Compliance with CBT referral in nursing home residents diagnosed with depression: Results from a feasibility study

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ABSTRACT

Objectives: Patient-level factors that influence compliance with a recommendation for CBT in nursing home residents diagnosed with depression were identified.
Methods: Within a cluster-randomized trial on stepped care for depression in nursing homes (DAVOS-study, Trial registration: DRKS00015686), participants received an intake interview administered by a licensed psychotherapist. If psychotherapy was required, patients were offered a referral for CBT. Sociodemographic characteristics, severity of depression, loneliness, physical health, antidepressant medication, prior experience with psychotherapy, and attitudes towards own aging were assessed. A binary regression determined predictors of compliance with referral.
Results: Of 123 residents receiving an intake interview, 80 were recommended a CBT. Forty-seven patients (58.8 %) followed the recommendation. The binary logistic regression model on compliance with recommended CBT was significant, $\chi^2(9) = 21.64$, p = .010. Significant predictors were age (Odds Ratio (OR) = 0.9; 95 % Confidence Interval (CI) = 0.82, 0.99; $p = .024$) and depression ($OR = 1.33$; 95 % $CI = 1.08, 1.65$; $p = .008$).
Conclusion: Within the implemented setting compliance rate was comparable to other age groups. Future interventions should include detailed psychoeducation on the benefits of psychotherapy on mild depressive symptoms in older age and evidence-based interventions to address the stigma of depression. Interventions such as reminiscence-based methods or problem-solving could be useful to increase compliance with referral, especially in very old patients (80+). Language barriers and a culturally sensitive approach should be considered when screening residents.

1. Introduction

Structural and organizational obstacles as well as demographic and psychological factors have been considered reasons why older adults use mental health services less often [1,2]. Additionally low rates of compliance with a recommendation for mental health treatment have been reported for older people with mental health issues [3]. While there are country specific obstacles of funding that impede older people in need of care to profit from psychotherapy, patient-related obstacles need to be understood. For older people

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living in nursing homes systematic research assessing obstacles in the provision and utilization of psychotherapeutic care is very scarce. The present study explores factors affecting compliance with referral for CBT within nursing home residents suffering from depression.

1.1. Treatment of depression for residents of nursing homes

Compared to younger and community dwelling older adults (60+), residents of nursing homes show higher rates of mental health disorders - a difference that remains significant when controlling for neurocognitive disorders [4]. With reference to specific diagnoses, depressive disorders show significantly increased prevalence rates in nursing homes, ranging between 20 and 30 % [5,6] as compared to 5–9 % in the general adult population [7]. Several studies have shown that psychosocial interventions can reduce depressive symptoms and increase wellbeing in nursing home residents with and without cognitive impairment [8]. Especially CBT, reminiscence therapy, and problem-solving training have been found to be effective in significant short and long-term improvements among older people in long-term care facilities [9].

Even though psychotherapeutic treatment concepts for residents of nursing homes are available, actual psychotherapeutic care in this environment is hardly found outside of research projects [10,11]. Though several meta-analyses showed that antidepressants had less therapeutic effect in older people, as well as increased undesirable side effects, interactions, and the possible clinical consequences of polypharmacy [12–14], medication is almost exclusively recommended for nursing home residents suffering from depression [6]. The mismatch between the mental health needs of nursing home residents and the low variety of treatment opportunities is especially concerning as untreated mental illnesses in older people is associated with increased risks of mortality and suicide [15]. For older people with mood disorders, several studies found significantly higher costs in outpatient and inpatient care that cannot not be explained by the treatment of the mental illness alone [16]. The above-described evidence-practice gap and its consequences for patients and society should be addressed through sustainable and efficient care services.

1.2. Barriers to psychotherapy for older people

To our knowledge there are no studies that have researched the compliance with accessible psychotherapy nursing homes. Low rates of community-living older people in psychotherapy have been linked with factors such as reduced physical health, lack of barrier-free psychotherapy practices, travel distance, coverage of costs, and a missing integration of home visits [2,17,18]. Professionals have difficulties to correctly identify mental illness in old age [19], and refer them less often due to old age stereotypes and underestimated potential treatment success [20]. Several studies have shown that psychotherapists' willingness to work with older adults is low, due to assumptions about reduced treatment effectiveness and poor professional knowledge about geriatric patients [21,22]. In summary, it is very difficult for older people to initiate a first contact with a psychotherapist and subsequently start treatment. These barriers can be assumed to operate in an amplified way for older people living in nursing homes. Consequently, many authors have emphasized the need of integrating psychotherapy services in nursing homes, through salaried psychotherapists, in-house services, collaborative arrangements, interdisciplinary approaches, or collaborative care models [23–25].

However, even if favorable external conditions are created to integrate psychotherapy in nursing homes, the question remains whether residents will use this service. In addition to the factors described above, research explained the non-use of psychotherapy among older people with stigma about age(ing) and psychotherapy [26]. For example, older people have more negative beliefs about finding an appropriate treatment provider [27] and there is evidence of low perceived benefits of treatment among older people [28]. Furthermore, feared stigmatization from psychotherapeutic treatment has been identified as an inhibiting factor in this population [29]. On the other hand, feared stigma of seeking psychotherapy does not seem significantly higher in older adults than in other age groups [27]. Surveys with community-dwelling older adults have shown that older people are open to psychotherapeutic treatments and sometimes prefer them to pharmacological treatments [30,31].

1.3. Compliance with psychotherapy referral

Starting an advised treatment, or attending sessions, is one component of compliance, which in literature is defined as

> ' … the extent an individual's behaviour coincides with health-related instructions or recommendations given by a health care provider in the context of a specific disease or disorder. ' p.33 [32].

Research has found that 50–69 % of adult patients are compliant when referred to psychotherapy [33–35]. The largest and most recent study failed to identify age, race, marital status, education, or previous mental health treatment as predictors for compliance after referral form a general practitioner to a psychotherapeutic service [34]. Earlier research suggests that demographic and psychological factors are related to compliance with therapy after referral. A 2007 pan-European study that screened participants for depression in general practices found the presence of a confidant, previous use of services and the desire for change to be significant predictors for compliance with a referral [33]. In another study examining older people living independently and their participation in a psychological training offered, chronic illness and physical fitness were associated with high participation rates, while living alone and high levels of anxiety were associated with lower rates [36]. Only one study researched determinants of specialist mental health service use by nursing home residents [37]. They found that higher physical functioning predicted less mental health service use in nursing home residents whereas a reported mental health diagnosis made it more likely.

Research of compliance with psychotherapy recommendations among older people (living in nursing homes) is sparse and

outdated. Identifying predicting factors is necessary because some patients may lose out on appropriate treatment due to non-compliance after referral. In the present study, we investigated the following research questions.

(1) What is the rate of compliance with referral to CBT in nursing homes residents?
(2) Are demographic or psychological factors related to the compliance with a CBT referral in nursing home residents?
    (a) Are adaptive attitudes towards one's own ageing, severity of depression, loneliness, earlier psychotherapeutic treatment, and antidepressant medication related to a higher probability of compliance with a CBT referral?
    (b) Are higher age, lower education, worse physical fitness, and male sex associated with a lower probability of compliance with a CBT referral?
(3) What are the reasons residents of nursing homes are not compliant with a recommendation for a CBT?

2. Methods

2.1. Setting

The treatment referral was delivered within a controlled cluster-randomized trial on stepped care for depression (DAVOS-study) that implemented mental health treatment in nursing homes [38]. In cooperation with two social services organizations in Frankfurt/Germany (*Frankfurter Verband für Alten-und Behindertenhilfe e.V. and Agaplesion Markus Diakonie gGmbH*) ten nursing homes with more than 1250 care places were included and randomly assigned to three cluster groups. During a process of 2.5 years participants where continuously recruited in an open cohort (for an overview of recruitment and assessment see Fig. 1). Each cluster consisted of three or four different nursing homes that passed from control to intervention phase on predefined dates. All nursing homes and the included residents were informed of this schedule. In each facility, a case management program was implemented. The DAVOS case managers were nurses or social workers within the institution nominated by the management of the respective nursing homes. Case managers were responsible to pre-check the suitability of participants, inform them about the procedure of the study, and suggested contact with a psychotherapist in case of positive screening for depressive symptoms. Inclusion criteria consisted of being resident of a participating nursing home, being over the age of 60 and a sufficient level of cognitive functioning. Exclusion criteria for the DAVOS project were insufficient cognitive functioning, inability to provide consent or a current alcohol or substance-related disorder as obtained from the nursing home's documentation. For the screening the Depression Monitoring List (DeMol) with the integrated Patient Health Questionnaire [39] in a slightly modified version was used. It was supplemented by a question on specific suicide plans and a personal assessment by the case manager of non-specific symptoms (e.g., complaints of headaches, back pain, or dizziness) as well as a question on the case manager's personal assessment of irregularities (did you notice anything in particular during the screening interview)? (e.g. contradictions between behaviour and statements).

2.2. Intervention

Severity and frequency of the symptoms were assessed by the case manager using the DeMoL and depending on the result, three types of recommendation were made. (1) No symptoms: the case manager was suggested to screen again in two months. (2) A few symptoms: "watchful waiting" (screening in two weeks). (3) Noticeable symptoms: the psychotherapists in the project were informed and the participant was offered an initial interview in the facility to assess the ICD-10 criteria for the diagnosis of depression. Two licensed psychotherapists conducted the intake interviews and were supervised every fortnight by an experienced psychotherapist and supervisor with expertise in psychotherapy for older people and the assessment of mental capacity. The interview included questions on prior experiences with psychological or psychopharmacological treatment, specific goals associated with psychotherapy and assessed and suicidal risk. Information about depression, effects of psychotherapy generally and CBT specially for older patients, coverage of costs, confidentiality and treatment delivery in the residence was given in a verbal educational talk. An information sheet explaining these points in elaborated plain language was given to the residents. To ensure understanding, patients were asked about their understanding of what was being communicated and were encouraged to ask questions about the therapy process and delivery at the end of the intake interview. The residents confirmed in writing that he had received this information. Patients were informed that the case manager was available to answer questions and that a second interview with the psychotherapist could be scheduled if patients, their relatives or legal carers had questions about starting CBT. In accordance with guidelines for psychotherapy with older adults, patients with mild cognitive, hearing, or visual impairment were offered a shorter session with a second follow up appointment, breaks within the intake interview or adapted material [40]. If a mild to severe depressive episode (F32.0–2), a mild to severe recurrent depressive disorder (F33.1–2), a Dysthymia (F34.1) or an adjustment disorder with a prolonged depressive reaction (F43.21) were diagnosed, the patients were recommended a CBT treatment within the study. The therapy files with all formal and content-related documentation were kept at the Centre for Psychotherapy of the Goethe University Frankfurt and were not accessible to all professional groups involved in DAVOS, but only to the psychotherapists. The DAVOS study has been approved by the ethics committee of the Goethe University of Frankfurt am Main, Germany (reference 129/18) and conforms to the Declaration of Helsinki (Version Fortaleza, 2012). Trial registration is DRKS00015686 (www.drks.de).

2.3. Measures

If not otherwise specified, data was collected in face-to-face interviews conducted by research assistants, mainly students

completing their master's degree in psychology at the Goethe University Frankfurt. Participants received were informed about the possibility of participating in a study on the treatment and prevention of depression for residents with and without depressive symptoms. Material explaining the background, scope and possible interventions in elaborated plain language was given to the residents. Written informed consent was obtained from all participants before the assessment started. All analysis were performed using IBM SPSS-Software 27.

2.4. Predictors

Socioeconomic data. Personal and sociodemographic data such as age, sex, education, degree of care, time living in the nursing home were obtained in a structured interview.

Cognitive functioning. The Mini-Mental State Examination (MMSE) was used to screen for cognitive impairment. It is a widely used time effective instrument that tests several areas of cognitive performance [41]. A proposed 2-factor solution was replicated in a sample of nursing home residents [42]. In a review of community samples the MMSE showed a pooled estimate for the diagnostic accuracy with sensitivity of 0.97 (95 % CI 0.83, 1.00) and a specificity of 0.70 (95 % CI 0.50, 0.85) thus the authors concluded the assessment with the MMSE should not be used in isolation to confirm or exclude a neurodegenerative disease [43]. We cross-checked the MMSE score with the presence of a possible dementia diagnosis in the nursing home documentation. In case of ambiguity, a medical consultation was suggested. If dementia with moderate to severe cognitive impairment was diagnosed by the physician, the patient was excluded from the study.

Medication. Current medication was obtained from the nursing home documentation.

Severity of depression. Depressive symptoms were assessed using the Geriatric Depression Scale (GDS) [44]. Compared with the longer GDS-30 the GDS-15 showed better psychometric properties for nursing home residents with values for sensitivity of (95 % $CI =$ 0.86, 0.90) and specificity of .74 (95 % $CI =$ 0.73, 0.75) [45].

Experience of Loneliness. The subjective experience of loneliness was assessed with two questions from the UCLA Loneliness Scale [46]. The German version of the UCLA has been validated for samples of older adults living independently with sufficiently good psychometric properties [47]. Participants were asked to answer the questions 'I have people around me that I can talk to' and 'Nobody really knows me' on a 5-step Likert scale.

Attitudes toward Own Ageing. The Philadelphia Geriatric moral scale (PGCMS) is a 22-item instrument with a dichotomous answer option [48]. People's attitudes towards own aging are assessed on one scale with 5 questions. The assumed 3-factor structure was be found in a study with community dwelling older adults and with a Cronbach's alpha of .85 the subscale used in our study showed good internal consistency [49].

Physical Health. The subjective health was assessed asking one question regarding the subjective experience of physical health 'How would you describe your general health' on a 5-step Likert scale.

Treatment experience. Participants were asked if they had ever been diagnosed with a mental health disorder and received psychotherapeutic treatment for it. The answer was coded in a dichotomous format ('Yes, treatment experience had' vs. 'No, never used Psychotherapy').

2.5. Outcome

Patient Compliance. After the intake interview, the licensed therapist recommended CBT if indicated. Patients were asked if they wanted to start a home delivered cognitive behavioral psychotherapy to treat their depression. Their answer (yes/no) and the reason for non-compliance were documented within the interviewer's sheet. If the patient needed time to think it through or speak to a family member a second appointment was offered. If the patient attended a first session of CBT after the referral, compliance with referral was coded.

2.6. Quantitative analysis

As 34 observations (5.31 %) were missing we estimated by using five multiple imputations (m = 5) with the variables in the model (age, sex, antidepressant medication, depressiveness, experienced loneliness, physical health, treatment experience, attitudes toward own ageing and compliance). This procedure for dealing with individual missing values avoids the reduction of the sample size by case exclusions as well as distorted results when replacing them with mean values or similar [50]. To understand the pathways of compliance with a CBT referral well, we wanted to ensure that all study participants had an equal chance of receiving an intake interview, so we conducted a *t*-test for independent samples as a preliminary analysis. Homogeneity of variances was asserted using Levene's Test, which showed that equal variances could not be assumed for all variables ($p = .001$; .875). Therefore, we used Welch's *t*-test to identify significant group differences. It is less sensitive to unequal variances and prevents the result of a type I error (false positive effect). To predict factors in association with compliance with CBT referral, we calculated a binary logistic regression to predict the outcome 'compliant'/'not compliant'. Assumption testing showed that correlations between predictor variables were generally low ($r < .5$), indicating that multicollinearity would not be a confounding factor in the following analysis. Linearity was tested using the Box-Tidwell [51] procedure. Bonferroni correction was applied to all ten terms in the model [52]. All variables were found to follow a linear relationship. Outliers were controlled using z-values. As the observations seemed plausible and were not ±3 standard deviations under or above mean values, we decided not to exclude those cases in favor of statistical power. All independent variables were entered into the equation in one step. Regarding statistical power, we followed the recommendation for 5–9 cases per

independent variable [53].

2.7. Qualitative analysis

We followed qualitative content analysis according to Kuckartz [54] to analyse reasons of non-compliance with referral as noted down by therapists after the intake interview. Sentences including more than one reason were divided into single coding units by the first author. A coding unit was defined to be constituted by one reason for non-compliance. With an inductive procedure a coding system was developed by the first and last author. In an initiating text work, the notes were read several times and key themes were noted down. In a joint meeting of both raters, inductive categories were assigned definitions and textual examples. In two iterations of rating the single units, categories were added and definitions were adjusted. Subsequently three overarching themes that grouped existing categories were found in a joint discussion. A final version of the code system was used to code all units. A backward check was made to control the fit of the smallest coding units to the overarching themes The category system appeared exhaustive and reflected the content of the research question so that no further adjustments were made.

3. Results

3.1. Sample characteristics

In total, 449 residents participated in the DAVOS-study. Of those, 300 were women (66.4 %) and mean age was 82.43 ($SD = 10.63$). The majority of the sample had ten years of school education ($n = 136$, 37.1 %). Mean MMSE was 24.37 ($SD = 4.49$) and degree of care ranged from two to five with most people having a degree of care of 3 ($n = 115$, 42.1 %). The mean time the participating residents lived in the care home was 2.87 years with values ranging from one week to nine years (see Table 1). Of the 47 patients, a total of 26 completed the CBT as planned after after 18 sessions (55.3 %). Fourteen patients dropped out during therapy (29.8 %). Six patients died during the course of the therapy (12.8 %) and one patient moved out of the nursing home, so that CBT could not be continued within the project.

Comparison of mean values. There were 123 participants receiving an intake interview and 326 who did not (N = 449) (see Table 1 & Fig. 1). The age of the participants who received an intake interview ($M_{age} = 80.60$, SD = 9.9) and those who did not ($M_{age} = 82.48$, SD = 10.7) hardly differed. Most people in both groups had a degree of care of 3; 41.18 % in the group that received an intake interview; 42.55 % in the group that did not receive an intake interview. In the group that received an intake interview 69,1 % ($n = 85$) of the residents were female, most had 9 years of education (42.02 %), 3.33 % did not report German as their native language, the average MMSE was 24.46 ($SD = 4.06$), they had been residents of the respective facility for approximately 1.73 years ($SD = 2.24$) residents of the respective facility and average GDS scores of 6.52 ($SD = 3.87$) were assessed. In the group that did not receive an intake interview 68,1 % ($n = 222$) of the residents were female, most had 10 years of education (41.11 %), 12.3 % did not report German as their native language, mean MMSE was 24.34 ($SD = 4.72$), hey had been residents of the respective facility for about 3.46 years ($SD = 4.23$) and average values of the GDS of 4.78 ($SD = 3.79$) were assessed.

Age, sex, MMSE, degree of care and years of education did not differ significantly between the two groups. With regard to the native language, there was a significant difference between the groups, with residents not receiving an intake interview reporting German as their native language less often $t(188.05) = -2.63$, $p = .009$. Time living in the nursing home differed significantly as well between the groups with residents that didn't receive an intake interview living in the facility longer than those that received an intake interview, $t(299.44) = 3.99$, $p < .001$. This was not explained by younger age or higher depressiveness after the move, as none of these correlations were significant (time in nursing home * age $r(298) = 0.002$, $p = .978$), (time in nursing home * depressiveness $r(262) = -0.099$, $p = .109$). Values for depressiveness also differed significantly between the two groups, with higher average values on the GDS in the group of residents receiving an intake interview $t(188.05) = 3.49$, $p < .001$.

3.2. Binary logistic regression

Of the 123 residents that participated an intake interview, 80 residents received a recommendation for psychotherapeutic treatment and were referred to a psychotherapist (in training) offering home visits. A total of 47 residents (58.8 %), aged 60–96 (33 woman and 14 men, $M_{age} = 81.53$, $SD = 7.86$) decided to start a home delivered cognitive behavioral treatment. 33 residents (41.2 %) aged 67–100 (26 women and 7 men, $M_{age} = 87.57$, $SD = 7.51$) did not comply with the referral.

The binary logistic regression model was conducted to determine the effect of age, sex, antidepressant medication, depressiveness, experienced loneliness, physical health, treatment experience and attitudes toward own aging on the likelihood of compliance after a referral for CBT treatment. The binary logistic regression model was statistically significant, $\chi^2(9) = 21.636$, $p = .010$ for the original data, significant values were obtained for all multiple imputations. Goodness-of-fit was assessed using the Hosmer-Lemeshow-Test, that indicated a good model fit with a non-significant outcome ($\chi^2(8) = 9.07$; p = .337). Nagelkerkes's indicated a good amount of explained variance with $R^2 = 0.40$ (Backhaus et al., 2006). Our model identified 75.40 % percent of the cases in the original data. The mean value for the imputed data was slightly bigger with 76.08 % correctly identified cases.

Table 2 shows the combined data for the single variables in a binary logistic regression after multiple imputation. Significant factors of the equation were age ($p = .024$) and depressiveness assessed with the GDS ($p = .008$). Higher age made the start of a therapy less likely ($OR = 0.90$; 95 % $CI = 0.82$, 0.99), whereas higher values in the GDS made the compliance more likely ($OR = 1.33$; 95 % $CI = 1.08$, 1.65). Non-significant predictors of compliance with referral for CBT among nursing home residents were sex (with a negative

association with female sex) (*OR* = 0.54; 95 % *CI* = 0.16, 1.85; *p* = .324), education (*OR* = 1.99; 95 % *CI* = 0.99, 4.03; *p* = .055), antidepressant medication (*OR* = 1.79; 95 % *CI* = 0.55, 5.81; *p* = .334), experienced loneliness (*OR* = 0.80; 95 % *CI* = 0.43, 1.51; *p* = .492), physical health (*OR* = 0.87; 95 % *CI* = 0.38, 1.97; *p* = .736), psychotherapeutic experience (*OR* = 1.59; 95 % *CI* = 0.38, 6.63; *p* = .525) and attitude towards own aging (*OR* = 1.59; 95 % *CI* = 0.75, 2.17; *p* = .366).

3.3. Qualitative assessment of reasons for non-compliance

For the 33 persons that didn't start therapy after receiving a recommendation, the therapists noted reasons for non-compliance on their intake interview sheet. The grouped answers and frequencies of those can be seen in table 3. Overarching concepts can be identified in the areas of reservations about psychotherapy in particular (no motivation for therapy, not interested in therapy, distrust of the therapist, & no goals for therapy), treatment reservation in general (no motivation for talking, feared aggravation, & no motivation for change), and symptom impairment (no hope for change, no psychological strain, & severity of depression).

4. Discussion

This study contributed to knowledge about compliance with referral for CBT in the scope of an implemented stepped care design for older nursing home residents diagnosed with depression. Associations between demographic and psychological factors and the attendance at at least one CBT session when offered as in-house service within a feasibility study were analyzed using a binary logistic regression. Reasons for non-compliance were assessed with an open-ended question and grouped according to underlying topics. In our study, of the 80 referred residents 58,8 % followed the recommendation for CBT and started a treatment. This finding is consistent with results in younger populations with elevated depression scores and rates of compliance with a recommended psychological intervention [33–35]. We can assume that financial and organizational factors that usually prevent older people in need of care from entering psychotherapy [23,24] have been reduced by the design of the study with home-visits, a first contact established through a familiar person within the facility, direct referral, and insurance coverage, allowing for a compliance rate similar to younger and independently living patient groups. The overall study design of DAVOS was a multidisciplinary concept involving nurses and social workers from each facility (case managers) as well as psychotherapists and medical doctors. Since the exchange of information and the initiation of interventions usually took place between two of these professions, they can also be classified as one-to-one traditional consultation-liaison services. Future implementation concepts should focus on a multidisciplinary team approach, where all professional groups involved are in regular joint exchange [55].

The finding that people reporting elevated depressive symptoms seek and attend psychotherapeutic treatment more frequently than those with little or no symptoms has been reported for both younger people and older people living in the community [2,56] and was displayed by the researched group in this study as well. However, subclinical depressive symptoms, especially in older people, represent the main factor for an increased risk of developing a more severe depressive episode [57] and, therefore, compliance would be desirable even for less severe symptom burden.

In this study lower age was identified as a second significant predictor for a higher compliance rate after referral. This fits in with earlier findings where higher age was consistently negatively related to mental health treatment [17,37,56] and non-compliance with psychotherapy after the first assessment [3,58]. It is notable that chronological age showed a significant effect while attitude towards one's own aging and subjectively rated physical health did not in our study. Brickman and colleagues hypothesized that values such as self-reliance are more prevalent among older people born in the first half of the 20th century, making earlier cohorts show greater reservation to utilize (psychotherapeutic) treatment services [40]. In line with that, the most frequently named reasons for non-compliance were specific reservations about psychotherapy or the psychotherapist within our study. Studies have shown a shift over the past 40 years toward more positive attitudes among the general population toward psychotherapy for depression [59] and a preference for psychotherapy even among older subgroups (75+) [30], with a preference for supportive interventions over CBT [31]. What seems to be related to chronological age rather than cohort are prejudices against mental illnesses. An age-period-cohort analysis showed that negative attitudes toward depression increase with higher age – independent from the cohort [60]. Prejudice and stigma towards depression are significantly related to reduced mental health service use in depressed individuals [61]. Furthermore, social selectivity theory suggests that people who perceive their (life) time as finite and limited place a greater emphasis on positive and well-being-enhancing activities and contacts [62]. In line with that a study on the differences in therapy goals showed that the older participants wanted to reduce their depressive symptoms just like the younger ones but were significantly more interested in well-being and functioning [63]. The sample of this study consisted mainly of "young old" people with a mean age of 68. It is worth considering that this well-being-oriented formulation of (therapy) goals is even more important for very old people (80+) and for people living in a nursing home, since they operate with shorter time horizons than younger or physically more well people [64]. Based on these previous studies, our result that higher age is related to reduced compliance with a recommendation for CBT could be explained by a pronounced stigma of depression with higher age, prejudice against psychotherapy within the older cohort as well as a preference for more supportive interventions in this multimorbid patient group.

Special attention should be paid to the finding that residents who lived longer in the nursing home and those who did not speak German as their native language were less likely to receive an intake interview. Older people with a history of migration face specific barriers and facilitators using the (mental) health system in the country they live in [65]. With the data collected in our study we cannot draw sufficient conclusions on why residents with a history of migration did receive an intake interview less often than those without a history of migration. Possible explanations could be a language barrier, prejudice against psychotherapy on the part of the resident or considerations about the resident's attitude towards psychotherapy on the part of the case manager. Nevertheless, we

identified a marginalized subgroup that might need a further adapted approach when screening residents of nursing homes for depression. While studies were able to show, that promoting health care literacy in older, marginalized patients is one way to increase treatment compliance [66], it does not sustainably reduce stigma towards mental illness [67]. A meta-analysis showed that continuum beliefs about mental illness are consistently associated with lower stigma [68]. Interventions appeared to be especially effective when they promoted a process of identification with the person suffering from mental illness for example using stories. Further research is needed to determine the feasibility and effectiveness of programs to reduce stigma about mental illness in the older adults (in need of care) and the association with treatment utilization and compliance. Future research should capture non-compliance and it's reasons more comprehensively and systematically throughout the therapy process. Internalized age images should be assessed using state of the art implicit measurement tools [69]. Beliefs about mental illness and its origins as well as attitudes towards different forms of psychotherapy, taking into account generational differences and the impact of migration history, should ideally be investigated using a mixed methods approach of quantitative and qualitative surveys, as data is only available for older community dwelling adults [1,28, 30] and is missing for nursing home residents. Despite the need for a broad and detailed survey of a heterogeneous life reality of this patient group, it is important to pay special attention to the duration of the assessment. Time-efficient procedures should be preferred.

4.1. Implication for practice

The findings of this study emphasize the impact of a well-structured multidisciplinary concept with regular joint exchanges for all professional groups involved in treatment to implement psychotherapy in long term care settings. Questions of geographical and temporal organisation must be taken into account, as well as facility- and country-specific financing systems [8,23,55]. Our results showed that older nursing home residents are not a homogenous group and that subsets of residents miss out on appropriate treatment. Those with mild depressive symptoms and those of higher age are less likely to follow a referral. Gatekeepers like nurses and general practitioners should be trained to create favorable pathways in care facilities by increased psychoeducation about depression and its treatability in older age [66]. Evidence based interventions to reduce the stigma of mental illness like materials that include relatable success stories of psychotherapy treatment with older nursing home residents [68] as well as options of well evaluated more supportive forms of psychotherapy such as reminiscence-based methods and problem-solving [9] may be a promising way to increase the compliance rate with referral, especially for older residents (80+). Residents with a history of migration seem to face special barriers to access psychotherapeutic services. Accessibility could be increased if practitioners on all levels are appropriately trained in managing their own implicit biases, the epidemiology of illness in (other) ethnic groups such as ethnorelativism [70]. Our findings also suggest a possible need for screening tools and psychotherapeutic services in languages of prominent migrant groups of the respective region. Native-speaking nurses, psychotherapists, translator services or the use of resource-efficient technical support could be helpful in this context [70,71].

4.2. Study limitations and strengths

The data of this article was collected within a feasibility study, thus the internal reliability of the results is limited. The lengthy questionnaires and interviews prevented many residents from participating in the study and increased the risk of dropping out before an intake interview was offered. We must also acknowledge that we have only covered a limited range of the behavioural repertoire of compliance when defining the attendance of a first session after referral as compliant behaviour in this study. Furthermore, the small sample offered an intake interview was entirely Caucasian, with mainly German as the native language. This, together with the fact that we only included patients with depression as their main diagnosis, restricts the ability to generalize results to a wider population.

Despite these limitations, we were able to show that with a multidisciplinary approach CBT can be delivered to residents of nursing homes suffering of depression at a similar rate to younger adults. These findings can help reduce ageism related barriers to older people (in need of care) and thereby improve their access to mental health care. We were able to identify predictors of compliance with CBT referral, which can help modify and integrate future treatment services more efficiently into everyday care. The external validity of the present study is high, given that the intervention was integrated over a long period of time into the daily routine of the nursing home, in collaboration with the in-house staff, working under real-life circumstances.

Ethics statement

The DAVOS study has been approved by the ethics committee of the Goethe University of Frankfurt am Main, Germany (reference 129/18) and conforms to the Declaration of Helsinki (Version Fortaleza, 2012).

Funding

Data availability statement

The analytic methods, statistical code and the modified version of the DeMol used for this paper are available upon request to the author. The data collected can only be analyzed and published but cannot be passed on to third parties as the authors do not have the

permission to share the data in accordance with the approved ethics proposal.

CRediT authorship contribution statement

Declaration of GENERATIVE AI and AI-assisted technologies in the writing process

During the preparation and completion of this work none of the authors used AI or AI-assisted technologies (including figures and illustrations).

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendices.

Table 1
Descriptive statistics: Sample sizes, means and standard deviations for all participants, separated by group

	All Participants	Participants			
		a) No intake interview	b) Intake Interview		
				No Referral	Referral
Characteristic	N(%)				
N	449*[1]				
n		326 (72.00)	123 (27)	43 (9)	80 (17.8)
Sex (female)	307 (68.4)	222 (68.10)	85 (69.1)	27 (62)	58 (72.5)
Education					
A-Levels	96 (25.81)	60 (23.72)	36 (30.35)	9 (21.43)	27 (35.51)
Secondary school	137 (36.83)	104 (41.11)	33 (27.73)	13 (30.95)	20 (27.3)
Primary school	127 (34.14)	77 (30.43)	50 (42.02)	20 (47.62)	30 (39)
Mother tongue German*[2]	223 (92.1)	107 (87.7)	116 (96.7)	39 (90.7)	77 (97.5)
	123 (27)				
Intake Interview					
Started Psychotherapy	47 (10)		47 (38.2)		47 (58.7)
	M(±SD)				
Age	82.5 (10.5)	82.48 (10.7)	82.60 (9.9)	79.90 (12.09)	84.0 (8.2)
Degree of care	2.89 (0.94)	2.8 (0.82)	2.94 (0.92)	2.69 (0.93)	3.04 (0.9)
MMSE	24.37 (4.49)	24.37 (4.72)	24.46 (4.06)	24.54 (4.81)	24.46 (3.64)
Time in care home*[2]	2.54 (3.76)	3.46 (4.23)	1.92 (2.24)	1.73 (1.92)	2.07 (2.46)
GDS*[2]	5.67 (3.92)	4.78 (3.79)	6,51 (3,87)	5.07 (3.69)	7.27 (3.76)

Note: N = Total sample, n = Fraction of the sample, M = Mean value, SD = Standard deviation, MMSE = Mini-Mental State Examination (Scores of 24 to 30 indicate no pathological cognitive ability. Scores of 19–23 indicate a mild, scores 10–18 a cognitive impairment. Scores ≤ 9 indicate severe cognitive impairment), GDS = Geriatric Depression Scale (Scores of 0 to 5 indicate no diagnosis of depression, 6 to 10 a mild to moderate and 11 to15 a severe form of depression). *1 Reported are the valid percentages. *2 Significant differences between the groups a) and b) were found.

Table 2
Binary Logistic Regression of Predictors of Compliance with Psychotherapy (N = 80)

Predictor	B	SE	p	OR	OR [95 % CI]
Age	−.11	.05	.024	0.90	[0.82–0.99]
Sex	−.62	.63	.324	0.54	[0.16–1.85]
Education	.69	.36	.055	1.99	[0.99–4.03]
Antidepressant	.58	.60	.334	1.79	[0.55–5.81]
Depressiveness	.29	.11	.008	1.33	[1.08–1.65]
Loneliness	−.22	.32	.492	0.80	[0.43–1.51]
Physical health	−.14	.42	.736	0.87	[0.38–1.97]

Table 2 (*continued*)

| Predictor	B	*SE*	*p*	*OR*	OR [95 % CI]
Psychotherapeutic Experience	.46	.73	.525	1.59	[0.38–6.63]
Attitude towards own Aging	.24	.27	.366	1.28	[0.75–2.17]
constant	.69	5.127	.204	681.332	[.029–16159752.518]

Note: B = unstandardized regression coefficients; SE = standard error; OR = odds ratio; CI = confidence interval; Female was treated as the reference category for sex.

Table 3
Reasons for non-compliance as perceived by the therapists

	N	%
Reservations about Psychotherapy	17	39,53
No motivation for psychotherapy	8	18,60
Not interested in psychotherapy	3	6,97
Distrust of the psychotherapist	3	6,97
No goals for psychotherapy	3	6,97
Symptom impairment	11	25,58
No hope for change	6	13,95
Severity of depression	1	2,32
No psychological strain	4	9,30
Treatment reservation in general	10	23,26
No motivation for talking	5	11,63
Feared aggravation	4	9,30
No motivation for change	1	2,32
No reasons given	**4**	**9,30**
Total	**42**	

Note: Multiple answers were possible.
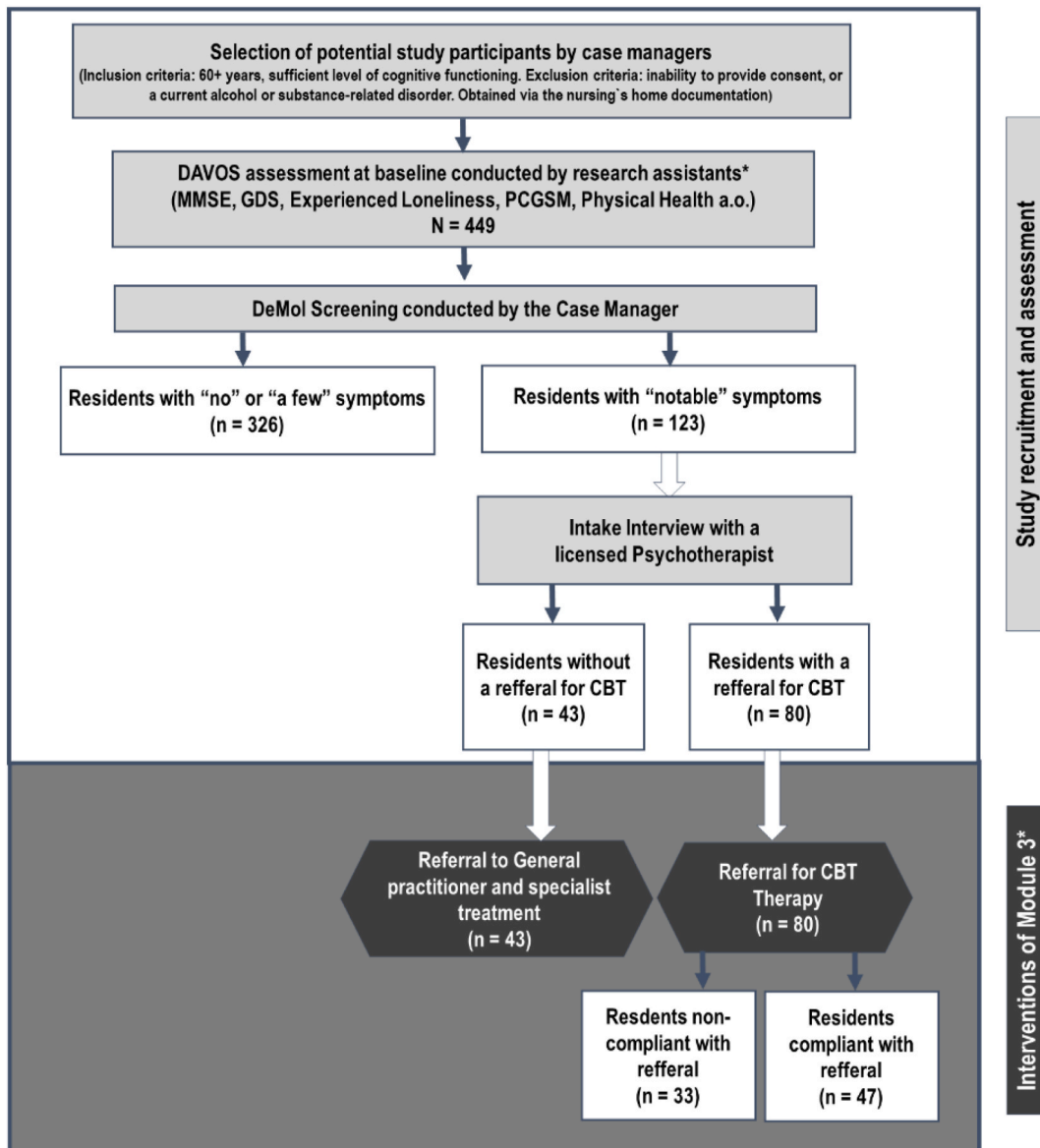
Fig. 1. Shows an excerpt of the case management programme and the related assessments and interventions used in the DAVOS study. *For a full description of all assessments and all three intervention Modules see: Tesky et al., 2019. MMSE = Mini-Mental State Examination, GDS = Geriatric Depression Scale. PGCMS = Philadelphia Geriatric moral scale.

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