Research report

Childhood abuse in late-life depression

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ABSTRACT

Background: Little is known about the role of childhood abuse in late-life depression. The aim of the study is therefore to study whether childhood abuse is associated with late-life depression according to its onset, and which clinical characteristics play a role in this association.
Methods: Data were used from 378 depressed and 132 non-depressed persons, aged 60–93 years, from the Netherlands Study of Depression in Older persons (NESDO). Childhood abuse included psychological, physical and sexual abuse and emotional neglect.
Results: 53% of the depressed older adults reported childhood abuse, compared to 16% of the non-depressed older adults ($p < 0.001$). Using logistic regression analyses adjusted for age, sex and level of education, depression was strongest associated with physical abuse (Odds Ratio ((OR) 13.71; 95% Confidence Interval (CI) 3.25–57.91) and least with sexual abuse (OR 5.35; 95% CI 2.36–12.14). Childhood abuse was associated with early-onset (OR 13.73, 95% CI 7.31–25.80), middle age-onset (OR 5.36, 95% CI 2.90–9.90) and late-onset depression (OR 4.74, 95% CI 2.51–8.95). In the late-onset group childhood abuse was associated with an increased number of chronic diseases.
Limitations: Age of depression onset and childhood abuse were asked retrospectively, which may have biased the results.
Conclusions: Childhood abuse is strongly related to late-life depression and its comorbidities, even in the case of late-onset depression. This might suggest that psychological wellbeing can be maintained throughout middle age, but may be disturbed in later life.

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1. Introduction

Many older adults have been confronted with abuse during their youth. Estimated prevalence rates of childhood abuse among adults of 55 years and older by the US Department of Health and Human Services were 13.5% for verbal abuse, 9.6% for physical abuse, and 9.3% for sexual abuse (Bynum et al., 2010). It is common knowledge that childhood abuse may have long lasting adverse effects on mental health during someone's life (Kendler et al., 2000; Kessler et al., 1997; MacMillan et al., 2001). Associations with depression and anxiety were repeatedly shown in community based samples (Comijs et al., 2007; Green et al., 2010; Hovens et al., 2010; Jordanova et al., 2007; Kasen et al., 2010; Korkeila et al., 2005; McLaughlin et al., 2010; Pitzer and Fingerman, 2010; Scott et al., 2011; Wainwright and Surtees

2002) as well as in clinical samples of adults (Ehnvall et al., 2008; Hovens et al., 2010).

If childhood abuse makes persons more vulnerable to depression when confronted with life stressors, it seems reasonable to assume that childhood abuse is particularly associated with early-onset depression. However, it has recently been shown that about 30% of the later-onset disorders were associated with childhood abuse (Green et al., 2010). This suggests that people may function mentally well for a rather long period of time, despite of having suffered from negative events in the past. Thus far, there is little knowledge about childhood abuse and late-life depression since most studies until now were carried out in population based samples of mixed ages (Green et al., 2010; Jordanova et al., 2007; McLaughlin et al., 2010; Pitzer and Fingerman, 2010; Scott et al., 2011; Wainwright and Surtees, 2002), in most of which the oldest age groups (75 years and older) were not included. Only one study in a community based sample of older adults aged 55–85 years showed that childhood adversities were associated with depression also in late life (Comijs et al., 2007).

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It is important to examine the role of childhood abuse in late-life depression because of potential clinical consequences. Reflecting on their lives, older adults may recall old traumas, functioning as new stressors. In concordance with aging processes such as deteriorating health and cognitive function, these older adults may not be able to cope with these old traumas and may get depressed.

In the present study we examined the association between childhood abuse and depression in a cohort of depressed older adults and non-depressed controls aged 60–93 years. Next to the strength of the association between specific types of childhood abuse and late-life depression, we examined whether childhood abuse was associated with specific clinical characteristics of depression, especially age of onset, but also severity, chronicity and suicidal ideation. In addition, we examined whether co-morbidity with apathy, anxiety, neuroticism, sense of mastery, cognitive function, and somatic health played a role in the association between childhood abuse and late-life depression.

2. Methods

The present study used data from the first measurement of the Netherlands Study of Depression in Older persons (NESDO), a multi-site naturalistic prospective cohort study in the Netherlands. Detailed description of the design and study sample is given in the design paper (Comijs et al., 2011). In short, the NESDO cohort included 378 depressed (major depression, dysthymia or minor depression according to DSM-IV criteria (American Psychiatric Association, 2000) and 132 non-depressed adults, aged 60 through 93 years. Recruitment of depressed older adults took place in five regions in the Netherlands from both mental health care institutes and general practitioners. Participants with a primary diagnosis of dementia, a Mini Mental State Examination-score (MMSE) under 18 (out of 30 points), and insufficient command of the Dutch language were excluded. Non-depressed controls were recruited from general practitioners. Inclusion criteria for non-depressed controls were no lifetime diagnosis of depression, dementia or other serious psychiatric disorders, and good command of the Dutch language. The interviews were conducted by carefully selected research assistants, mainly consisting of psychologists and mental health care nurses. All interviews were audio taped to control the quality of the data. Data collection of the first measurement started in 2007 and was finished in September 2010.

3. Measures

3.1. Depression diagnoses

Diagnosis of depression and dysthymia according to DSM-IV-R criteria (American Psychiatric Association, 2000) were assessed with the Composite International Diagnostic Interview (CIDI; WHO version 2.1; lifetime version). The CIDI is a structured clinical interview that is designed for use in research settings and has high validity for depressive and anxiety disorders (Kessler et al., 2010;Wittchen et al., 1991). Questions were added to determine the research DSM-IV diagnosis of current minor depression (Comijs et al., 2011).

3.2. Childhood abuse

Childhood abuse, including emotional neglect as well as psychological, physical and sexual abuse, was assessed using a structured inventory previously used in the Mental Health Survey and Incidence Study (De Graaf et al., 2004) and the Netherlands Study of Depression and Anxiety (Penninx et al., 2008). The inventory was administered as an interview in the second part of the baseline assessment after a break and the inventory for physical health and pain. In the childhood abuse inventory participants were asked whether they had experienced any kind of neglect or abuse before the age of 16. Emotional neglect included the lack of parental attention or support and ignorance of one's problems and experiences. Psychological abuse included verbal abuse, punishment without reason, subordination to siblings and being blackmailed. Physical abuse included being kicked, hit with or without an object and any other physical harm. Sexual abuse was defined as being sexually touched against one's will, or being forced to touch someone sexually. After an affirmative answer, a question was asked about the frequency of these events, which was recorded as: Never, once, sometimes, regularly, often or very often. A childhood abuse index was constructed by recoding the frequency scores in (0) never, (1) once, sometimes and (2) regularly, often or very often. These scores were summed up, resulting in a childhood abuse index that ranges from 0 to 8, with higher scores indicating a higher frequency of childhood abuse (Hovens et al., 2010).

3.3. Clinical characteristics

Severity of depression was measured using the self-report Inventory of Depressive Symptoms (IDS) (Rush et al., 1996). The age of first depression onset, the number of depressive episodes and suicide attempts were assessed with the CIDI depression section as described before. Age of onset was used as a continuous variable, but was also categorized into early-onset (< 40 years), middle age-onset (40–60 years) and late-onset (60 years and older). Anxiety disorders (general anxiety disorder, panic disorder, agoraphobia and social phobia) were assessed using the CIDI (12 month version). Severity of anxiety symptoms was measured using the Beck Anxiety Index (BAI) (Beck et al., 1988), a self-report questionnaire. Apathy was assessed using the Apathy Scale as a self-report questionnaire (Starkstein et al., 1992). General cognitive performance was measured with the Mini-Mental State Examination (MMSE) (Folstein et al., 1975), a frequently used screening instrument for global cognitive functioning in older adults. Neuroticism was assessed with a subscale of the NEO-FFI (Costa and McCrae, 1995), and sense of mastery was assessed with the Pearlin and Schooler mastery scale (Pearlin and Schooler, 1978). The number of chronic diseases was assessed with previously used self-report questions about the presence of the following chronic diseases or disease events: cardiac disease (including myocardial infarction), peripheral artherosclerosis, stroke, diabetes mellitus, COPD (asthma, chronic bronchitis or pulmonary emphysema), arthritis (rheumatoid arthritis or osteoarthritis) and cancer. The accuracy of self-reports of these diseases was shown to be adequate and independent of cognitive impairment compared to data obtained from general practitioners (Kriegsman et al., 1996).

3.4. Statistical analyses

Differences between depressed and non-depressed participants were analysed by independent t-test (continuous variables) or chi-square statistics (categorical variables). By using logistic regression analyses adjusted for age, sex and level of education, the association between childhood abuse and depression were examined. Second, in the depressed group only, the associations between childhood abuse and the clinical characteristics of depression were examined. Depressed participants without childhood abuse were the reference

group in these logistic regression analyses. The association between childhood abuse and the three groups of age of depression onset was examined with multinominal regression analyses adjusted for age, sex and education, in which the onset of depression was the outcome variable. Finally, associations between childhood abuse and aging characteristics (age, cognitive function and number of chronic diseases) within age of onset groups were examined with multivariate logistic regression analyses. Odds Ratio's of all regression analyses are presented with their 95% Confidence Intervals (95% CI).

4. Results

Data on childhood abuse were available for 508 of the 510 older people, since two of the depressed persons were not willing to answer these questions. The depressed persons did not differ from the non-depressed controls with respect to mean age (70.7 versus 70.1 years) and sex (66% versus 61.4% female), but had a lower level of education (10.4 years versus 12.5 years of education; $p < 0.001$). Depressed persons reported significantly more often childhood abuse (53.3%) than non-depressed controls (15.9%). Most frequently reported was emotional neglect (41.5%), followed by psychological abuse (26.3%), sexual abuse (22.6%) and physical abuse (16%) (Table 1). Multivariate logistic regression analyses adjusted for age, sex and level of education showed strong associations between childhood abuse and depression, with the highest Odds Ratio for physical abuse: OR 13.71 (95% CI 3.25–57.91) and lowest for sexual abuse OR 5.35 (95% CI 2.36–12.14).

The associations between the various forms of childhood abuse and clinical characteristics of the depressed participants are presented in Table 2. In depressed older adults, all types of abuse were associated with more severe depression, a younger age of onset, more depressive episodes, higher levels of neuroticism, lower sense of mastery, and higher number of chronic diseases. In addition, psychological abuse and physical abuse were associated with more anxiety symptoms and co morbidity of anxiety disorders. Only physical abuse was associated with lower cognitive function. Childhood abuse was not associated with lifetime suicide attempts and apathy symptoms in late-life depression.

Childhood abuse was most prevalent in early-onset depression (see Fig. 1), and was less but still strongly associated with middle age- and late-onset depression (Table 3). The odd ratios decreased with a later onset of depression, except for sexual abuse which was strongest associated with early- and late-onset depression. Analyses of the association between specific characteristics of the aging process such as deteriorating health and cognitive functioning, and childhood abuse (outcome variable), within the three age of onset groups, showed that in early and middle age onset younger age was associated with abuse, whereas in the late-onset group childhood abuse was associated with an increased number of chronic diseases (Table 4).

5. Discussion

In this study, depressed older adults reported high rates (53.3%) of childhood abuse. As far as we know this is the first

Table 1
The association between childhood trauma (no/yes) and depression in older adults ($N=508$).

	Depressed patients ($N=376$)		Non-depressed comparison group ($N=132$)		p	Bivariate		Multivariate[*]	
	N	%	N	%		Odds ratio	95% CI	Odds ratio	95% CI
Emotional neglect	156	41.5	9	6.8	< 0.001	9.69	4.78–19.66	10.39	5.04–21.44
Psychological abuse	99	26.3	8	6.1	< 0.001	5.54	2.61–11.74	6.44	2.97–13.96
Physical abuse	60	16.0	2	1.5	< 0.001	12.34	2.97–51.24	13.71	3.25–57.91
Sexual abuse	85	22.6	7	5.3	< 0.001	5.22	2.35–11.59	5.35	2.36–12.14
Any abuse	200	53.3	21	15.9	< 0.001	6.03	3.63–10.05	7.18	4.18–12.30
Childhood abuse index	Mean 1.8	SD 2.2	Mean 0.3	SD 0.8	< 0.001	2.00	1.60–2.51	2.13	1.67–2.72

[*] Adjusted for age, sex and level of education.

Table 2
The association between clinical characteristics of depression and its co morbidities with childhood abuse.

	No abuse $N=175$		Emotional neglect $n=156$				Psychological abuse $n=99$				Physical abuse $n=60$				Sexual abuse $n=85$			
	Mean or %	SD	Mean or %	SD	OR	95% CI[*]	Mean or %	SD	OR	95% CI[*]	Mean or %	SD	OR	95% CI[*]	Mean or %	SD	OR	95% CI[*]
Depression severity	27.9	12.6	33.1	13.0	1.03	1.01–1.05	34.1	12.8	1.04	1.02–1.06	35.2	13.0	1.05	1.02–1.07	34.2	13.8	1.03	1.01–1.06
Age of onset	53.5	18.8	42.3	20.4	0.97	0.96–0.99	41.9	21.7	0.98	0.96–0.99	41.1	21.9	0.97	0.96–0.99	43.2	21.8	0.98	0.96–0.99
Number of depressive episodes	2.4	1.3	2.9	1.5	1.31	1.11–1.56	2.9	1.4	1.27	1.04–1.55	3.0	1.5	1.35	1.07–1.70	2.8	1.5	1.25	1.01–1.55
Suicide attempts (life time), yes/no	12.0%		16.7%		1.48	0.78–2.81	17.2%		1.48	0.72–3.03	18.3%		1.47	0.64–3.39	15.3%		1.42	0.64–3.15
Any anxiety disorder past yr	37.1%		50.6%		1.49	0.94–2.36	53.5%		1.74	1.03–2.94	55%		1.90	1.01–3.61	50.6%		1.42	0.81–2.47
Anxiety symptoms	16.9	1.6	18.5	11.5	1.02	1.00–1.04	20.4	11.6	1.03	1.01–1.06	21.4	13.5	1.04	1.01–1.07	19.5	12.9	1.02	0.99–1.04
Apathy symptoms	17.0	5.1	17.4	5.9	1.02	0.98–1.06	17.3	5.5	1.01	0.96–1.06	18.7	5.8	1.06	0.99–1.12	17.6	6.2	1.03	0.98–1.09
Cognitive functioning	27.67	2.07	27.7	1.8	0.95	0.85–1.07	27.4	2.3	0.90	0.80–1.02	27.1	2.5	0.84	0.74–0.97	28.0	1.8	1.05	0.91–1.21
Mastery	14.8	3.3	16.0	2.8	1.15	1.06–1.24	16.0	2.9	1.17	1.06–1.28	16.2	3.3	1.16	1.04–1.30	16.4	3.0	1.16	1.05–1.27
Neuroticism	38.0	7.3	40.3	6.9	1.04	1.01–1.08	41.1	6.4	1.07	1.03–1.11	41.1	6.6	1.06	1.01–1.08	41.1	6.4	1.05	1.01–1.10
Number of chronic diseases	2.0	1.4	2.2	1.5	1.20	1.02–1.40	2.4	1.6	1.25	1.05–1.48	2.6	1.7	1.41	1.15–1.74	2.5	3.0	1.22	1.02–1.47

[*] Logistic regression analyses adjusted for age, sex and level of education; reference group are persons without any form of childhood abuse.
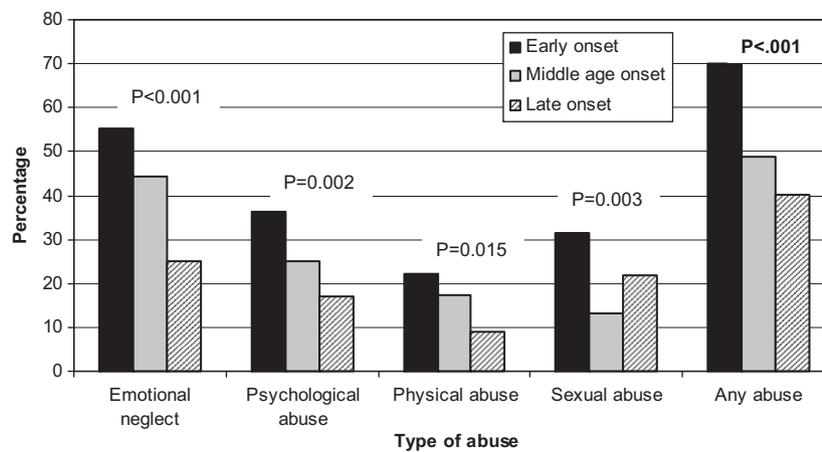
Fig. 1. Percentages of childhood abuse according to the onset of depression.

Table 3
Results of multinominal regression analyse, with type of depression onset as outcome and non-depressed adults as reference group.

	Early-onset n=121		Middle age-onset n=120		Late-onset n=124	
	OR[*]	95% CI	OR[*]	95% CI	OR[*]	95% CI
Emotional neglect	16.74	7.71–36.32	10.32	4.73–22.50	4.99	2.20–11.33
Psychological abuse	9.48	4.17–21.54	5.45	2.34–12.69	3.87	1.58–9.48
Physical abuse	19.73	4.51–86.22	12.95	2.92–57.41	7.16	1.50–34.22
Sexual abuse	7.96	3.33–19.06	2.62	1.02–6.77	5.92	2.37–14.77
Any childhood abuse	13.73	7.31–25.80	5.36	2.90–9.90	4.74	2.51–8.95

[*] Logistic regression analyses adjusted for age, sex and level of education.

study on childhood abuse among clinically depressed older adults and non-depressed controls. The results demonstrate that childhood abuse may be considered an important risk factor for late-life depression. Although childhood abuse was strongest associated with early-onset depression, we found also a robust association with a middle age- and late-onset of depression. This is in line with Green et al. (2010) who showed in a large nationally representative sample of adults (>18 years) that about 30% of the later-onset disorders were associated with childhood abuse. This is an intriguing finding, because it has been suggested that due to early stress persistent changes may occur in specific neurobiological systems, such as the hypothalamic-pituitary-adrenal (HPA) axis or the serotonin receptors, which makes a person more vulnerable for developing psychiatric disorders when confronted with stressful events (Nemeroff, 2004). However, it appears that some adults with middle age- and late-onset depression have been able to function mentally well for a long period of time, despite the fact that these stressful events happened in their childhood. Apparently, in late life the balance to maintain psychological wellbeing has been disturbed. In the late-onset depression group we found an association between childhood abuse and an increase of chronic diseases. Previous research has already shown that childhood abuse is associated with elevated inflammation levels and adverse health outcomes in late life (Draper et al., 2008;Miller et al., 2009). This suggests that deteriorating health and its biological correlates may increase the vulnerability to depression in victims of childhood abuse. Also, changes in social functioning or social network, such as the loss of a partner, may disturb a lifetime equilibrium supporting their psychological wellbeing. For clinical reasons, it is important to further investigate how childhood abuse and late-onset depression interact.

Over 50% of the participants with late-life depression reported childhood abuse, suggesting a chronic or fluctuating course of depression in all participants with an early- or middle age-onset. This is in line with previous studies in younger adult age groups (18–65 years) that showed an association between childhood abuse and a chronic course of depressive disorders (Nanni et al., 2012;Rhebergen et al., 2011;Wiersma et al., 2009). As in the study of Wiersma et al. (2009), we found a dose-response relationship between childhood abuse and depression. The greater the number and frequency of abusive behaviours, as reflected in the childhood abuse index, the higher the probability of depression. All types of childhood abuse were associated with higher levels of neuroticism, lower sense of mastery, and higher number of chronic diseases, suggesting a psychological as well as an physical vulnerability that may moderates the association between childhood abuse and late-life depression. Former studies examining this moderating effect in younger adult age samples have shown conflicting results, whereas Kendler et al. (2004) showed that neuroticism moderates the relationship between childhood adversity and depressive disorders; Spinhoven et al. (2010) did not find such an effect.

5.1. Limitations and strengths

Some limitations need to be acknowledged. Age of depression onset and the number of depressive episodes were asked retrospectively. Although data regarding age of onset, diagnoses and clinical conditions have been found to be accurate and reliable (Toren et al., 2006), we still need to be cautious since the data might be biased by selective recall, whereby especially milder and older episodes may have been underreported. However, we used broad ranges for the age of onset classification, and therefore the

Table 4

Results of multivariate logistic regression analyses of the association between age, cognitive functioning and number of chronic diseases, and childhood abuse (outcome) within categories of onset of depression.

	Early-onset n=121		Middle age-onset n=120		Late-onset n=124	
	OR	95% CI	OR	95% CI	OR	95% CI
Age (years)	0.94[*]	0.89–0.99	0.93[*]	0.87–0.99	0.99	0.94–1.05
Female	1.03	0.43–2.47	0.62	0.28–1.37	0.85	0.35–2.06
Level of education (years)	1.04	0.92–1.28	1.02	0.91–1.13	0.97	0.85–1.10
Cognitive functioning	0.94	0.75–1.18	1.03	0.86–1.24	0.91	0.75–1.11
Number of chronic diseases	0.94	0.69–1.28	1.04	0.80–1.34	1.47[*]	1.13–1.93

[*] $P < 0.05$.

bias will hardly affect our results. Childhood abuse was also asked retrospectively. However, it is hard to tell whether this has led to under- or overreporting. Underreporting of events may be caused by memory problems, unwillingness to report embarrassing events or to disclose painful memories, whereas overreporting may be the consequence of the negative mood. The mean MMSE-score was within normal ranges in all types of childhood abuse, and did not differ from the mean score in the control group, therefore, recall failure due to cognitive impairment will be limited. Several longitudinal studies showed that childhood abuse reports are rather unstable over time (Fergusson et al., 2000; Widom, 1997, 1996); however, two studies of retrospective reports of childhood abuse conclude that it is unlikely that psychopathology is associated with less valid or reliable recollections of childhood abuse (Brewin et al., 1993; Hardt and Rutter, 2004). Still, we need to be careful with respect to the exact magnitude of childhood abuse in this depressed sample of older adults. Finally, although we included severely depressed older adults, the most severe depressed patients were not able or willing to participate in the study, and our results can therefore not be generalized to this group.

This study has some important strength. As far as we know this is the first study that describes self-reported rates of childhood abuse in a depressed cohort of older adults aged 60–93 years and a non-depressed control group of a similar age range. Diagnoses according to DSM-IV criteria and data on childhood abuse were systematically and carefully assessed by structured interviews. The results extend the well-known long-term effects of childhood abuse on mental health across the lifespan, and stress the importance of considering childhood abuse when treating late-life depression, even when the onset of depression is after the age of 60 years.

5.2. Clinical implications

Getting information about a history of childhood abuse in depressed older adults is important (Read and Bentall, 2012), also when it concerns a first episode of depression. Childhood abuse is not only a risk factor for the onset of depression; it also identifies persons at risk for a chronic course and poor treatment outcomes. This was shown in a recent meta-analysis showing that depressed patients who were abused during childhood had a poor response to a combination of structured psychological treatment and pharmacotherapy with antidepressants (Read and Bentall, 2012). Other treatment options may be considered, such as Eye Movement Desensitization and Reprocessing (EMDR), which is specifically directed at these traumatic experiences and may be effective even in old age (Flik and De Roos, 2010; Sun et al., 2004).

5.3. Conclusions

Our study showed that the effects of childhood abuse may last a lifetime. Although most prevalence rates decrease with a later onset of depression, childhood abuse was still strongly associated with an onset of depression after the age of 60 years. This may suggest that the balance persons had to maintain psychological wellbeing during their lives is disturbed. This finding could not be explained by factors such as neuroticism, sense of mastery, number of chronic disease or cognitive function. Further research is necessary to better understand the background of the association between childhood abuse and late onset of depression.

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