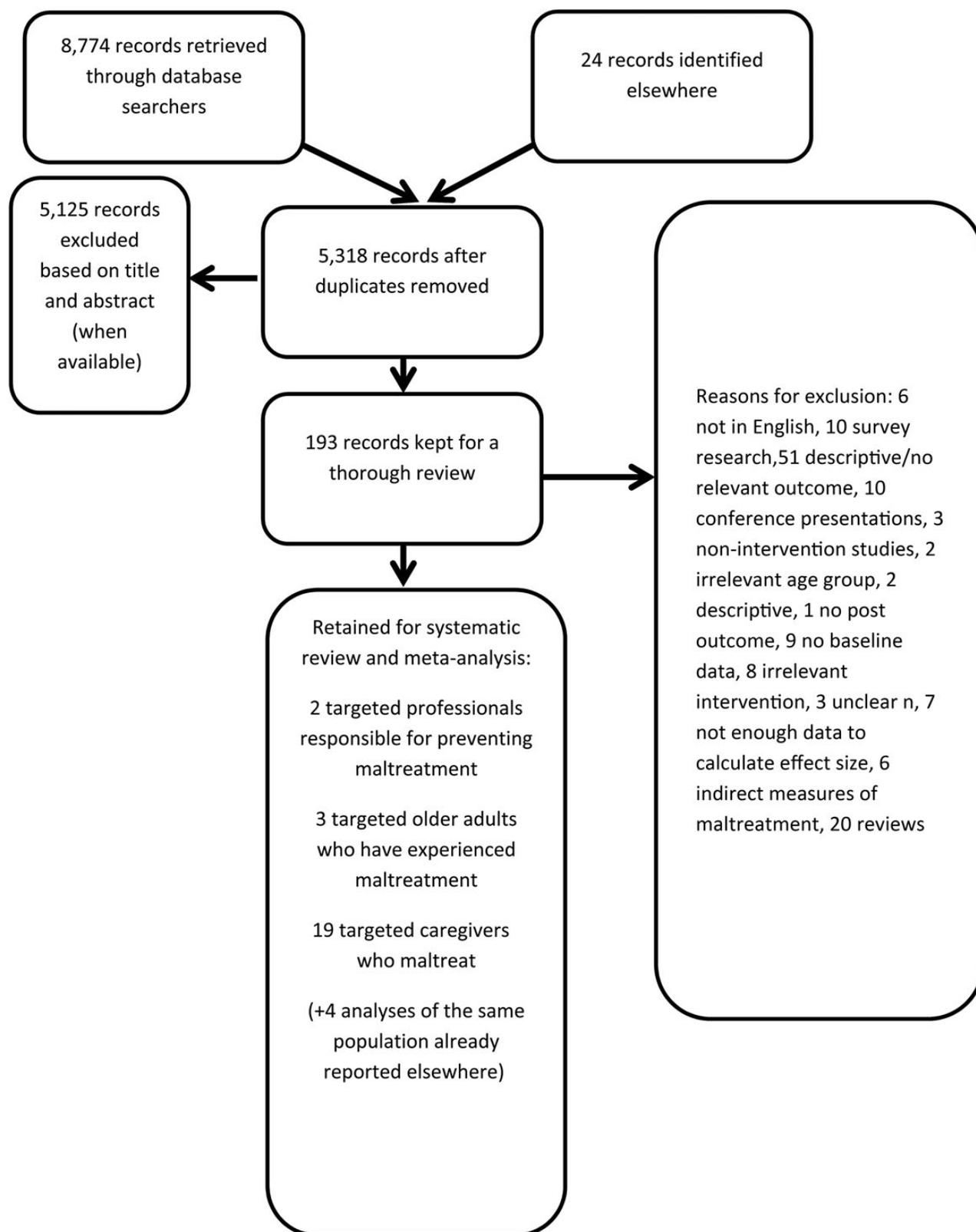


Figure 1. Study flow.

study conducted a fidelity check and blind assessment and accounted for the therapist's effect. Its effect was non-significant [32].

As for the five interventions that targeted paid carers to reduce psychological abuse, three were conducted in the United States [28–30], one in Taiwan [27] and one in the

Table I. Study characteristics

| Study   | Country | Setting   | Dementia diagnosis  | Target population for reducing maltreatment       | Target population for intervention  | Sample size (baseline and final)  | Intervention type  | Frequency, intensity and duration of intervention   | Comparison condition | Age and gender distribution of those who participated in intervention  | Outcome used for meta-analysis  | Study type                 |
|---|---------|---|---|---|---|---|--|---|----------------------|--|---|----------------------------|
| Interventions that target professionals responsible for preventing elder maltreatment |         |   |   |   |   |   |  |   |                      |  |   |                            |
| [23]  | USA     | Community mental health   | Dementia was one possible inclusion criteria, but actual percentage is not reported | Older adults with mental illness                  | Mental health providers who care for older adults (non-physicians)        | 44 clinicians, 100 residents  | Assessment and service planning toolkit                          | Not reported  | Usual care training  | Only characteristics of older adults were provided: Intervention—mean 72.5 SD = 8.8 (84% women), control—mean 68.7 SD = 6.7 (85.2 women) | % of clinicians reporting assessment of elder abuse and neglect (post-intervention—65.4% ( $n = 26$ ), post-control—38.9% ( $n = 18$ )) | Group comparison           |
| [22]  | Japan   | Municipalities  | Not reported  | Older adults at risk for abuse                    | Departments responsible for the report of elder maltreatment              | 1,840 municipalities, 1,096 replied, 489 completed  | A national elder abuse prevention programme                      | December 2006–October 2008  | None                 | Characteristics of municipalities: 259 cities, 5 special wards, 188 towns, 37 villages   | Rate of report of suspected cases of abuse per 1,000 older adults over a 6-month period (paired $t$ (488) = 1.84; $P = 0.066$ )         | Pre–post                   |
| Interventions that target older adults victims of elder maltreatment                  |         |   |   |   |   |   |  |   |                      |  |   |                            |
| [24]  | Canada  | University and community settings   | Not reported  | Older women victims of family maltreatment        | Older women victims of family maltreatment                                | 16  | Psychoeducational support group                                  | 8 consecutive weeks, 2 h each   | Control              | Aged 69–83   | Non-physical abuse based on the Hartford study subscale (75% control ( $n = 6$ ); 83% intervention ( $n = 9$ ))                         | RCT                        |
| [25]  | USA     | Community based   | Possibly present, but % not reported  | Suspected victims of elder abuse and self-neglect | Suspected victims of elder abuse and self-neglect and family caregivers   | Approached 175; 48 older adults and 7 caregivers received full intervention; 47–54 follow-up analysis | Motivational interviewing and connection with services           | A more extensive programme had an average of 15 h and 5 min, 3–36 meetings, 3–18 months; 1 h and 40 min engaged in outreach | None                 | 67.4% women, average age 80  | Overall number of abuse risk factors $F$ (1, 53) = 17.01, $P < 0.001$ , $\eta^2 = 0.24$   | Pre–post                   |
| [26]  | Iran    | Community based   | Not reported  | Older adults who are able to perform daily tasks  | Older adults who are able to perform daily tasks and their family members | 64 out of 200 screened  | Family based   | 10 sessions each lasted 45 min  | Control              | Control: 43.8% women, intervention: 59.4% women aged 55–85   | Perceived threat (Post-control— $M$ [SD] = 22.4 [3.5]; Post-intervention— $M$ [SD] = 25.5 [3.6], $P = 0.001$ )                          | RCT (semi-experimental?)   |
| Interventions that target carers who maltreat Abuse as an outcome                     |         |   |   |   |   |   |  |   |                      |  |   |                            |
| [32]  | UK      | Mental health community services and one neurological outpatient dementia service | Dementia as a key criterion   | Older adults with dementia                        | Family caregivers   | 450 eligible; 260 consented; at 8-month, 31 withdrawn or lost to follow-up                            | A coping strategy programme                                      | 8 sessions  | Treatment as usual   | Mean age: control: 56.1 (12.3) (71% women); intervention: 62.0 (14.6) (67% women)  | Modified Conflict Tactics Scale ( $n$ [%] with at least one item scoring $\geq 2$ ): control 38 [44%], intervention 82 [48%]            | Randomised parallel groups |
| [29]  | USA     | Long-term care facility   | Cognitively able to understand costs and benefits of participation                  | Older adults in nursing homes                     | Certified Nurse Assistance (CNA)  | 2 nursing homes. Staff: 25. Residents: 68 (51%; 83 agreed to participate), 18% residents              | An educational intervention to increase awareness to elder speak | A single 90-min intervention that composed of two sessions of 45 min  | Control              | Trained Unit: 84.87 (8.44); Control unit: 84.21 (6.58); Women: 79.92%  | Elder speak observation based on Communication Evaluation tool: time 2-untrained staff (43%; $n = 13$ ),                                | Pre–post comparison group  |

|                         |                 |                                    |   |                                 |                                  |  |   |  |                               |  |  |   |
|-------------------------|-----------------|------------------------------------|---|---------------------------------|----------------------------------|--|---|--|-------------------------------|--|--|---|
| [27]                    | Taiwan          | Nursing homes                      | Not reported                                | Institutional older adults      | Staff                            | lost to follow-up (39 intervention, 29 control)<br>112 recruited; 100 in analysis, 50 in each group  | An educational support group  | 8 consecutive weeks; for each session, a lecture on the topic was given during the first 30 min, the following 40 min allowed for free sharing and mutual support among group members, and the last 20 min were dedicated to an integrative discussion | Control-no extra intervention | 97% women; mean age of 42.9 (SD = 9.5)   | Caregiver Psychological Elder Abuse Behavior Scale (CPEAB): <i>M</i> post-intervention [SD] = 29.2 [6.0]; <i>M</i> post-control = 30.4 [5.8] | A quasi-experimental design using a case-control pre-post test            |
| [19, 31]                | The Netherlands | Psychogeriatric wards              | Moderate to severe dementia                 | Demented nursing home residents | Certified nurse assistants (CNA) | 6 nursing homes out of 19 were selected; 12 psychogeriatric wards (1 experimental and 1 control ward in 6 nursing homes). 155 assessed for eligibility, 129 randomised, completers: 27 intervention, 31 control; newly included: 35 intervention, 31 control | Educational training on the use of snoezelen for 24 h care  | 18-month implementation period; 4 weekly 4-h session   | Usual care without snoezelen  | Residents: age 82–85, women 75–87%; CNAs: 91–95% women, age 33–37                            | Malignant social psychology post-control— <i>M</i> [SD] = 6.03 [0.6], post-intervention— <i>M</i> [SD] = 2.98 [0.6], <i>P</i> < 0.001        | Two-group comparison (cluster randomisation was potentially contaminated) |
| [28]                    | USA             | Nursing homes                      | 33% primary or secondary dementia           | Nursing home older adults       | Certified nurse assistants (CNA) | 20 CNAs (50–60% of the residents participated)   | A communication training programme  | 3 sessions of 1 h each   | None                          | Aged 18–60, 95% women  | Diminutives per utterances <i>F</i> (1,19) = 22.54, <i>P</i> < 0.001, $\eta^2 = 0.54$  | Pre-post  |
| [30]                    | USA             | Nursing homes                      | 63% of participants with dementia diagnosis | Nursing home residents          | Nursing home staff               | 3 out of 5 nursing homes elected to participate; staff 38; beds ownership 344, 60 residents participated   | A communication training programme  | 3 sessions of 1 h each   | None                          | Staff: Age 40.7 (11.98), 35 women; Residents: 80% women                                      | Diminutives per utterances: <i>F</i> (1,35) = 12.95, <i>P</i> = 0.001, $\eta^2 = 0.94$   | Pre-post  |
| Restraint as an outcome |                 |                                    |   |                                 |                                  |  |   |  |                               |  |  |   |
| [18, 38]                | The Netherlands | Psychogeriatric nursing home wards | Dementia diagnosis                          | Nursing home residents          | Staff                            | 714 residents were eligible for participation. Complete data were available for 405 residents and 225 of these continued to reside in the nursing homes 24 months after  | EXBELT intervention: a policy change, education, consultation and the availability of alternative interventions | The educational programme started 1 month after baseline, during a 3-week period (one session per week). Each meeting lasted ~3 h. A 90-min educational  | Control                       | Not reported for staff; residents: 70–77% women, control—83.9 ± 6.6; intervention—80.9 ± 8.0 | % belt restraint at 24 months intervention 5% ( <i>n</i> = 134), control 14% ( <i>n</i> = 91)  | Quasi-experimental comparative  |

Continued

Table I. Continued

| Study | Country         | Setting                            | Dementia diagnosis   | Target population for reducing maltreatment      | Target population for intervention                        | Sample size (baseline and final)   | Intervention type   | Frequency, intensity and duration of intervention   | Comparison condition | Age and gender distribution of those who participated in intervention                               | Outcome used for meta-analysis  | Study type                          |
|-------|-----------------|------------------------------------|--|--|---|--|---|---|----------------------|---|---|-------------------------------------|
|       |                 |                                    |  |  |   | baseline; staff-not reported   |   | session, summarising the content of the 9 h of education, was provided separately to members of the nursing staff who could not attend the programme sessions                   |                      |   |   |                                     |
| [39]  | The Netherlands | Psychogeriatric nursing home wards | Dementia diagnosis   | Newly admitted residents during a 4-month period | Twenty-six nursing home wards from 13 Dutch nursing homes | No data re staff status; 104 older adults; 82 were present on T2 and T3; Informed consent was obtained from legal representatives of 49 out of the 82 residents. $n = 20$ in control   | EXBELT intervention: a policy change, education, consultation and the availability of alternative interventions | Ongoing   | Control              | Not reported for staff; residents 62–70% women; age $82 \pm 6.6$ control; $86 \pm 5.1$ intervention | Restraint use, 8-month follow-up: control —5 (13%), intervention—1 (2%)                 | Quasi-experimental comparison group |
| [35]  | The Netherlands | Psychogeriatric nursing home wards | Dementia diagnosis   | Nursing home residents                           | Staff   | 5 wards; 167 residents; 23 nurses  | Educational programme plus consultation with a nurse specialist   | Educational programme over a 2-month period, consultation for 28 h per week   | Control              | Residents: age: $82 \pm 7$ ; 75% women; not reported for staff                                      | Restraint use, post-intervention —Experimental 45 (52.3%), Control—40 (69.0%)           | Cluster RCT                         |
| [36]  | The Netherlands | Psychogeriatric nursing home wards | Dementia diagnosis probably most residents; Cognitive status 3.6–3.9 on a scale of 0 (intact) to 6 (total dependence) Baseline | Psychogeriatric nursing home residents           | Staff   | 15 psychogeriatric nursing home wards in the Netherlands. 432 psychogeriatric nursing home residents from 15 psychogeriatric nursing home wards in seven nursing homes were selected for participation; 404 consented, and 371 of these were available at baseline. 241 from 14 wards had complete data and were included in the data analyses. 30% of nursing staff invited to attend, but 24–39% attending | Educational programme plus consultation with a nurse specialist   | Five 2-h educational sessions for staff over a 2-month period; One 90-min plenary session and consultation with a nurse specialist for 8 months; 28 consultation hours per week | Control              | Residents: 78.8% women, mean age $83 \pm 7.1$ ; Staff: age: $37 \pm 10.0$                           | % physical restraint post-test: 64% (out of 126) intervention, 60% (out of 115) control | Cluster-RCT                         |

|      |                 |                                    |   |  |   |   |   |   |  |   |  |             |
|------|-----------------|------------------------------------|---|--|---|---|---|---|--|---|--|-------------|
| [37] | The Netherlands | Psychogeriatric nursing home wards | Cognitive status 2.6–3.0 on a scale of 0 (intact) to 6 (total dependence)   | Newly admitted residents to a psychogeriatric clinic | Staff   | ~7 people per ward (48 staff members)—43 attended at least four sessions<br>14 psychogeriatric nursing home wards; 138 residents; 105 included in the analysis; 48 nurses   | An educational programme for nurses and consultation with a nurse specialist  | A 2-month period, 5 meetings, each lasting 2 h; consultation with a nurse for 8 months, 28 consultation hours per week                  | Control                                  | Nurses mean age 37(10), 80% women; residents: control 82.5 (7), 70% women; intervention 80.1 (7), 64.7% women                           | Use of restraint post-test 3: intervention 25 (47.2%), control 15 (40.5%)                  | Cluster-RCT |
| [40] | Germany         | Nursing homes                      | The median score of between 10 and 11 (of 16) on the Dementia Screening Scale indicated the presence of severe cognitive impairment in the study population | Nursing home residents                               | Nursing staff   | 123/308 nursing homes expressed an interest; 45 nursing homes participated nursing homes. 333 residents restrained at baseline, 430 (7.7%) restrained at some time during the 3 days immediately before the start of the intervention (T1). 60 (22.4%) in the intervention group and 37 (22.8%) in the control group were lost to follow-up | Multifactorial intervention: One person responsible for the intervention from each of the participating homes (change-agent) was appointed. A training course that included education about the reasons restraints are used, the adverse effects and alternatives to their use. Technical aids, such as hip protectors and sensor mats, were provided | One 6-h mandatory training course; advise available for 3 months  | Control                                  | Staff characteristics not reported; Residents: Age $\geq 90$ 27.8% intervention, 26.4% control; women 71.2% intervention, 82.4% control | Complete cessation of physical restraint: control 11 (8.8%) intervention 35 (16.8%)        | Cluster-RCT |
| [33] | Germany         | Nursing homes                      | Cognitive impairment at baseline: Intervention 1,212/1,905 (64%), control 1,109/1,761 (63%)   | Nursing home residents                               | Nursing staff (residents, legal guardians and relatives received written materials) | Intervention—18 nursing homes, 2,283 resident; control—18 nursing homes, 2,166 residents; at follow-up 1,868—intervention, 1,802—control  | Guidelines and theory-based multicomponent intervention   | A 90-min information session, information materials for various stakeholders and a designated nurse attended a 1-day intensive training | Control reading materials                | Only available for residents: 84 (10); 73–77% women   | Any physical restraint at 6-month follow-up: intervention 423 (23.6%), control 525 (29.1%) | Cluster-RCT |
| [44] | Germany         | Nursing homes                      | $\geq 1$ clinical dementia rating   | Nursing home residents                               | Nursing home staff  | A pool of 10 nursing homes, 6 were randomly selected; 20 wards, 321 residents approached, 298 consented, 210 residents completed follow-up, 134 staff at randomisation,   | Dementia care education   | 3 months; thirteen 1-h sessions   | Wait list control (and relaxation group) | Age residents: 79.5 (11.5), 82 (10.4), 80.4 (9), women 77.6–88.2%; staff age 45.6 (7.2), 44 (8.5), 43 (9.8), women: 97–89%              | Proportion receiving physical restraint: % post-2: 35% intervention, 41% control           | Cluster-RCT |

Continued

Table I. Continued

| Study    | Country   | Setting                                       | Dementia diagnosis       | Target population for reducing maltreatment | Target population for intervention | Sample size (baseline and final)  | Intervention type  | Frequency, intensity and duration of intervention  | Comparison condition | Age and gender distribution of those who participated in intervention                              | Outcome used for meta-analysis   | Study type                           |
|----------|-----------|---|--------------------------|---|------------------------------------|---|--|--|----------------------|--|--|--------------------------------------|
| [41]     | Hong Kong | A convalescent hospital                       | 43% cognitively impaired | Older hospitalised adults                   | Hospital staff                     | 96 staff members completed follow-up; 2,000 selected; baseline: 958 and follow-up 988 patient episodes analysed; no information re-staff  | Restraint reduction programme, the provision of bed-chair pressure sensors to reduce the use of physical restraint | Ongoing, a 10-month period   | None                 | Average age 79 ± 10, 51% women; not reported for staff   | Overall rate of physical restraint pre: 13.3% (127), post: 4.1% (41)                               | Comparative, retrospective: pre-post |
| [42]     | Sweden    | Group-dwelling units for people with dementia | Dementia diagnosis—all   | Long-term care residents with dementia      | Long-term care nursing staff       | Baseline: intervention—184 staff, 191 residents; control—162 staff, 162 residents; 6-month follow-up: intervention—156 staff, 185 residents, control—133 staff, 165 residents                         | Restraint minimisation educational programme   | A 6-month programme; 2 days of seminar for 1 volunteer, six 30-min videotape lectures to others                | Control              | Intervention—staff: 43.5 ± 11.8 (89.7% women); control—41.8 ± 12.1 (90.7% women)                   | Physical restraint at follow-up: intervention—30 (20.1%), control—53 (38.1%)                       | Cluster-RCT                          |
| [17, 43] | Norway    | Nursing home                                  | Dementia diagnosis—all   | Older adults with dementia                  | Nursing home staff                 | 4 nursing homes; 14 staff in intervention and 22 in control changed quit or changed position; 55 patients in intervention 96 patients in control; 55 and 87 completed follow-up                       | Educational  | A full-day seminar (6 h), followed by a 1-h session of guidance per month over 6 months—overall 7-month period | Control              | Intervention—67% women, age 84.9 (5.6); control—72% women age 84 (6.3); no information about staff | Number of restraints per patient (range) at follow-up: intervention—1.5 (0–10), control—3.7 (0–25) | Cluster-RCT                          |
| [17, 34] | Norway    | Nursing homes                                 | Dementia diagnosis—all   | Nursing home residents with dementia        | Staff                              | 7 nursing homes invited, 4 nursing homes agreed; 211 at baseline and 145 residents at follow-up; 44 intervention—46 control at 6 months. 197 care staff; 12 months: 56 intervention and 53 in control | Educational  | A 2-day educational seminar and monthly group guidance for 2 months  | Control              | Staff: 95.4% women, age 43.1 (12.9). Residents age 86, 73% women                                   | Interactional restraint at 12 months: control—9 (20%), intervention—23 (53%)                       | Cluster-RCT                          |

|      |                 |                             |                         |   |                             |   |   |   |         |  |   |                   |
|------|-----------------|-----------------------------|-------------------------|---|-----------------------------|---|---|---|---------|--|---|-------------------|
| [45] | The Netherlands | Dementia special care units | Dementia diagnosis —all | Nursing home older adults with dementia | Multidisciplinary care team | 22 dementia care units approached, 17 dementia special care units participated; 659 residents | Training on 'Grip on challenging behaviours care program' (incorporates the detection, analysis, treatment and evaluation of problem behaviours) using structured forms and a multidisciplinary format. | 1 day; 2 sessions of training. Ongoing use of forms | Control | Age 85 (7.3), women 69.7%. No information provided for staff | Restraint use, pre-post-intervention —31.7% ( $n = 659$ ) | Stepped-wedge RCT |
|------|-----------------|-----------------------------|-------------------------|---|-----------------------------|---|---|---|---------|--|---|-------------------|

Netherlands [19, 20, 31]. Two employed a pre-post design [28, 30], two employed a non-RCT comparative group design [27, 29] and one relied on a cluster-RCT design that was potentially contaminated [19, 20, 31]. Blind assessment was conducted by two studies [19, 20, 30, 31]. The studies did not conduct a fidelity check. The effects of four interventions were statistically significant [19, 20, 28–31, 46].

Of the studies that assessed restraint use, one study employed a stepped-wedge approach [45], one employed a pre-post design [41], two employed a quasi-experimental design [18, 38, 39] and the remaining studies employed cluster-RCT design. Of the cluster-RCTs, three adjusted for the clustering design [33, 39, 42]. One study conducted a fidelity check/implementation assessment [18]. Blind assessment was reported by most studies [17–20, 31, 33–38, 43, 45]. It is important to note that even though the interventions targeted carers, the studies mainly focused on the details of the care recipients and with very few exceptions [17, 34, 36, 37, 42, 44] have failed to provide information about carers' characteristics. See Table 1 for study characteristics.

The stepped-wedge design resulted in a non-significant effect [45], whereas the pre-post design [41] resulted in a significant reduction of restraints. The effects of the quasi-experimental studies were significant [18, 38, 39]. As for the cluster-RCTs, three had a significant effect [17, 33, 42, 43], whereas the remaining studies had a non-significant effect, after adjustment for clustering. The pooled effect of these nine studies was significant: standardised mean difference:  $-0.24$ , 95% confidence interval =  $-0.38$  to  $-0.09$ , indicating that the intervention results in a reduction in restraint use. Homogeneity was low: ( $Q[df] = 10.76$  [8],  $P = 0.22$ ,  $I^2 = 25.7$ ,  $T^2 = 0.01$ ). See Figure 2 for details.

There was no evidence for publication bias. The Begg and Mazumdar's correlation was not significant (Kendall's  $\tau = -0.25$ ,  $P = 0.34$ ) and so was Egger's intercept ( $0.32$ , 95% CI  $[-2.08$  to  $2.72]$ ,  $P = 0.76$ ). The trim-and-fill method suggested that one study should be imputed, but the overall effect following imputation ( $-0.25$ , 95%CI  $[-0.41$  to  $-0.11]$ ) remained consistent with the overall effect without imputation, providing no support to publication bias.

## Discussion

There is a growing body of literature attesting to the importance of preventing elder maltreatment, given its negative effects on the quality of life, well-being, health and mortality of older adults [9]. The present study was designed to systematically review and appraise current knowledge based on interventions for the prevention or reduction of elder maltreatment. The most notable finding of the present review is that although a few thousand studies that address elder maltreatment exist, only 24 studies met our inclusion criteria and contributed to current evidence on the topic. Of these studies, two targeted professionals responsible for preventing maltreatment, three targeted older adults who experienced maltreatment and the remaining 19 studies targeted carers

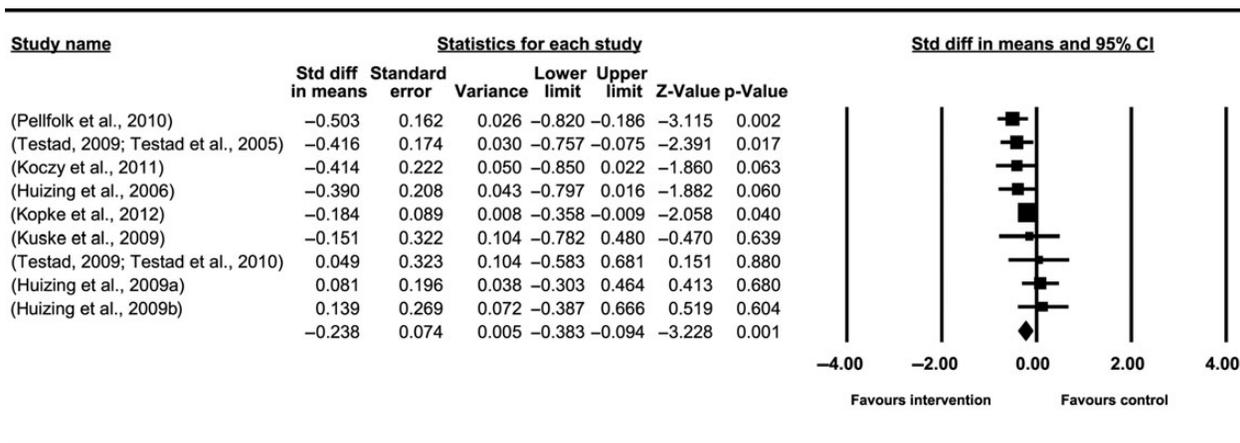


Figure 2. Cluster-RCT interventions that target restraint use.

who maltreat. These 19 studies were also quite diverse, with one study targeting family carers, five targeting psychological abuse among paid carers and the remaining 13 studies targeting the use of physical restraint among paid carers. Current findings raise important issues with regard to the need for more funding in this area of research, as well as for better quality monitoring of the research conducted.

A website search of the most prominent elder abuse prevention organisations (e.g. National Center on Elder Abuse, Action on Elder Abuse) clearly demonstrates that one of the most central areas for intervention is the education and training of professionals responsible for the prevention of elder maltreatment. Nonetheless, these strategies clearly lack evidence at the present time as the two studies that targeted professionals responsible for preventing elder maltreatment were both non-significant.

Three of the reviewed studies targeted older adults who experienced maltreatment. These studies were quite diverse in terms of their outcomes. Hence, our current review provides no evidence for such interventions. Limited evidence also exists with regard to interventions that target unpaid caregivers who maltreat, with only one study meeting our inclusion criteria.

Evidence is also limited with regard to interventions that target psychological abuse among long-term care (LTC) paid carers. These interventions offered educational components to increase awareness to communication patterns and some also had specific contents about dementia care, with one study providing training in the use of *snoezelen* as a means to improve elder care. However, four of the studies employed a very weak design (e.g. pre-post, non-RCT comparison groups) and none of the studies conducted an implementation assessment.

It is also important to note that the outcomes assessed by these studies were not necessarily clear indicators of psychological abuse. The use of ‘elder-speak’ or diminutive language could be hurtful and disrespectful, but its interpretation as abusive is quite subjective. This is contrasted with clearer signs of elder abuse, such as acts of violence, which were not assessed in these studies.

The strongest evidence exists for interventions that target physical restraint among LTC paid carers. Most interventions

addressed older adults with dementia. There was no concern for publication bias with regard to these interventions. These studies have largely relied on educational means to improve the care provided to older residents by helping carers to identify alternatives to restraint use and by providing information about the care of older adults with dementia. Some of these interventions also offered a change-agent or an expert who was available for ongoing consultations.

Although these studies suggest a promising direction for intervention, we concur with a recent review on the topic that has questioned the quality of these intervention studies [10]. Most of the cluster-RCT did not account for a clustering effect in their analysis. Moreover, the cluster-randomisation employed by some of these studies is questionable given the low number of clusters that participated in the randomisation process. Most studies did not assess the quality of implementation of the intervention employed. In addition, even though interventions specifically targeted carers, carers’ characteristics were not provided by many of these studies making future replications challenging.

As with any meta-analysis, it is possible that we had missed studies that could have otherwise met our inclusion criteria. Our reliance on studies available in English, given our limited resources, is another limitation. Nevertheless, our study provides a first attempt to systematically review, appraise and analyse the emerging field of elder maltreatment. Our findings call for more rigorous, better quality research in the field. Specific areas that are still lacking evidence at the present time are interventions that target (i) elder neglect, (ii) public awareness, (iii) older adults who experience maltreatment, (iv) professionals responsible for preventing maltreatment, (v) family caregivers who abuse and (vi) carers who abuse. The most effective place to intervene at the present time is by targeting restraint use in institutions.

### Future research directions

There are significant national and international efforts to increase awareness to the topic of elder maltreatment (e.g. national elder abuse day) and to make legislative changes to

reduce or prevent elder maltreatment, but the effectiveness of these efforts has not been examined scientifically. Given current investment in training programmes for professionals responsible for reducing elder maltreatment and in awareness campaigns, there is an urgent need to systematically assess the effectiveness of these interventions.

In addition, future research should specifically address elder neglect. Although this is the most prevalent form of elder maltreatment according to some statistics [5], none of the interventions reviewed specifically addressed this form of maltreatment. Another area that requires further attention is the care of older adults at home. The majority of older adults live at home [47] and as a result, abuse, most often occurs behind closed doors [48]. Nonetheless, most interventions that targeted paid caregivers did so in institutions and only one study addressed abuse by family caregivers. Hence, the most vulnerable population that receives home care services or unpaid care by family members has received almost no research attention. Further attention should also be paid to the cognitive status of the care recipients. Past research has shown that cognitive status is a major risk for elder maltreatment [49]. However, because the cognitive status of care recipients was not clearly detailed in all studies reviewed, we did not evaluate whether intervention effects vary by cognitive diagnosis.

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## Key points

- Three categories of interventions were identified.
  - There is a need for better quality research in the field.
  - Interventions designed to reduce physical restraint have the greatest empirical support.
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## Supplementary data

Supplementary data mentioned in the text are available to subscribers in *Age and Ageing* online.

## Conflicts of interest

None declared.

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## References

The very long list of references supporting this review has meant that only the most important are listed here and are represented by bold type throughout the text. The full list of references is available as Supplementary data, Appendix 2, available in *Age and Ageing* online.

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