

**Supplementary Table 1.** Risk factors of caregiver's abusive behaviors toward dementia patients

Authors	Year	Country	Design	Sample		Risk factors of abuse			
				Number	Severity of dementia	Overall	Psychological	Physical	Neglect
Current study	-	Korea	Cross-sectional		MMSE=0–29 CDR=0.5–3	Not evaluated	Education <sup>P</sup> Severe dementia <sup>P</sup> , duration of illness <sup>P</sup> , BPSD <sup>P</sup> , low income <sup>C</sup> Severe care burden <sup>C</sup> DOCAD <sup>C</sup>	Non-AD <sup>P</sup> Severe dementia <sup>P</sup> , duration of illness <sup>P</sup> , BPSD <sup>P</sup> , low income <sup>C</sup> Severe care burden <sup>C</sup> Poor knowledge about dementia <sup>C</sup>	Not evaluated
Yan <sup>6</sup>	2014	China	Prospective (Duration of follow up=6 months)	149	Not described	Not evaluated	Agitated behavior <sup>P</sup> , emotional exhaustion <sup>C</sup> , depersonalization <sup>C</sup> , abuse at baseline <sup>C</sup> Large number of co-residing days <sup>C</sup>	Agitated behavior <sup>P</sup> , emotional exhaustion <sup>C</sup> , depersonalization <sup>C</sup> , abuse at baseline <sup>C</sup> Lack of personal achievement <sup>C</sup>	Not evaluated
Cheng et al. <sup>18</sup>	2013	China	Cross-sectional	76	Not described	Behavioral problems <sup>P</sup> , poor forgiveness <sup>C</sup> , severe care burden <sup>C</sup>	Not evaluated	Not evaluated	Not evaluated
Yan and Kwok <sup>5</sup>	2011	China	Cross-sectional	122	Not described	Not evaluated	Large number of co-residing days <sup>C</sup> Young age <sup>P</sup> , agitated behavior <sup>P</sup> , high level of any care burden <sup>C</sup> , lack of assistance from a domestic helper <sup>E</sup>	Large number of co-residing days <sup>C</sup>	Not evaluated
Camden et al. <sup>19</sup>	2011	UK	Prospective (Duration of follow up=1 years)	63	MMSE=0–28	Care burden <sup>C</sup> , anxiety and depression <sup>C</sup> , negative reason for caring <sup>C</sup>	Not evaluated	Not evaluated	Not evaluated
Cooper et al. <sup>14</sup>	2010a	UK	Prospective (Duration of follow up=1 years)	131	Not described	No qualification <sup>P</sup> , shorter duration of memory problems <sup>P</sup> , change of anxiety and depression <sup>C</sup> , receiving fewer hours of in-home social care at baseline <sup>E</sup>	Not evaluated	Not evaluated	Not evaluated
Wiglesworth et al. <sup>7</sup>	2010	USA	Cross-sectional	129	Dementia Severity Rating Scale=mild–severe	Physical assault <sup>P</sup> , psychological aggression <sup>P</sup> , care burden <sup>C</sup> Low income <sup>P</sup> , role limitations due to emotional problems <sup>C</sup> , low education <sup>C</sup> , poor emotional status <sup>C</sup> , depression <sup>C</sup> , anxiety <sup>C</sup>	Physical assault <sup>P</sup> , psychological aggression <sup>P</sup> , care burden <sup>C</sup>	Physical assault <sup>P</sup> , psychological aggression <sup>P</sup> Low income <sup>E</sup> , role limitations due to emotional problems <sup>C</sup>	Psychological aggression <sup>P</sup> , care burden <sup>C</sup> , low income <sup>P</sup> Low education <sup>P</sup> , social contacts <sup>C</sup>
Cooper et al. <sup>11</sup>	2010c	UK	Cross-sectional	220	MMSE=0–29	More hours of care provided <sup>P</sup> , living with caregiver <sup>P</sup> , BPSD <sup>P</sup> , ADL <sup>P</sup> , abusive behaviors towards the caregiver <sup>P</sup> , depression <sup>C</sup> , anxiety <sup>C</sup> , care burden <sup>C</sup> , dysfunctional coping <sup>C</sup> , fewer previous relationship rewards <sup>C</sup>	Not evaluated	Not evaluated	Not evaluated
Cooper et al. <sup>13</sup>	2008a	UK	Cross-sectional	86	MMSE=9.4*	More cognitive impairment <sup>P</sup> , less ADL impairment <sup>P</sup> , irritability <sup>P</sup> , receiving 24h care <sup>P</sup> , men <sup>C</sup> , care burden <sup>C</sup> , anxiety <sup>C</sup>	Not evaluated	Not evaluated	Not evaluated
Cooney et al. <sup>16</sup>	2006	UK	Cross-sectional	82	Not described	Current relationship <sup>PC</sup>	Current relationship <sup>PC</sup> , younger age <sup>P</sup> , total BPSD <sup>P</sup> , active-disturbed BPSD <sup>P</sup> , mood disturbed BPSD <sup>P</sup> , receiving longer breaks from caring <sup>C</sup> , poor social interaction between dementia patients and caregivers <sup>PC</sup> , poor prior relationship <sup>PC</sup> , history of regular arguments prior to dementia <sup>PC</sup>	Current relationship <sup>PC</sup> , better physical health <sup>C</sup>	Current relationship <sup>PC</sup>
Compton et al. <sup>17</sup>	1997	UK	Cross-sectional	38	Not described	Problem behavior <sup>P</sup> , verbal and physical abuse by patient <sup>P</sup> , anxiety <sup>C</sup> , poor premorbid relationship <sup>PC</sup> , less happy with the help caregivers received from others <sup>E</sup>	Not evaluated	Not evaluated	Not evaluated
Pot et al. <sup>8</sup>	1996	Netherland	Cross-sectional	169	MMSE=10.1–16.5†	Men <sup>P</sup> , more cognitive impairment <sup>P</sup> , IADL <sup>P</sup> , caregiving tasks <sup>C</sup> , living with patient <sup>C</sup> , spouse <sup>C</sup>	Men <sup>P</sup> , more cognitive impairment <sup>P</sup> , IADL <sup>P</sup> , caregiving tasks <sup>C</sup> , living with patient <sup>C</sup>	Men <sup>P</sup> , more cognitive impairment <sup>P</sup> , IADL <sup>P</sup> , living with patient <sup>C</sup> , spouse <sup>C</sup>	Not evaluated
Cooney and Mortimer <sup>15</sup>	1995	UK	Cross-sectional	67	Not described	Not evaluated	Poor premorbid relationship <sup>PC</sup> , verbal reciprocity <sup>PC</sup> , prior frequent arguments <sup>PC</sup>	Physical reciprocity <sup>PC</sup> Psychological distress <sup>C</sup> , social isolation <sup>C</sup> , length of time caring <sup>C</sup>	Poor premorbid relationship <sup>PC</sup>
Coyne et al. <sup>10</sup>	1993	USA	Cross-sectional	342(277)‡	Not described	Not evaluated	Not evaluated	Lower functioning level <sup>P</sup> , care for more years <sup>C</sup> , care for more hours per day <sup>C</sup> , care burden <sup>C</sup> , depression <sup>C</sup>	Not evaluated

\*mean of MMSE, †mean of MMSE is 16.5 for no abuse, 12.0 for psychological abuse and 10.1 for physical abuse, ‡number in blank was actual analyzed subject number. P: patient's factor, C: caregiver's factor, E: environmental factor, AD: Alzheimer's dementia, ADL: Activities of Daily Living, IADL: Instrumental Activities of Daily Living, BPSD: Behavioral and Psychological Symptoms of Dementia, CDR: Clinical Dementia Rating, COPE: Coping Orientations to Problems Experienced scale, DOCAD: duration of care after dementia diagnosis, MMSE: Mini Mental Status Examination