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Differential Psychological Treatment Effects in Patients With Late-Life Depression and a History of Childhood Maltreatment

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ABSTRACT

Objective: *This is the first interventional study to assess the impact of childhood maltreatment (CM) on psychological treatment outcomes in patients with late-life depression (LLD).* ***Methods:*** *This is a secondary analysis of a multicenter, randomized controlled trial with 251 participants aged ≥60 years with moderate to severe depression. Participants were randomly assigned to cognitive behavioral therapy for late life depression (LLD-CBT) or to a supportive intervention (SUI). Treatment outcomes were measured by changes in the Geriatric Depression Scale (GDS).* ***Results:*** *In the intention-to-treat sample (*n = *229), both LLD-CBT (*n = *115) and SUI (*n = *114) significantly reduced depressive symptoms in patients with CM, with large effects at post-treatment (*d = *0.95 [95% CI: 0.65 to 1.25] in LLD-CBT;* d = *0.82 [95% CI: 0.52 to 1.12] in SUI). A significant treatment group*CM interaction (*F(1,201.31) = 4.71; p = .031) indicated greater depressive symptom reduction in LLD-CBT compared to SUI*

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at week 5 and post-treatment for patients without CM, but not at 6-month follow-up. Across both treatments, higher severity of the CM subtype 'physical neglect' was associated with a smaller depressive symptom reduction (F (1,207.16) = 5.37; p = .021). ***Conclusions:*** *Specific and non-specific psychotherapy effectively reduced depressive symptoms in older individuals with depression and early trauma. For patients without early trauma, LLD-CBT may be preferable over SUI. Considering early trauma subtypes may contribute to develop personalized treatment approaches.* (Am J Geriatr Psychiatry 2024; 32:1325−1336)

Editorial accompaniment, please see page 1337.

Highlights

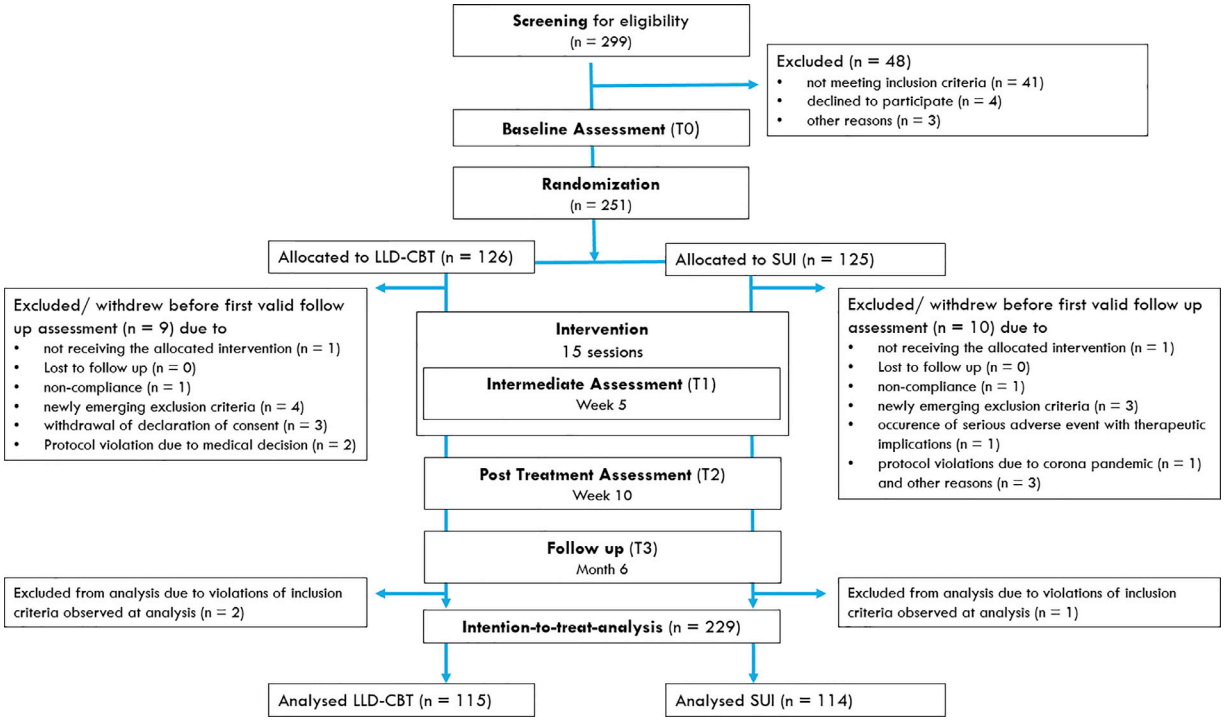
- **What is the primary question addressed by this study?**
  Does childhood maltreatment affect the psychological treatment outcomes in late-life depression?
- **What is the main finding of this study?**
  In older individuals with depression and childhood maltreatment, both specific and non-specific psychotherapy equally reduce depressive symptoms. However, in patients *without* childhood maltreatment, cognitive behavioral therapy for late-life-depression demonstrates greater efficacy over non-specific supportive psychotherapy.
- **What is the meaning of the finding?**
  Practioners should consider a history of early trauma in their choice between specific and non-specific interventions.

INTRODUCTION

Late-life depression (LLD) is a significant mental health condition with a high prevalence of 40.8 % of older individuals experiencing clinically relevant depressive symptoms in developing countries and 17.1% in developed countries.[1] LLD has emerged as a leading cause of Years Lived with Disability worldwide.[2] Despite the high prevalence and the detrimental consequences, depression in higher age remains undertreated[3] even though meta-analyses[4–7] have demonstrated the effectiveness of psychological treatments for this condition. This undertreatment can be attributed to multimorbidity, concerns about potential adverse events, and a lack of confidence in the efficacy and safety of pharmacological and non-pharmacological treatments, particularly in the oldest old depressed patients.[3] Numerous studies have shown an association of childhood maltreatment (CM) and depression in late life[8,9] particularly with the trauma subtypes emotional/physical abuse or neglect.[9,10] As in depressed children, adolescents and middle-aged adults[11] CM may significantly affect treatment outcomes also in older adults. However, there is lacking evidence on how early trauma in older depressed adults affects psychological treatment outcomes. One recent meta-analysis included older depressed adults among other age groups,[12] suggesting that individuals with major depressive disorder and a history of childhood trauma benefit from evidence-based treatments similarly to those without childhood trauma. Yet, this study has been severely criticized for its limitations.[13,14] There is no meta-analysis specifically investigating higher aged individuals with a history of CM.

We need a better understanding of how therapy can be tailored to the specific needs of this population in order to provide more effective treatments. This study aims to address this gap in research and is, to the best of our knowledge, the first interventional study investigating the differential effects of psychotherapy in patients with both LLD and CM. Klein and colleagues[15] have shown that a structured behavioral therapy tailored to address CM in early onset chronic depression (Cognitive Behavioral Analysis System of Psychotherapy, CBASP) was

FIGURE 1. Trial flowchart. LLD-CBT: cognitive behavioral therapy for late life depression, SUI: supportive nonspecific intervention.



more beneficial for middle-aged adults with CM compared to a supportive intervention. In further analyses, these effects extended up to 2 years of follow-up.[16,17] Based on these findings, we hypothesized that cognitive behavioral therapy for late life depression (LLD-CBT) would be more effective than a non-specific, supportive intervention (SUI) in older patients with CM due to similarities in some elements of CBASP and CBT such as an overlap of the situational analysis technique and addressing childhood experiences.

METHODS

Study Design

The original study[18] was a multicenter, randomized, parallel-group, observer-blinded, controlled trial at seven university sites in Germany. The study protocol has been published[19] and the trial is registered at ClinicalTrials.gov (NCT03735576) and DRKS (DRKS00013769). The trial was approved by all local ethics committees of the participating sites. All participants provided written informed consent prior to all study procedures. The study procedure is shown in Figure 1.

Participants

Overall, we recruited 251 participants aged ≥60 with moderate to severe LLD (Fig. 1). We assessed diagnostic criteria for major depressive disorder (MDD) using the validated standard clinical Mini International Neuropsychiatric Interview for DSM-5 (M.I.N.I. Version 7.0.2). We included patients with diagnosis of MDD, a score >10 on the Geriatric Depression Scale (GDS), a score >10 on the Quick Inventory of Depressive Symptomatology−Clinician Rating (QIDS-C) and a Mini-Mental-State-Evaluation score >25. Ongoing pharmacological medication was allowed but had to be stable for at least 6 weeks prior to baseline and should not be changed during the 8-week intervention phase. The exclusion criteria are presented in the supplement.

Randomization

Participants were randomly assigned to one of two treatment arms via 1:1 stratified block randomization.[18] All clinical interviews and outcome assessments were conducted by blinded, trained, certified, and supervised raters.

Treatments

Both manual-based treatments (LLD-CBT and SUI) included 15 individual outpatient sessions held twice per week over the 8-week intervention phase. LLD-CBT is an adaptation of cognitive behavioral therapy tailored to the characteristic needs and issues of LLD.[20] SUI is a non-specific, supportive and emotion-focused intervention facilitating empathically the patient's self-reflection without guiding or structuring the sessions.[21] All therapists were trained in both methods and delivered both interventions. We assured adherence by continuous central supervision and local supervision at each trial site. Additionally, therapy sessions were videotaped and randomly selected to be evaluated using a structured adherence scale.[18]

Measures

We assessed depressive symptoms at all rating visits using the German 30-item version of the GDS,[22] the most widely used measure specific to depression among older populations.[23]

We assessed CM at baseline with the German adaptation of the 28-item short form of the Childhood Trauma Questionnaire (CTQ-SF),[24] the most commonly used measure to assess CM in patients with depression.[12] The CTQ assesses five subscales of childhood trauma, i.e. emotional abuse (EA), physical abuse (PA), sexual abuse (SA), emotional neglect (EN) and physical neglect (PN). Higher scores indicate higher maltreatment severity. Severity categories are "None to Minimal", "Low to Moderate", "Moderate to Severe" or "Severe to Extreme". We considered the presence of maltreatment if a subject had at least one moderate to severe maltreatment subdomain.

Detailed information about the measures, adverse and serious adverse events are given in the supplement.

Statistical Analysis

Analyses were carried out with the full analysis set we derived from the intention-to-treat (ITT) sample, including all randomized subjects with a valid baseline assessment and at least one valid follow-up outcome assessment. For evaluating the influence of CM on change in GDS, we conducted a mixed model for repeated measures (MMRM) with the fixed effects of baseline GDS score, therapist, treatment group, visit, CTQ overall score and the interactions treatment group*visit and treatment group*CTQ score (ARH1-structured covariance matrix over time) with corresponding marginal means and contrast tests. We computed estimated means of the change in GDS for several values of CTQ (30-45-60-75-90) derived from the severity grading of the CTQ overall score by MacDonald and colleagues[25] (none/minimal: CTQ $\leq$36, low to moderate: CTQ >36, and $\leq$51, moderate to severe: CTQ >51 and $\leq$68, severe to extreme CTQ $\geq$69) and from the distribution of CTQ scores in our sample (range, mean, and SD). To further investigate the influence of CM subtypes on treatment effects, we performed MMRMs for each subtype including the respective CTQ subtype score (EA, PA, SA, EN, PN) as fixed effects replacing the overall score. We calculated Cohen's d as between-group effect size by dividing the difference of the mean change in GDS of the groups by the pooled standard deviation (SD). Cohen's d as pre-post-treatment effect sizes was calculated separately for the LLD-CBT and SUI group by dividing the difference from the GDS scores at end of treatment to baseline by the SD of the baseline GDS score.

Remission ($\leq$10 points on the GDS at post-treatment) and response rates (all remitted patients and patients with a reduction of 50% of the baseline GDS score at post-treatment) were compared between patients with and without CM using Pearson's χ^2 test. The analyses were performed with SPSS Statistics 28.0.1.0 (IBM Corp., Armonk, NY, USA).

RESULTS

The intention-to-treat (ITT) sample consisted of 229 participants. Patient baseline clinical and demographic characteristics were fairly balanced between groups (Table 1). The mean geriatric depression scale

TABLE 1. Baseline Demographic and Clinical Characteristics of the ITT Population

	LLD-CBT (n = 115)	SUI (n = 114)	Overall (n = 229)
Age (years), Mean (SD)	69.6 (7.3)	70.7 (6.9)	70.2 (7.1)
Gender (Female)	83 (72.2%)	68 (59.6%)	151 (65.9%)
Relationship status			
Single, separated, or widowed	59 (51.3%)	60 (52.6%)	119 (51.9%)
Married or with partner	56 (48.7%)	54 (47.4%)	110 (48.1%)
Living alone	51 (44.4%)	49 (42.9%)	100 (43.7%)
Employment			
Currently employed	25 (21.7%)	26 (22.8%)	51 (22.2%)
Retired or unemployed	90 (78.3%)	88 (77.2%)	178 (77.8%)
Patients born in Germany	101 (87.8%)	106 (93%)	207 (90.4%)
At least one parent born in another country	32 (27.8%)	28 (24.6%)	60 (26.2%)
First depressive episode <60 years of age	83 (72.2%)	85 (74.6%)	168 (73.4%)
Age at first depressive episode, Mean (SD)	43.4 (21.4)	41.8 (19.7)	42.6 (20.6)
Number of depressive episodes			
Mean (SD)	3.9 (8.3)	5.0 (11.2)	4.4 (9.8)
Median (IQR; range)	2 (1-3;0-50)	2 (1-5;0-99)	2 (1-4;0-99)
Chronic depression (current episode since >2 y)	43 (37.4%)	41(35.9%)	84 (36.7%)
Comorbid psychiatric disorders apart from depression			
None	99 (86.1%)	98 (86.0%)	197 (86.0%)
One	11 (9.6%)	12 (10.5%)	23 (10.0%)
Two or three	5 (4.4%)	4 (3.6%)	9 (3.9%)
Reported childhood maltreatment (CTQ)	66 (57.4%)	59 (51.8%)	125 (54.6%)
Inpatient psychiatric treatment (lifetime)	44 (38.3%)	46 (40.4%)	90 (39.3%)
Outpatient psychiatric treatment (lifetime)	80 (69.6%)	80 (70.2%)	160 (69.9%)
Outpatient psychotherapy (lifetime)	79 (68.7%)	75 (65.8%)	154 (67.2%)
Suicide attempts (lifetime)	6 (5.2%)	16 (14.0%)	22 (9.6%)
Current use of psychopharmacological drugs (regular; patient-reported)	51 (44.3%)	51 (44.7%)	102 (44.5%)

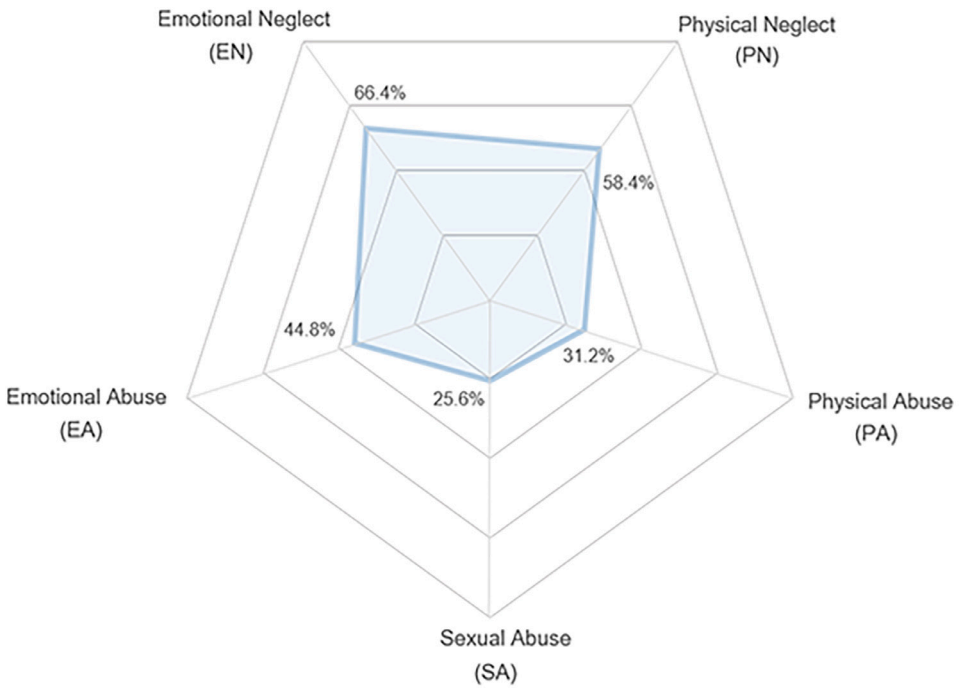
(GDS) score at baseline was 20.7 (SD 4.3), corresponding to severe depression.[26] The most common psychiatric comorbidities were agoraphobia (6.1%), social anxiety disorder (3.9%), and alcohol abuse (3.9%).

A total of 125 patients (55%) reported childhood maltreatment (CM). The number of patients with CM was balanced between groups. Twenty percent of patients reported only one subdomain of CM and 35% reported two or more maltreatment subtypes. In the whole sample, 36% reported experiences with emotional neglect (EN), 24% emotional abuse (EA), 32% physical neglect (PN), 17% physical abuse (PA) and 14% sexual abuse (SA). The distribution of CM subdomains among patients with CM is shown in Figure 2. Table 2 displays the means and standard deviations of the GDS throughout the study in both arms for patients with and without experiences of early trauma, divided by CM subtypes.

Influence of CM Severity on Treatment Efficacy

The mixed model for repeated measures (MMRM) yielded no significant main effect of the childhood trauma questionnaire (CTQ) overall score on GDS score reduction ($F(1, 202.16) = 0.34$; p = .559). Yet, there was a main effect of treatment favoring the LLD-CBT group ($F(1,206.98) = 6.52$; p = .011, estimated marginal mean difference (emmd) of LLD-CBT and SUI: change in $GDS_{emmd} = -1.22$, [95% CI: −2.80. to 0.35]). The main effect was qualified by a significant treatment group*CM interaction ($F(1,201.31) = 4.71$; p = .031), showing a significant greater depressive symptom reduction in the LLD-CBT arm than in the SUI arm at week 5 and post-treatment (week 10) but only in the absence of CM. At 6-month follow-up, no significant difference was found. When CTQ scores indicated low to moderate CM, LLD-CBT was superior to SUI, but only at week 5. Results are shown in Table 3. The significant effect size for the difference between the two treatment groups for all patients with none to minimal CM (CTQ ≤ 36) was $d = 0.68$ [95% CI: 0.23 to 1.13] at week 5 and $d = 0.41$ [95% CI: −0.04 to 0.86] at post-treatment, favoring the LLD-CBT group. The non-significant effect size for follow-up was $d = 0.35$ [95% CI: −0.10 to 0.81]. For CTQ values corresponding too low to moderate CM, LLD-CBT was superior to SUI, but only at week 5. The non-significant between treatment group effect size was $d = 0.06$ [95% CI: −0.43 to 0.56] for patients with low to moderate CM (CTQ >36

FIGURE 2. Frequency of CM subdomains among patients with a history of childhood trauma.



and ≤51). For moderate to extreme CTQ scores, estimated marginal means yielded no significant difference in depressive symptom reduction between the treatment groups at any time point. GDS scores over time for both treatments are shown in Figure 3.

Furthermore, the MMRM revealed a main effect of time ($F(2, 271.21) = 18.98$; $p < .001$) with a significant improvement of depressive symptoms over time in both groups and independent from CM. The significant treatment effect size estimates for the GDS reduction in single-group, pretest-posttest design for patients with CM were $d = 0.95$ [95% CI: 0.65 to 1.25] for the LLD-CBT group and $d = 0.82$ [95% CI: 0.52 to 1.12] for the SUI group. This indicates a large effect

TABLE 2. Mean GDS of Patients With and Without CM (Subtypes) for Each Treatment Group Throughout the Study

Geriatric Depression Scale, 30-Item Version Score (Possible Range 0-30), Mean (SD)								
	Overall (*n* = 229)	**CM (*n* = 125)**	**EN (*n* = 83)**	**EA (*n* = 56)**	**PN (*n* = 73)**	**PA (*n* = 39)**	**SA (*n* = 32)**	**No CM (*n* = 100)**
Baseline	20.7 (4.3)	21.2 (4.1)	21.7 (4.0)	21.6 (3.8)	20.8 (4.3)	21.9 (3.9)	21.1 (4.1)	19.9 (4.3)
Intermediate (Week 5)	16.3 (6.0)	16.5 (6.2)	17.2 (5.8)	16.5 (6.4)	17.7 (6.1)	16.3 (6.3)	16.5 (5.5)	15.7 (5.7)
End of Treatment (Week 10)	13.8 (7.3)	14.4 (7.6)	15.1 (7.7)	14.4 (8.2)	15.8 (7.6)	14.1 (7.3)	12.8 (7.0)	12.9 (6.7)
Follow-Up	14.5 (7.0)	14.9 (7.2)	15.9 (6.7)	14.2 (7.4)	15.9 (7.2)	14.7 (7.2)	13.1 (6.8)	13.9 (6.7)
LLD-CBT								
Baseline	21.0 (4.3)	21.4 (4.1)	22.2 (3.8)	22.0 (3.4)	20.7 (4.4)	21.8 (3.7)	21.6 (4.1)	20.4 (4.6)
Intermediate (Week 5)	15.6 (6.6)	16.3 (6.4)	17.4 (5.9)	16.4 (3.6)	17.7 (5.9)	17.1 (6.7)	16.5 (5.6)	14.6 (6.7)
Treatment (Week 10)	13.5 (7.6)	14.0 (7.9)	14.6 (8.2)	14.6 (8.8)	15.3 (8.3)	14.4 (8.4)	11.3 (7.8)	12.9 (7.3)
Follow-Up	14.0 (7.4)	14.7 (7.7)	15.6 (7.2)	14.4 (7.7)	14.9 (7.9)	16.9 (6.6)	13.5 (7.3)	13.1 (7.1)
SUI								
Baseline	20.4 (4.2)	21.1 (4.1)	21.2 (4.3)	21.1 (4.3)	21.0 (4.3)	22.0 (4.2)	20.7 (4.1)	19.8 (4.4)
Intermediate (Week 5)	16.9 (5.4)	16.8 (5.9)	17.0 (5.9)	16.6 (6.6)	17.8 (6.2)	15.6 (6.0)	16.5 (5.6)	17.2 (4.8)
End of treatment	14.2 (6.9)	15.0 (7.2)	15.7 (7.2)	14.2 (7.6)	16.2 (7.2)	13.8 (6.6)	14.3 (5.8)	13.5 (6.5)
Follow-Up	14.9 (6.6)	15.2 (6.9)	16.2 (6.3)	14.0 (7.1)	16.7 (6.6)	13.0 (7.4)	12.7 (6.5)	14.7 (6.3)

TABLE 3. Results of the MMRM With the Fixed Effects Baseline GDS Score, Therapist, Treatment Group, Visit, CTQ Overall Score and the Interactions Treatment Group*Visit and Treatment Group*CTQ Overall Score

Fixed Covariate values for emm	Visit	df	emmd (LLD-CBT − SUI) of Change in GDS	95% CI	p-Value
CTQ = 30 (no or minimal CM)	Intermediate (week 5)	201.50	−3.25	−5.33; −1.18	.002
	Post-treatment (week 10)	243.50	−2.74	−5.18; −0.31	.027
	Follow-up (month 6)	249.17	−2.30	−4.74; 0.14	.064
CTQ = 45 (low-moderate CM)	Intermediate (week 5)	193.94	−1.70	−3.21; −0.19	.027
	Post-treatment (week 10)	192.26	−1.19	−3.26; 0.78	.234
	Follow-up (month 6)	201.22	−0.75	−2.73; 1.24	.458
CTQ = 60, CTQ = 75, CTQ = 90 (moderate-extreme CM)		Non-significant at any visit			

MMRM: mixed model for repeated measures, Emm: estimated marginal means, Emmd: estimated marginal mean difference, df: degrees of freedom, CI: confidence interval, CTQ: childhood trauma questionnaire, LLD-CBT: cognitive behavioral therapy for late-life-depression, SUI: supportive intervention, GDS: Geriatric depression scale.

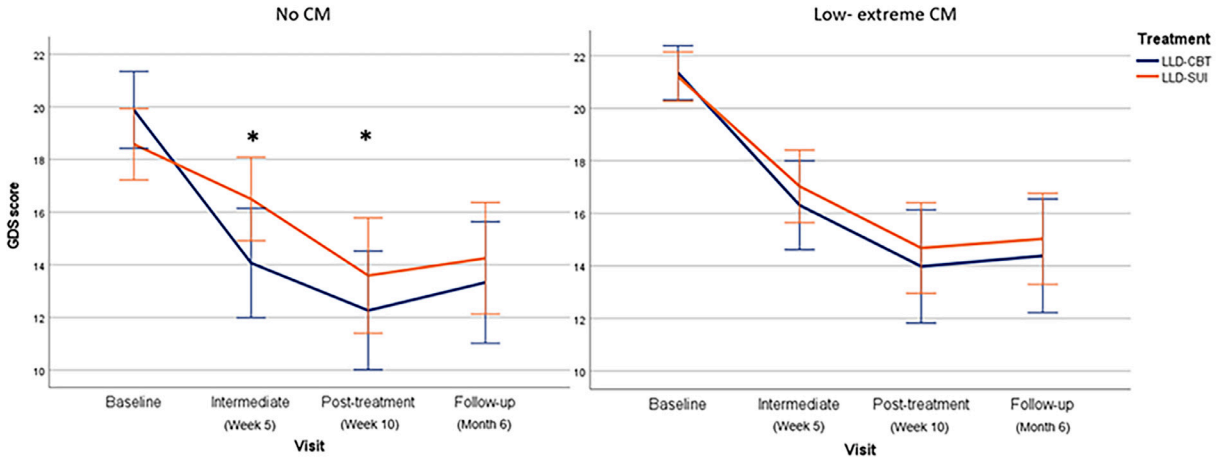
on depressive symptom reduction in patients with CM in both arms.

The Influence of CM Subtypes on Treatment Efficacy

Analogous to the CTQ overall score effects, the mixed model for repeated measures (MMRM)l for emotional neglect (EN) showed a main effect of treatment favoring the LLD-CBT group ($F(1,216.02) = 4.43$; p = .037, change in GDS_{emmd}= −1.33, [95% CI: −2.87 to 0.22]). However, LLD-CBT was superior only at week 5 and post-treatment, and only in the absence of EN or with low to moderate EN (Table 4). The between treatment-group effect size for all patients with no EN (CTQ EN ≤ 9) was d = 0.61, [95% CI: −0.10 to 1.13] at intermediate and d = 0.38, [95% CI: −0.15 to 0.90] at post-treatment. For patients with low to moderate EN (CTQ EN >9 and ≤14) the effect size was d = 0.45, [95% CI: −0.05 to 0.94].

Similarly, there was a main effect of treatment in the emotional abuse (EA) model showing a superiority of LLD-CBT compared to SUI ($F(1,221.68) = 5.62$;

FIGURE 3. Mean GDS score over time for the LLD-CBT and SUI group, divided by CM severity. Error bars show standard deviation. For the graphic presentation, we used the categorization of CM severity from MacDonald and colleagues[25]: No CM: CTQ ≤36, CM: CTQ >36).



p = .019, change in GDS_{emmd}= −1.42, [95% CI: −2.96 to 0.12]). Yet, the significant greater depressive symptom reduction in LLD-CBT was present only at week 5 measure and when EA was absent (*d* (CTQ EA ≤8)= 0.52, [95% CI: 0.15 to 0.89]) or low to moderate (*d* (CTQ EA >8 and ≤12)= 0.10, [95% CI: 0.55 to 0.74]).

For physical abuse (PA), the MMRM revealed a greater depressive symptom reduction in LLD-CBT ($F(1,225.06) = 10.71$; p = .001, change in GDS_{emmd} = −1.38, [95% CI: −2.88 to 0.13]), qualified by a significant treatment*PA interaction ($F(1,216.69) = 7.64$; p = .006). Only in the absence of PA, LLD-CBT led to a greater depressive symptom reduction than SUI at week 5 (*d* (CTQ PA ≤7) = 0.65, [95% CI: 0.32 to 0.97]), post-treatment (*d* (CTQ PA ≤7)= 0.45, [95% CI: 0.12 to 0.78]) and follow-up, *d* (CTQ PA ≤7) = 0.42, [95% CI: 0.09 to 0.75]).

For physical neglect (PN), there was a greater depressive symptom reduction in LLD-CBT than in SUI at week 5 when PN was absent, *d* (CTQ PN ≤7) = 0.37, [95% CI: −0.03 to 0.78]) or low to moderate, *d* (CTQ PN 8-9) = 0.82, [95% CI: 0.17 to 1.47]). Furthermore, there was a significant main effect of PN ($F(1,207.16) = 5.37$; p = .021) with estimated marginal means indicating that greater PN severity is linked to a smaller reduction in depressive symptoms, regardless of treatment.

There was no effect of sexual abuse (SA) on change in GDS. Results of the MMRMs for CTQ subtypes are shown in Table 4.

Response and Remission

At post-treatment, there was no significant group difference between patients with and without CM, neither in response [42 of 125 (33.6%) responded in CM group vs. 42 of 104 (40.4%) in the no CM group; $\chi^2 = 1.125$; p = .289] nor in remission rates [CM: 39 of 125 (31.2%) vs. no CM: 35 of 104 (33.7%); $\chi^2 = 0.156$, p = .693].

CONCLUSIONS

In this secondary analysis of a multicenter, randomized clinical trial, we found no evidence that a structured, specific therapy for late-life depression outperforms a non-specific supportive intervention in older patients with a history of early trauma. Both treatments reduced depressive symptoms in patients with CM with large pre-post effects, without a significant difference between the interventions. However, when the overall CM severity was low, the LLD-CBT patients exhibited a significantly greater depressive symptom reduction than the SUI patients. The same pattern was observed for the subtypes emotional/physical neglect and emotional/physical abuse, but not for sexual abuse. However, these interactions of CM severity and depressive symptom reduction in the treatment groups did not persist at the 6-month follow-up. Only the interaction between physical

TABLE 4. Results of the MMRMs With the Fixed Effects Baseline GDS Score, Therapist, Treatment Group, Visit, Respective CTQ Subtype Score and the Interactions Treatment Group*Visit and Treatment Group*CTQ Subtype Score. For Readability, Only Significant Results are Shown

CTQ subtype	Fixed covariate values for emm	Visit	df	emmd (LLD-CBT − SUI) of change in GDS	95% CI	p-Value
EN	EN = 6 (no EN)	Intermediate (week 5)	203.31	−3.28	−5.72; −0.84	.010
		Post-treatment (week 10)	262.01	−2.85	−5.56; −0.12	.041
	EN = 12 (low-moderate EN)	Intermediate (week 5)	203.31	−2.02	−3.55; −0.49	.010
EA	EA = 6 (no EA)	Intermediate (week 5)	211.57	−2.74	−4.56; −0.93	.003
	EA = 11 (low- moderate EA)	Intermediate (week 5)	205.67	−1.55	−3.07; −0.03	.046
PA	PA =5 (no PA)	Intermediate (week 5)	214.25	−2.97	−4.68;−1.27	<.001
		Post-treatment (week 10)	238.05	−2.44	−4.53; −0.35	.022
		Follow-up (month 6)	239.95	−2.41	−4.52; −0.29	.026
PN	PN = 6 (no PN)	Intermediate (week 5)	209.75	−2.15	−4.09; −0.21	.030
	PN = 9 (low-moderate PN)	Intermediate (week 5)	201.82	−1.59	−3.08; −0.10	.036
SA		No significant results				

MMRM: mixed model for repeated measures, Emm: estimated marginal means, Emmd: estimated marginal mean difference, df: degrees of freedom, CI: confidence interval, CTQ: childhood trauma questionnaire, LLD-CBT: cognitive behavioral therapy for late-life-depression, SUI: supportive intervention, GDS: Geriatric depression scale, EN: emotional neglect, EA: emotional abuse, PN: physical neglect, PA: physical abuse, SA: sexual abuse.

abuse and depressive symptom reduction in both groups remained significant at follow-up. Higher severity of physical neglect was linked to a smaller reduction of depressive symptoms over time in both interventions.

Unexpectedly, both interventions performed equally well in patients with early trauma. In line with a meta-analysis on supportive therapy in depression,[27] these findings imply that the substantial reductions in both treatments in patients with CM may be caused predominantly by factors outside of therapy, as life events, and by common psychotherapeutic factors.

Furthermore, unlike a meta-analysis examining adolescents and mixed aged adults,[11] we did not observe a smaller response or remission rate in patients with CM. This discrepancy suggests that effects of childhood maltreatment on depression treatment outcomes may vary across different stages of life.

However, the question remains why LLD-CBT was more effective in patients without early trauma.

Patients with CM often display heightened interpersonal problems, alterations in social cognition,[28] and a propensity for anxious and avoidant attachment styles.29 Moreover, research has consistently shown impaired neuropsychological functioning, including long-term impairments in learning,[30] working memory, processing speed, attention, and intelligence in individuals with early trauma compared to their non-maltreated peers, both in healthy samples[31] and in patients with psychiatric disorders.32

Given the cognitive and social sequalae of CM, individuals with CM may encounter challenges in establishing a positive therapeutic alliance, which is crucial for the success of CBT[33] and may have difficulties with learning new skills or social tasks used in LLD-CBT. Moreover, high levels of physical and emotional maltreatment have been linked to reduced utilization of cognitive reappraisal strategies,[34] which are integral to LLD-CBT. Conversely, patients without CM may have demonstrated a greater capacity to harness the components of LLD-CBT, which could elucidate why LLD-CBT yielded better outcomes for patients without CM, while performing equivalently to SUI for those with CM.

It is important to recognize that both LLD-CBT and SUI may not fully meet the unique needs of individuals with a maltreatment history, particularly in addressing complex interpersonal issues related to abuse experiences. Specialized trauma sensitive therapies as CBASP have been shown to be more effective in patients with a history of childhood neglect and severe depressive symptoms[35] and therefore may offer a better-tailored approach for the transdiagnostic sequelae of CM.

Regarding the CM subtypes, LLD-CBT was more effective than SUI when there were no or only low levels of neglect or abuse, whereas the subtype sexual abuse had no influence on treatment outcomes. Patients with higher physical neglect displayed a smaller reduction of depressive symptoms, aligning with prior research linking physical neglect to increased depression severity and risk.[10,36] These findings highlight the importance of distinguishing CM subtypes, as their impact on depression may vary due to diverse impaired mechanisms or processes.[37] For instance, O'Mahen and colleagues[38] identified rumination in cases of emotional abuse and behavioral avoidance in emotional neglect as distinct impaired mechanisms mediating depression. Furthermore, a review identified various mechanisms mediating the link between emotional abuse and depression, such as early maladaptive schemas, hopelessness, negative cognitive styles, brooding rumination, and overall emotion dysregulation.[37] In addition, such dynamics manifest in effects on brain function varying between childhood neglect and abuse.[39]

Strengths and Limitations

To our knowledge, this is the first study comparing the efficacy of psychotherapy for patients with LLD and a history of CM. Still, it is a secondary exploratory analysis and MMRMs have not been corrected for multiple testing including Type I error inflation, and therefore, the results should be interpreted cautiously and require validation through further investigation. Additionally, the absence of a less intensive control condition or waiting list limits our ability to compare treatment outcomes against the untreated natural course of the disorder.

The study's strengths—including its multicenter design, a large number of patients, randomization, and adherence-to-manual monitoring, rater-blinding, and post-treatment follow-up—enhance the credibility of the findings. The active control condition was of

equal intensity and delivered by the same therapist as the LLD-CBT intervention to prevent systematic therapist or dose-response effects. The Childhood Trauma Questionnaire (CTQ) is a robust method for assessing CM[40] as it exhibits lower susceptibility to response bias than other measurements.[41]

It is noteworthy that our sample exhibited slightly lower prevalence of CM (55%) than a meta-analysis of depressed adult patients (62%).[12] Specifically, only 32% of our participants reported physical neglect, which appears relatively low for this specific cohort when considering the higher prevalence rates in the general German population.[42] This lower prevalence could be attributed to either a healthier sample or potential underreporting. Given that our sample consisted mainly of individuals born during or a few years after World War II—a period marked by food shortages, housing insecurity[43] and more prevalent violent parenting styles[44]—CM might have been underreported and considered 'ordinary' or 'common' during the adverse circumstances in this specific time period. As most patients and their parents were born in Germany, generalizability of our findings to international populations may be restricted.

Summary and Practical Implications

In summary, our analyses provide initial evidence for differential treatment effects in depressed older patients with and without CM. In patients who did not report a history of childhood trauma, we found a superiority of a more structured and specific treatment approach over a nonspecific supportive intervention. Furthermore, higher severity of physical neglect was linked to a smaller overall reduction in depressive symptoms. However, in patients with CM and in the sexual abuse subdomain, depressive symptom reductions were equally large in both arms.

These findings have several practical and mental health implications. First, they suggest that LLD individuals may be screened for CM. For patients without a history of CM, cognitive behavioral therapy may be preferable over SUI. For patients with CM, mental health practitioners can still provide effective treatment choosing either CBT or supportive psychotherapy, when specialized treatments such as CBASP are unavailable. Furthermore, since a supportive intervention is more straightforward to learn and teach compared to CBT or CBASP, it could potentially expand access to effective treatment in areas where specialized resources are scarce.

Secondly, these results emphasize the value of separating CM subtypes and understanding the underlying impaired mechanisms, as treatment outcomes may vary depending on the subtype. Specialized or modular therapy approaches might provide a more personalized treatment tailored to the unique needs of each patient.

In conclusion, while these results provide valuable insights into the treatment of LLD with a history of CM, further research is needed to better understand the complex nature of CM, its function as a determinant with social and cognitive sequelae, and its mediating role for treatment outcomes in this vulnerable population.

AUTHOR CONTRIBUTIONS

JM conceptualized the study, performed the statistical analyses, interpreted the data, and drafted the manuscript. ME conceptualized the study, interpreted the data, and edited the manuscript. ES contributed substantially to conceptualizing the study and edited the manuscript. WM and MHe advised with statistical analyses. FSD coordinated the trial. MHa conceptualized the study, interpreted the data, helped with the statistical analysis, and revised the manuscript. NZ helped with the conception and design of the study and revised the manuscript. ES, SR-H, MW, LF, KD, OP, FJ, BB, and MHau were the principal investigators at the trial sites. All authors critically reviewed and revised the manuscript and approved the final version.

DISCLOSURE/CONFLICTS OF INTEREST

The original study was funded by BMBF01KG1716. The authors report no conflicts related to this study or with any product mentioned or concept discussed in this article.

DATA SHARING STATEMENT

The data that support the findings of this study are not publicly available due to ethics restrictions but available from the corresponding author upon reasonable request with individual permission from local institutions ethics board.

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SUPPLEMENTARY MATERIALS

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