Late-life depression in people from ethnic minority backgrounds: Differences in presentation and management

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Highlights:

- 5,546 patients with late-life depression were studied
- Patients from ethnic minority backgrounds presented and were treated differently than the majority population
- Patients with a Black background more frequently presented with psychotic problems and were less likely to be prescribed antidepressants
- Hopelessness, guilt feelings and suicidal thoughts were less common in Black and South Asian patients

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Abstract (246/250)

Background:

An elevated risk of late-life depression has been suggested in older adults from minority ethnic groups, but little is known about ethnic group differences in symptom and treatment profiles. The current study aimed to compare symptoms and types of treatment between ethnic groups in patients with late-life depression.

Methods:

Data were extracted from the Clinical Record Interactive Search (CRIS) system for a large mental health care provider in South London. In total 5,546 individuals aged 65 and older diagnosed with late-life depression between 2006 and 2017 were included. Patients from ethnic minority backgrounds were compared to the White British individuals on the following features recorded at depression diagnosis: Mental and physical wellbeing as well as functional scales, individual depressive symptoms recorded, and treatments administered.

Results:

Black Africans and Black Caribbeans more frequently presented with psychotic problems and were significantly less likely to have antidepressant treatment prescribed post diagnosis compared to White British. White Irish had higher rates of substance use and sleep disturbance. Depressive symptoms of hopelessness, guilt feelings and suicidal thoughts were less common in Black Caribbeans, Black Africans and South Asians compared to White British.

Limitations:

Only patients with depression under a specialist mental health care provider were included in the study.

Conclusions:

Ethnic minority elders have significantly different presentations and undertake different types of treatment both across groups and relative to their White British counterparts. These differences need to be taken into consideration to optimise pathways into care and to personalise treatment.

Keywords: depression; ethnic minorities; depressive symptoms; antidepressants; health inequalities

Introduction

Ethnic Minority groups have been found to have higher prevalence of late-life depression relative to relative to reference groups, as well as lower rates of recognition, treatment and poorer outcomes (Pickett et al., 2013). It has been postulated that factors associated with ethnic minority status are likely to play a significant role in the genesis of these differences. However, ethnic minority elders remain an under-studied population, particularly in the UK. In their longitudinal study, Williams and colleagues (Williams et al., 2015) found prevalence of depressive symptoms to be highest in South Asian (15.5%) and Black Caribbean (17.7%) participants, nearly double those of White British (9.7%) participants. Furthermore, in older African Americans, depressive symptoms have been found to be associated with faster cognitive decline, particularly negative affect and anhedonia (Turner et al., 2015). Gilmer and colleagues (Gilmer et al., 2008) reported that, across all age groups, longer depressive episodes, are associated with older age, African American status and treatment within primary care.

In the UK, levels of under-treatment are high for late-life depression, with as many as 85% of older people affected receiving no health service input (Anderson, 2011), as well as reduced receipt of psychological therapies in older people with depression despite higher likelihood of benefit (Pettit et al., 2017). However, further inequalities in treatment receipt between ethnic groups have yet to be clarified, although lower levels of mental health service use and higher likelihood of mental health support from primary rather than secondary care have been described for older ethnic minority , compared to White groups (Gallo et al., 2005; Pingitore et al., 2001). This study therefore aimed to investigate differences in characteristics at diagnosis of late-life depression and in subsequent treatment receipt between ethnic minority and White British elders using data from an ethnically diverse location in the UK.

Methods

Data Source:

Data were acquired through the Clinical Record Interactive Search (CRIS) system. This provides access to anonymised electronic health records of patients within South London and Maudsley NHS Foundation Trust (SLaM), a large secondary mental health provider for one of the UK's most ethnically diverse areas in South East London with a population of over 1.36 million residents (Perera et al., 2016).

Participants and Design:

Patients diagnosed with late-life depression (aged 65 years or older at diagnosis) were ascertained from CRIS in the window between 1st January 2006 and 30th June 2017. Diagnoses were determined according to International Classification of Diseases, Tenth Revision (ICD-10) codes (World Health Organization, 2004) from structured fields and this information was supplemented by data on recorded diagnoses in free text fields (e.g. clinical correspondence) through a natural language processing algorithm (Perera et al., 2016). We also established whether a late-life depressive episode was considered to be in the context of a recurrent depressive disorder, as reflected in an F33 ICD-10 diagnosis code. Patients were excluded if no data on ethnicity were available, if they received a dementia diagnosis within 3 months of the index depression diagnosis, if there was any recorded bipolar affective disorder, or if the depressive disorder was considered in remission. As covariates for analysis we ascertained at depression diagnosis: gender and marital status from structured fields. Socioeconomic status at this date was approximated using a neighbourhood-level index of multiple deprivation derived from national Census output (Noble et al., 2007).

Ethnicity categories:

We used recorded ethnicity on the source documentation as the grouping variable, applying the following categories defined by the UK Office for National Statistics (ONS): White British, White Irish, Other White background, Black Caribbean, Black African, according to previous research on this population (Das-Munshi et al., 2017). We included 'other Black background' and 'White and Caribbean mixed' in the 'Black Caribbean' category and 'White and Black African mixed' in the 'Black African' category. Furthermore, the Bangladeshi, Indian and Pakistani individuals were classed into one group ('South Asian') as the numbers of individuals within specific sub-groups were too small for separate analysis. Similarly, the group 'Other' was created for individuals classified as 'any other', 'other mixed', 'Chinese' or 'other Asian'.

Outcome variables:

We extracted scores from the structured Health of the Nation Outcome Scales (HoNOS65+) instrument. This is a standard and routinely completed measure of patient wellbeing used in UK mental health services (Burns et al., 1999; Pirkis et al., 2005). We included subscales measuring physical health, mental health, symptom severity and functional status closest to depression diagnosis. The subscales within HoNOS65+ are rated on a Likert scale from 0 (no problem) to 4 (severe or very severe problem), which were dichotomised to 'minor or no problem' (scores of 0 and 1) and 'mild to severe problems' (scores 2 to 4) to ease interpretation.

Previously developed natural language processing algorithms were also used to identify recording of depressive symptoms (e.g. anergia, helplessness and hopelessness) in the patient's free-text record (clinical events, correspondence) within 6 months of depression diagnosis (Perera et al., 2016), as well as recorded cognitive behavioural therapy (CBT) and psychotropic medications. We ascertained whether antipsychotics or antidepressant prescription was mentioned in the patients record either before or after a diagnosis of late-life depression.

Statistical analysis:

We used STATA 13 software. Initially, classical tests of hypotheses, ANOVA, Kruskal-Wallis and chi-squared tests, were conducted to identify overall group differences. Further to this, ethnic minority groups were compared to the reference group (White British) using logistic regression models. We applied four differing regression models: model 1 (crude, unadjusted), model 2 (adjusted for age and gender), model 3 (adjusted for age, gender, index of multiple deprivation score, depression severity according to HoNOS65+ score, recurrent depression diagnosis), and model 4 (model 3 plus adjustments for HoNOS65+ physical illness and ADL problems).

Of the included patients, 24.8% had missing data on at least one of the covariates. Assuming missingness to be random, we imputed missing values using chained equations to maximise statistical power. Using the MI package in STATA we created 20 imputed datasets through replacing missing values through simulated values assembled from potential covariates and outcome values (Oudshoorn et al., 1999). Rubin's rules were applied to combine coefficients in final analyses (Rubin, 2004).

Results

We ascertained 6,809 patients aged 65 years or older with a secondary care diagnosis of depression. We excluded 1,263 individuals as no data on ethnicity was available (n=250; 19.8%), patients were diagnosed with dementia within three months (n=885; 70.1%%), or had a diagnosis of bipolar disorder or the depression in remission (n=129; 10.2%).

A total of 5,546 subjects were included in the final cohort and patient characteristics are presented in Table 1. The White British group was the most numerous (70.1%) with Black Caribbean making up the largest minority group (7.7%). In total 261 of patients (4.7% of the total sample) were in the other group (46.0% from 'any other', 43.7% from 'other Asian', 6.5% from Chinese and 3.8% from other mixed background). We report this group's sample characteristics in Table 1, but due to its heterogeneity it was not included in the regression models.

Around three quarters of the cohort had anti-depressant treatment recorded after diagnosis of depression, around a quarter had recorded anti-psychotic use after diagnosis, and around one in five had recorded CBT receipt from secondary care services.

Considering demographic factors, differences across groups were detected in age at diagnosis, marital status index of deprivation. White British formed the oldest and Black Africans the youngest group. South Asians were living in the least deprived and Black Africans in the most deprived neighbourhoods. Black Africans were least likely to be married and South Asians most likely.

In terms of clinical presentation, significant across-group differences were detected for HoNOS65+ scores relating to non-accidental self-injury (most common in Black Africans; least common in Black Caribbeans), substance use (most common in White Irish; least common in South Asians), cognitive problems (most common in Black Caribbeans), physical health problems (most common in White British), problematic psychotic symptoms (most common in Black Caribbeans), activities of daily living (most common in South Asians) and problems with living conditions (most common in Black Africans). The highest rates of recurrent depressive disorder diagnoses were in the White Irish and lowest in Black African group. Considering recorded depression symptoms, significant differences across groups were detected in guilt feelings, hopelessness and suicidal thoughts, although most symptoms did not show significant group differences.

Concerning prescribing, significant group differences were detected in antipsychotics before the index date (most common in South Asians), antipsychotics after index date (most common in Black Africans), and antidepressants after the index date (most likely in White Irish).

Regression models to test for differences in relation to a White British reference group

To determine the independence of differences between individual ethnic groups and the reference group (White British) we employed several logistic regression models. Results from all four differing regression models are presented in supplementary tables 1 to 5. In Table 2 we present regression output for HoNOS65+ problems, and in Table 3 depressive symptoms and treatment established, in logistic regression analyses adjusted for age, gender, index of multiple deprivation score, depression severity according to HoNOS65+ score and recurrent depression diagnosis (model 3, here referred to as 'main model').

In our main model, Black Caribbean patients were less likely to present with self-injury and substance use, but more likely to have cognitive and psychotic problems on HoNOS65+. In terms of depressive symptoms, apathy was more commonly recorded and guilt feelings, helplessness, hopelessness and suicidal thoughts less common. Recurrent depression and receipt of antidepressants after diagnosis were less likely.

Black African patients were in our main model more likely to have psychotic problems and difficulties with their living conditions on HoNOS65+. Recorded guilt feelings, hopelessness, concentration problems and suicidal thoughts were less common, as was recurrent depression. Both antidepressants use after diagnosis and CBT was less likely than in the White British population.

In our main model, Other White patients had lower likelihood of HoNOS65+ physical health problems and recorded guilt feelings, lower probability of recurrent depression and were less likely to be prescribed anti-depressants after diagnosis.

White Irish patients had in our main model a significantly increased likelihood of substance use and significantly lower likelihood of physical health and ADL problems on the respective HoNOS65+ scales. Somatic symptoms of concentration problems and disturbed sleep were more likely to be recorded.

In our main model, South Asian patients were less likely to present with substance use problems, recorded guilt feelings, hopelessness or suicidal thoughts. Recurrent depression was less likely, but antipsychotic medication before diagnosis was more common.

Further adjustments for physical health and ADL problems according to HoNOS65+ scores didn't substantially affect our results (see model 4 in Supplementary Tables 1 to 5). In the Black Caribbean group the odds ratio for recorded apathy was attenuated to a trend (OR: 1.45, 95% CI: 0.99-2.12, p=0.055) and in the Black African group the odds ratio for cognitive problems reached significance (OR: 1.69, 95% CI: 1.02-2.79, p=0.043) compared to the White British group. In the White Irish group the odds ratio for disturbed sleep was attenuated to a trend (OR: 1.25, 95% CI: 0.97-1.61, p=0.083) and there no longer was a difference in ADL problems (OR: 0.92, 95% CI: 0.70-1.20, p=0.520) compared to the White British group, whereby the later finding is like to reflect the influence of physical health problems on the ability to carry out ADLs.

Discussion

The main finding of our study in general is that people from ethnic minority groups diagnosed with late-life depression access secondary mental health services with a substantially different demographic and symptom profile than the White British reference population. There were also differences in treatments received. Our findings emphasise the importance of ensuring the cultural competency of clinicians, for example through utilising culturally appropriate frameworks of care, using a person-centred approach and having an awareness of observed patterns in the ethnic minority populations. Some have argued for specialist services for ethnic minority groups (Bhui and Sashidharan, 2003), and Cooper and colleagues (Cooper et al., 2003) found that, in general, concordance of doctor's race with patient's increases length of consultations and patient satisfaction. This is potentially accounted for by increased trust when patients see similarities between themselves and doctors in terms of communication, personal beliefs and values (Street et al., 2008).

Demographics

The findings that patients from most ethnic minority groups apart from South Asians were living in more deprived neighbourhoods than the White British reference group is important, given established findings that socioeconomic disadvantage is a risk factor for depression, particularly amongst elders (Kim, 2008), and may reflect social inequalities that have been present lifelong, or since the time of original migration for those born outside the UK. The younger age at diagnosis in elders from ethnic minority groups may reflect previous research findings that ethnic minority elderly are more likely to be 'young-old' (Shah, 2007); however, ethnic minority elders face social stressors such as poor socioeconomic status, alongside ageism and racism (Karlsen et al., 2005) which may also contribute to an earlier presentation of depression.

Symptom profile at depression diagnosis

Black Caribbean and Black African patients were found to be more likely to have psychotic symptoms when diagnosed with late-life depression, potentially reflecting previous findings of higher levels of psychosis in this group (Pinto et al., 2008). Black African and Caribbean

patients presented with lower likelihood of recorded hopelessness, feelings of guilt and suicidal thoughts than the White British reference group. Assuming that this does not reflect systematic under-recording, this suggests that depression in these patient groups does not follow Beck's classic triad (Beck A.T., 1979) as much as in the reference population. This in turn highlights the potential limitations of applying Western-based models of depression to individuals from non-Western backgrounds, which do not capture less affective and more somatic syndromes (Mallinson and Popay, 2007; Murray et al., 2006). On the other hand, it might reflect previous findings of lower disclosure of suicidal thoughts/self-harm because of lower cultural acceptability (Campbell, 2017). The same issues may apply to the lower recorded symptoms of guilt, hopelessness and suicidal ideation in the South Asian patients.

The White Irish patients presented with increased likelihood of substance use, which is concordant with previous findings of increased risk for both alcohol and depressive disorders in Irish-born residents in England (Weich et al., 2004). While it is difficult to determine the causal direction of depression and alcohol use, alcohol may be used to counteract feelings of loneliness that may be experienced by older Irish migrants with diminished contact to the Irish community (Leavey et al., 2007). In our study, the White Irish patient group also had increased likelihood of recorded concentration and sleep problems, which might potentially be accounted for by comorbid alcohol and other substance use. However, on the other hand functional and physical health problems were less commonly recorded in this group compared to the White British reference; this is unexpected and could be an underpowered finding given that White Irish represent the smallest group in our study. While not traditionally considered an 'ethnic' minority, Irish individuals are the oldest ethnic group in Britain, and have been highlighted as a largely invisible community in Britain and commonly neglected in research on the mental health of ethnic minorities because of the dominant Black/Brown-White dichotomy (Bracken et al., 1998). However, increasing evidence of social and psychological disadvantage (Bracken et al., 1998; Leavey et al., 2007), including those highlighted in our study, calls for more research in this group.

Certain symptoms were notably less common in the ethnic minority groups (e.g. hopelessness and suicidal ideation in Black Caribbeans, Black Africans and South Asians), suggesting that these groups might be 'healthier' regarding these symptoms than the White British reference

population. This could reflect 'healthy migrant effects', which are usually ascribed to the better health outcomes in migrant groups observed initially, when these immigrate for work or study (Vang et al., 2017). However, our patient sample is already in retirement age, and although we do not have any data on direct immigration status, most ethnic minority groups in the study are people who would have migrated in the immediate post-war context for work during the labour boom and have been in the UK for many years. Even if we accept that healthy migrant effects, or psychological resilience the migration process might preselect for (Dhadda and Greene, 2018), may play a role for some of these indicators, this must be weighed against the finding that for certain groups, for example the Irish in Britain (Das-Munshi et al., 2013), this has definitely not been the case with clear evidence of settlement into more materially and socially disadvantaged circumstances which have had long range adverse impacts on mental health in this group (Ryan et al., 2006).

Treatments

The inequalities observed with respect to the provision of treatment for depression are consistent with previous research from the UK, in nationally representative samples (Cooper et al., 2013b). It is possible that differences in the presentation of symptoms which may differ despite there being a similar common underlying depression construct across ethnic minority groups (Das-Munshi et al., 2014) may lead to clinicians being less able to identify and manage depression in older adults according to standard clinical practice. In line with other findings (Akincigil et al., 2012; Cooper et al., 2013a; Schofield et al., 2016) our results showed that Black African patients were significantly less likely to receive CBT secondary care services than their White British counterparts. Clinicians are less likely to consider talking therapy as a method of treatment in more severe/chronic presentations of depression, and so this might reflect the higher likelihood of psychotic symptoms, discussed above. Alternatively, this finding may reflect a reluctance of the patients themselves towards participating in talking therapy, or the use of alternative sources of help in the form of religious practices (O'Connor and Nazroo, 2002). A study investigating referral pathways into psychological therapies using the South East London Community Health study (SELCOH) showed that people from ethnic minorities were underrepresented in GP referrals for talking therapy, while ethnic composition didn't differ significantly in the self-referral route. The authors concluded that the self-referral route was more effective in ensuring equal access to psychological therapies,

especially for people of Black African and Black Caribbean background (Brown et al., 2014). Black Caribbean and Black African patients were also significantly less likely to have recorded anti-depressant treatment after diagnosis is in line with previous research in which the rates of use of anti-depressant medication are about half of that of White individuals (Pickett et al., 2012). This might be grounded in this group reporting fewer negative cognitions. Future research could explore whether the service user was involved in the decision-making process to indicate how decisions were influenced.

Study strengths and limitations

This is the first study accessing a large naturalistic sample with late-life depression from an ethnically diverse area in the UK and benefited from larger representation of ethnic minorities than what might have been achieved in a random national sample. Furthermore, the sample has more generalisability to clinical populations than groups identified from community sample with depressive symptom screening scales, or than *de novo* recruited cohorts or trial participant samples which are subject to substantial selection. These advantages of using electronic health records as a data resource need to be balanced with its limitations. First, the participants of this study were from a secondary care sample and therefore only the individuals whose conditions were severe enough to access secondary mental health services were represented. Given that ethnic minority communities have been reported to have reduced healthcare access (Suresh and Bhui, 2006), ethnic minority elders suffering from depression might also have been under-represented. Second, grouping of ethnic minority groups was needed to achieve sufficient statistical power; in particular, 'Black African and White Mixed' was included within the Black African Category, and the South 'Asian' group was formed of Pakistani, Indian and Bangladeshi individuals. While such groupings were the most succinct and analysis-appropriate, this have may have obscured associations of interest through within-group heterogeneity (Dogra et al., 2012). Third, some fine-grained potentially informative psychosocial characteristics could not be quantified in this study. For example, there was no indication of immigration status of the participants. Previous research has suggested that first-generation migrants have a greater risk of mood, anxiety and personality disorders than their second-generation counterparts (Salas-Wright et al., 2014), which may reflect differences in acculturation and language use (Liddell et al., 2016). Lastly, our study measured the recording of symptoms, not the actual presence of symptoms. Natural

language processing applications are designed to be yield a high precision (positive predictive value) at the potential expense of recall (sensitivity), so there may be symptoms that were not captured by the application, and the non-recording does not necessarily reflect the absence of a symptom. Nevertheless, the natural language processing software is a highly valuable tool which has been utilised increasingly to extract finer grain information from clinical records in a variety of studies than has hitherto been possible, enhancing the depth of data for large-sample analysis (Perera et al., 2016).

Conclusions

Depression is recognised to be a highly prevalent disorder in older people from ethnic minority groups (Osborn et al., 2003; Rees et al., 2016). The results obtained in our study highlight differences in symptomatic presentation and types of treatments for late-life depression between ethnic groups in a secondary care sample. The findings underline the need for more epidemiological studies of prevalence, disability and clinical presentations of depression in elderly ethnic minority groups, particularly individuals from categories of mixed race and other White as little is known about these groups. Further investigation is also needed, probably requiring mixed quantitative and qualitative approaches, into inequalities in pathways to care and receipt of care following a diagnosis, particularly concerning factors that might be responsive to intervention.

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Tables

Table 1: Sample Characteristics

	Whole cohort (n=5,546)	White British (=3,931; 70.1%)	Black Caribbean (n=424; 7.7%)	Black African (n=96; 1.7%)	Other White (n=357; 6.4%)	White Irish (n=311; 5.6%)	South Asian (n=166; 3.0%)	Other (n=261; 4.7%)	P-value*
Demographics±									
Mean age (SD)	76.8 (8.0)	77.4 (8.3)	76.1 (6.8)	72.7 (6.3)	76.4 (7.6)	75.2 (7.1)	75.1 (6.6)	74.3 (7.3)	<0.001
Female gender (%)	61.5	61.2	63.2	66.7	65.0	59.2	63.9	57.1	0.335
Marital status (%)	32.5	32.2	28.2	26.9	34.8	29.6	50.0	35.2	<0.001
Mean index of deprivation (SD)	26.6 (11.7)	25.9 (12.1)	30.0 (10.4)	32.1 (10.1)	26.3 (10.6)	28.3 (10.7)	25.7 (11.1)	27.3 (11.0)	<0.001
HoNOS65+ Score in problematic range∞									
Agitated behaviour (%)	14.5	14.2	12.9	17.4	16.5	14.7	20.4	13.7	0.309
Non-accidental self-injury (%)	12.3	13.1	6.6	14.1	10.8	11.3	11.2	12.0	0.019*
Substance use (%)	5.5	5.7	2.1	2.2	6.3	10.3	1.3	4.7	<0.001
Cognitive problems (%)	21.6	20.3	32.1	25.3	19.8	18.5	24.5	26.7	<0.001
Physical health problems (%)	67.4	69.6	66.7	62.0	62.0	55.5	69.1	60.3	<0.001
Psychotic symptoms (%)	10.2	9.0	19.1	18.8	12.1	7.6	10.7	10.7	<0.001
Depressed mood (%)	69	70.2	60.0	68.5	67.7	65.4	67.8	65.8	0.510
Relationship problems (%)	23.4	23.1	20.0	26.4	27.0	22.3	27.3	26.1	0.260
Activities of daily living (ADL) problems (%)	50.7	51.5	53.2	47.8	47.5	42.1	54.6	47.8	0.033
Living condition problems (%)	13.4	12.6	16.3	21.7	13.2	11.1	13.3	19.7	0.003
Occupational and recreational activities (%)	36.9	37.0	39.0	40.0	33.8	33.2	43.1	35.5	0.343
Recurrent depression diagnosis (%)	23.2	24.5	15.1	12.5	19.9	27.0	16.9	23.4	<0.001
Depressive symptoms∞									
Negative Cognitions									
Guilt feelings (%)	25.7	27.0	22.2	14.6	20.7	29.9	18.6	23.0	<0.001
Helplessness (%)	13.1	13.7	10.1	10.4	13.2	12.5	13.3	10.3	0.322
Hopelessness (%)	28.7	30.1	25.2	17.7	26.9	26.4	24.7	25.3	0.014
Affective Symptoms									
Anhedonia (%)	15.1	15.2	15.6	13.5	14.0	15.3	14.5	13.0	0.898
Apathy (%)	6.3	6.0	8.5	7.3	5.3	7.4	7.8	6.9	0.392
Poor motivation (%)	38.0	38.3	38.7	35.4	33.9	42.1	40.4	31.8	0.126
Tearfulness (%)	43.6	43.5	46.9	44.8	46.8	43.7	39.2	39.1	0.323
Somatic symptoms									
Disturbed sleep (%)	54.9	53.8	57.6	61.5	53.2	60.8	53.6	60.2	0.053
Lack of appetite (%)	52.5	52.3	55.4	50.0	49.6	53.1	54.8	53.3	0.749
Problems concentrating (%)	35.1	34.5	37.7	29.2	33.9	41.5	35.5	35.6	0.163
Suicidal thoughts (%)	19.0	19.9	13.4	13.5	18.8	20.3	13.3	18.4	0.011
Treatments									
Anti-depressants before index date (%)	51.4	50.5	52.4	50.0	50.7	58.5	51.2	56.7	0.093

Antipsychotics before index date (%)	15.5	14.3	17.5	22.9	15.1	20.9	23.5	18.9	<0.001
Antidepressants after index date (%)	76.3	77.3	71.0	70.8	70.9	83.0	77.7	70.1	<0.001
Antipsychotics after index date (%)	25.1	24.3	26.9	34.4	23.3	31.5	31.3	20.3	0.002
CBT post index date (%)	18.0	18.8	15.3	13.5	16.5	20.0	15.7	13.8	0.125

* chi^2-test, Kruskal-Wallis test or ANOVA
$^{\pm}$ at index date;
$^{\infty}$ recorded within 6 months of the index date
IMD = Index of Multiple Deprivations; SD = standard deviation

Table 2: Odds ratios (95% Confidence Intervals) for HoNOS65+ problems in logistic regression models

	Problems according to HoNOS65+ at the time of depression diagnosis (problem present vs. absent)										
	Agitated behaviour	Self-injury	Substance use	Cognitive problems	Physical health problems	Psychotic symptoms	Depressed mood	Relationship problems	ADL problems	Living condition problems	Occupational problems
White British	1	1	1	1	1	1	1	1	1	1	1
Black Caribbean	0.89 (0.65-1.23)	**0.47 (0.30-0.72)**	**0.35 (0.17-0.73)**	**1.95 (1.53-2.47)**	0.86 (0.68-1.08)	**2.42 (1.81-3.24)**	0.93 (0.74-1.16)	0.83 (0.63-1.09)	1.09 (0.87-1.36)	1.27 (0.95-1.72)	1.12 (0.89-1.41)
Black African	1.19 (0.68-2.08)	1.03 (0.55-1.94)	0.29 (0.07-1.22)	1.61 (0.99-2.64)	0.81 (0.52-1.27)	**2.12 (1.20-3.74)**	0.90 (0.57-1.41)	1.08 (0.66-1.76)	0.99 (0.64-1.52)	**1.74 (1.04-2.91)**	1.14 (0.73-1.79)
Other White	1.23 (0.89-1.69)	0.82 (0.56-1.20)	1.14 (0.71-1.86)	1.03 (0.77-1.36)	**0.73 (0.57-0.94)**	1.37 (0.95-1.97)	0.86 (0.67-1.11)	1.25 (0.96-1.64)	0.88 (0.69-1.12)	1.07 (0.76-1.52)	0.88 (0.68-1.13)
White Irish	1.03 (0.73-1.46)	0.85 (0.57-1.26)	**1.71 (1.13-2.59)**	1.00 (0.73-1.36)	**0.60 (0.46-0.77)**	0.81 (0.52-1.28)	0.81 (0.63-1.05)	0.92 (0.69-1.24)	**0.77 (0.60-0.99)**	0.85 (0.58-1.25)	0.90 (0.69-1.18)
South Asian	1.51 (1.00-2.29)	0.76 (0.44-1.31)	**0.22 (0.05-0.89)**	1.42 (0.96-2.08)	1.12 (0.78-1.61)	1.19 (0.70-2.01)	0.85 (0.60-1.20)	1.19 (0.81-1.74)	1.27 (0.90-1.78)	1.05 (0.65-1.72)	1.34 (0.96-1.90)

Bold: p<0.5, all models adjusted for adjusted for age, gender, deprivation score, depression severity score and recurrent depression diagnosis

Table 3: Odds ratios (95% Confidence Intervals) for recurrent depression, depressive symptoms and treatments in logistic regression models

	Recurrent depression	Negative cognitions			Affective symptoms				Somatic symptoms			Suicidal thoughts	Treatments				
		Guilt feelings	Helplessness	Hopelessness	Anhedonia	Apathy	Poor motivation	Tearfulness	Disturbed sleep	Lack of appetite	Concentration problems		Antidepressants before	Antipsychotics before	Anti-depressants after	Antipsychotics after	CBT
White British	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Black Caribbean	**0.51 (0.38-0.68)**	**0.76 (0.59-0.99)**	**0.70 (0.50-0.99)**	**0.75 (0.58-0.96)**	0.99 (0.73-1.33)	**1.46 (1.00-2.14)**	1.03 (0.83-1.27)	1.16 (0.93-1.44)	1.13 (0.91-1.41)	1.08 (0.87-1.35)	1.11 (0.89-1.39)	**0.60 (0.44-0.81)**	1.05 (0.84-1.31)	1.27 (0.95-1.69)	**0.72 (0.56-0.93)**	1.21 (0.95-1.55)	0.80 (0.60-1.07)
Black African	**0.32 (0.17-0.61)**	**0.39 (0.22-0.70)**	0.63 (0.32-1.23)	**0.42 (0.24-0.73)**	0.78 (0.42-1.44)	1.12 (0.51-2.49)	0.73 (0.47-1.14)	0.85 (0.55-1.31)	1.16 (0.75-1.80)	0.79 (0.52-1.22)	**0.60 (0.38-0.96)**	**0.49 (0.27-0.91)**	0.89 (0.58-1.36)	1.59 (0.96-2.64)	**0.58 (0.36-0.94)**	1.50 (0.96-2.35)	**0.53 (0.28-0.96)**
Other White	**0.69 (0.51-0.92)**	**0.65 (0.49-0.87)**	0.96 (0.69-1.34)	0.88 (0.68-1.14)	0.88 (0.63-1.23)	0.97 (0.59-1.57)	0.83 (0.65-1.06)	1.16 (0.91-1.47)	0.97 (0.77-1.23)	0.90 (0.71-1.14)	0.96 (0.76-1.23)	0.99 (0.73-1.32)	0.98 (0.78-1.24)	1.06 (0.76-1.46)	**0.75 (0.56-0.99)**	0.97 (0.74-1.28)	0.84 (0.62-1.15)
White Irish	0.94 (0.71-1.24)	1.10 (0.84-1.44)	0.89 (0.62-1.27)	0.80 (0.60-1.05)	1.00 (0.72-1.40)	1.23 (0.78-1.92)	1.07 (0.83-1.37)	1.01 (0.79-1.30)	**1.30 (1.01-1.67)**	1.03 (0.81-1.33)	**1.29 (1.01-1.65)**	0.90 (0.67-1.23)	1.23 (0.96-1.57)	1.26 (0.92-1.72)	1.34 (0.95-1.88)	1.24 (0.95-1.62)	0.97 (0.72-1.31)
South Asian	**0.61 (0.40-0.93)**	**0.53 (0.35-0.81)**	0.82 (0.50-1.33)	**0.65 (0.43-0.96)**	1.15 (0.75-1.78)	1.36 (0.75-2.46)	1.02 (0.73-1.44)	0.74 (0.52-1.04)	0.93 (0.67-1.30)	1.11 (0.79-1.57)	0.96 (0.68-1.35)	**0.49 (0.30-0.81)**	0.95 (0.68-1.32)	**1.61 (1.07-2.40)**	1.09 (0.70-1.69)	1.31 (0.91-1.87)	0.73 (0.47-1.14)

Bold: p<0.5, all models adjusted for adjusted for age, gender, deprivation score, depression severity score and recurrent depression diagnosis

Supplementary Tables

Supplementary Table 1: **Odds ratios (95% Confidence Intervals) for HoNOS65+ mental health problems (problem present vs. absent) in logistic regression models**

	Agitated Behaviour				Self-injury				Substance use				Cognitive problems				Psychotic problems				Depressed mood			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
White British	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Black Caribbean	0.87 (0.63-1.20)	0.86 (0.62-1.19)	0.89 (0.65-1.23)	0.88 (0.63-1.21)	**0.50 (0.33-0.76)**	**0.49 (0.32-0.75)**	**0.47 (0.30-0.72)**	**0.47 (0.30-0.72)**	**0.35 (0.17-0.72)**	**0.35 (0.17-0.72)**	**0.35 (0.17-0.73)**	**0.35 (0.17-0.72)**	**1.78 (1.42-2.34)**	**1.94 (1.54-2.44)**	**1.95 (1.53-2.47)**	**1.97 (1.54-2.52)**	**2.28 (1.73 – 3.01)**	**2.24 (1.69-2.95)**	**2.42 (1.83-3.24)**	**2.40 (1.80-3.21)**	0.95 (0.76-1.18)	0.94 (0.75-1.18)	0.93 (0.74-1.16)	0.93 (0.74-1.18)
Black African	1.29 (0.75-2.23)	1.21 (0.70-2.10)	1.19 (0.68-2.08)	1.18 (0.67-2.07)	1.10 (0.61-2.00)	1.03 (0.56-1.86)	1.03 (0.56-1.94)	1.04 (0.56-1.96)	0.38 (0.09-1.56)	0.31 (0.07-1.27)	0.29 (0.07-1.22)	0.29 (0.07-1.21)	1.31 (0.81-2.11)	**1.67 (1.03-2.71)**	1.61 (0.99-2.64)	**1.69 (1.02-2.79)**	**2.25 (1.29-3.92)**	**2.09 (1.19-3.66)**	**2.12 (1.20-3.74)**	**2.09 (1.18-3.70)**	0.94 (0.61-1.47)	0.91 (0.58-1.43)	0.90 (0.57-1.41)	0.92 (0.58-1.46)
Other White	1.15 (0.84-1.57)	1.14 (0.83-1.55)	1.23 (0.89-1.69)	1.24 (0.90-1.71)	0.79 (0.55-1.14)	0.79 (0.55-1.13)	0.82 (0.56-1.20)	0.81 (0.55-1.20)	1.14 (0.70-1.86)	1.12 (0.69-1.85)	1.14 (0.71-1.86)	1.15 (0.71-1.86)	0.97 (0.73-1.28)	1.02 (0.77-1.36)	1.03 (0.77-1.38)	1.06 (0.78-1.44)	1.33 (0.93-1.91)	1.31 (0.92-1.87)	1.37 (0.97-1.97)	1.36 (0.96-1.96)	0.88 (0.68-1.13)	0.88 (0.68 - 1.13)	0.86 (0.67-1.11)	0.90 (0.70-1.17)
White Irish	1.06 (0.76-1.49)	1.02 (0.73 - 1.44)	1.03 (0.73-1.46)	1.05 (0.74-1.49)	0.86 (0.59-1.25)	0.82 (0.56-1.18)	0.85 (0.58-1.26)	0.84 (0.57-1.25)	**1.81 (1.22-2.70)**	**1.60 (1.07-2.41)**	**1.71 (1.13-2.59)**	**1.72 (1.13-2.60)**	0.88 (0.65-1.20)	0.99 (0.73-1.35)	1.00 (0.73-1.36)	1.08 (0.78-1.49)	0.87 (0.65-1.36)	0.84 (0.62-1.32)	0.81 (0.59-1.28)	0.80 (0.57-1.27)	0.82 (0.64-1.06)	0.81 (0.63 - 1.04)	0.81 (0.63-1.05)	0.89 (0.69-1.15)
South Asian	**1.51 (1.01-2.25)**	1.46 (0.98-2.19)	1.51 (1.00-2.29)	1.46 (0.96-2.22)	0.84 (0.50-1.41)	0.81 (0.48-1.36)	0.76 (0.44-1.31)	0.79 (0.46-1.37)	**0.24 (0.06-0.94)**	**0.22 (0.05-0.88)**	**0.22 (0.05-0.89)**	**0.22 (0.05-0.89)**	1.28 (0.87-1.87)	1.45 (0.98-2.13)	1.42 (0.96-2.08)	1.36 (0.91-2.02)	1.32 (0.79-2.20)	1.28 (0.76-2.13)	1.19 (0.70-2.01)	1.16 (0.68-1.97)	0.88 (0.62-1.24)	0.87 (0.61-1.23)	0.85 (0.60-1.20)	0.81 (0.57-1.15)

Bold: p<0.05

Model 1: Crude
Model 2: Age & gender adjusted
Model 3: Adjusted for age, gender, index of multiple deprivation score, depression severity according to HoNOS65+ score, recurrent depression diagnosis
Model 4: Model 3 plus ADL & physical health problems

Supplementary Table 2: **Odds ratios (95% Confidence Intervals) for HoNOS65+ physical health and functional problems (problem present vs. absent) in logistic regression models**

	Physical health problems				Relationship problems				ADL problems				Living condition problems				Occupational problems			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
White British	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Black Caribbean	0.87 (0.69-1.09)	0.92 (0.73-1.16)	0.86 (0.68-1.08)	0.81 (0.63-1.04)	0.84 (0.65-1.09)	0.82 (0.63-1.06)	0.83 (0.63-1.09)	0.82 (0.63-1.08)	1.05 (0.85-1.30)	1.12 (0.90-1.38)	1.09 (0.87-1.36)	1.16 (0.92-1.47)	**1.36 (1.02-1.80)**	**1.36 (1.02-1.81)**	1.27 (0.95-1.72)	1.26 (0.93-1.71)	1.10 (0.88-1.36)	1.11 (0.89-1.37)	1.12 (0.89-1.41)	1.12 (0.88-1.42)
Black African	0.71 (0.46-1.08)	0.89 (0.58-1.38)	0.81 (0.52-1.27)	0.79 (0.49-1.27)	1.19 (0.74-1.91)	1.04 (0.65-1.69)	1.08 (0.66-1.76)	1.08 (0.66-1.76)	0.88 (0.58-1.33)	1.09 (0.71-1.67)	0.99 (0.64-1.52)	1.08 (0.68-1.71)	**1.93 (1.17-3.18)**	**1.92 (1.16-3.18)**	**1.74 (1.04-2.91)**	**1.79 (1.05-3.03)**	1.15 (0.75-1.77)	1.20 (0.78-1.85)	1.14 (0.73-1.79)	1.18 (0.73-1.91)
Other White	**0.73 (0.58-0.93)**	**0.77 (0.60-0.98)**	**0.73 (0.57-0.94)**	**0.74 (0.57-0.96)**	1.21 (0.92-1.58)	1.18 (0.90-1.55)	1.25 (0.96-1.64)	1.28 (0.98-1.68)	0.85 (0.67-1.07)	0.89 (0.70-1.12)	0.88 (0.69-1.12)	0.97 (0.75-1.26)	1.06 (0.75-1.50)	1.07 (0.76-1.50)	1.07 (0.76-1.52)	1.11 (0.78-1.59)	0.87 (0.68-1.11)	0.88 (0.69-1.12)	0.88 (0.68-1.13)	0.92 (0.70-1.20)
White Irish	**0.56 (0.44-0.71)**	**0.60 (0.43-0.77)**	**0.60 (0.46-0.77)**	**0.62 (0.47-0.81)**	0.98 (0.73-1.31)	0.92 (0.69-1.23)	0.92 (0.69-1.24)	0.95 (0.71-1.28)	**0.70 (0.55-0.89)**	**0.76 (0.60-0.98**)	**0.77 (0.60-0.99)**	0.92 (0.70-1.20)	0.89 (0.61-1.28)	0.87 (0.60-1.27)	0.85 (0.58-1.25)	0.91 (0.61-1.34)	0.87 (0.67-1.12)	0.88 (0.69-1.14)	0.90 (0.69-1.18)	1.01 (0.76-1.34)
South Asian	0.97 (0.68-1.38)	1.08 (0.76-1.55)	1.12 (0.78-1.61)	1.02 (0.69-1.50)	1.21 (0.84-1.75)	1.15 (0.79-1.66)	1.19 (0.81-1.74)	1.16 (0.79-1.70)	1.12 (0.80-1.56)	1.25 (0.89-1.75)	1.27 (0.90-1.78)	1.26 (0.88-1.81)	1.07 (0.66-1.75)	1.07 (0.66-1.74)	1.06 (0.65-1.72)	0.99 (0.60-1.62)	1.25 (0.90-1.73)	1.28 (0.92-1.77)	1.34 (0.96-1.90)	1.28 (0.89-1.84)

Bold: $p<0.05$

Model 1: Crude
Model 2: Age & gender adjusted
Model 3: Adjusted for age, gender, index of multiple deprivation score, depression severity according to HoNOS65+ score, recurrent depression diagnosis
Model 4: Model 3 plus ADL & physical health problems

Supplementary Table 3: **Odds ratios (95% Confidence Intervals) for recurrent depression, negative cognitions and suicidal thoughts in logistic regression models**

	Recurrent depression				Negative cognitions												Suicidal thoughts			
					Guilt feelings				Helplessness				Hopelessness							
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
White British	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Black Caribbean	**0.55 (0.42-0.73)**	**0.50 (0.38-0.67)**	**0.51 (0.37-0.68)**	**0.50 (0.37-0.68)**	**0.77 (0.61-0.98)**	**0.74 (0.58-0.94)**	**0.76 (0.59-0.99)**	**0.75 (0.57-0.97)**	**0.71 (0.51-0.99)**	**0.70 (0.50-0.97)**	**0.70 (0.50-0.99)**	**0.70 (0.50-0.98)**	**0.79 (0.62-0.99)**	**0.77 (0.61-0.97)**	**0.75 (0.58-0.96)**	**0.74 (0.58-0.95)**	**0.62 (0.47-0.83)**	**0.60 (0.45-0.80)**	**0.60 (0.44-0.81)**	**0.60 (0.44-0.81)**
Black African	**0.44 (0.24-0.82)**	**0.33 (0.18-0.61)**	**0.32 (0.17-0.61)**	**0.31 (0.17-0.60)**	**0.46 (0.26-0.82)**	**0.39 (0.22-0.69)**	**0.39 (0.22-0.70)**	**0.37 (0.20-0.67)**	0.73 (0.38-1.42)	0.68 (0.35-1.31)	0.63 (0.32-1.23)	0.62 (0.32-1.22)	**0.50 (0.30-0.85)**	**0.46 (0.27-0.78)**	**0.42 (0.24-0.73)**	**0.42 (0.24-0.72)**	**0.63 (0.35-1.14)**	**0.53 (0.29-0.95)**	**0.49 (0.27-0.91)**	**0.49 (0.27-0.91)**
Other White	**0.76 (0.58 – 0.99)**	**0.70 (0.53-0.93)**	**0.69 (0.51-0.92)**	**0.66 (0.49-0.89)**	**0.71 (0.54-0.92)**	**0.68 (0.52-0.88)**	**0.65 (0.49-0.87)**	**0.61 (0.46-0.82)**	0.95 (0.69-1.31)	0.94 (0.68-1.29)	0.96 (0.69-1.34)	0.96 (0.69-1.33)	0.86 (0.67-1.09)	0.85 (0.66-1.08)	0.88 (0.68-1.14)	0.87 (0.67-1.13)	0.93 (0.70-1.23)	0.90 (0.68-1.19)	0.98 (0.73-1.32)	0.97 (0.72-1.30)
White Irish	1.15 (0.89-1.49)	1.03 (0.79-1.35)	0.94 (0.71-1.24)	0.89 (0.67-1.19)	1.16 (0.90-1.49)	1.08 (0.84-1.40)	1.10 (0.84-1.44)	1.01 (0.77-1.33)	0.90 (0.64-1.28)	0.87 (0.61-1.23)	0.89 (0.62-1.27)	0.89 (0.62-1.26)	0.83 (0.64-1.08)	0.79 (0.61-1.03)	0.80 (0.60-1.05)	0.78 (0.59-1.03)	1.02 (0.77-1.36)	0.93 (0.69-1.24)	0.90 (0.67-1.23)	0.88 (0.65-1.20)
South Asian	**0.63 (0.42-0.95)**	**0.55 (0.36-0.83)**	**0.61 (0.40-0.93)**	**0.62 (0.41-0.95)**	**0.62 (0.42-0.92)**	**0.57 (0.38-0.85)**	**0.53 (0.35-0.81)**	**0.54 (0.35-0.83)**	0.96 (0.61-1.52)	0.93 (0.59-1.47)	0.82 (0.50-1.33)	0.81 (0.50-1.31)	0.76 (0.53-1.09)	0.73 (0.51-1.05)	**0.65 (0.43-0.96)**	**0.65 (0.44-0.96)**	**0.61 (0.39-0.97)**	**0.57 (0.36-0.89)**	**0.49 (0.30-0.81)**	**0.51 (0.31-0.83)**

Bold: $p<0.05$

Model 1: Crude
Model 2: Age & gender adjusted
Model 3: Adjusted for age, gender, index of multiple deprivation score, depression severity according to HoNOS65+ score, recurrent depression diagnosis
Model 4: Model 3 plus ADL & physical health problems

Supplementary Table 4: **Odds ratios (95% Confidence Intervals) for negative cognition and affective symptoms in logistic regression models**

	Affective symptoms																Somatic symptoms											
	Anhedonia				Apathy				Poor motivation				Tearfulness				Disturbed sleep				Lack of appetite				Concentration problems			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
White British	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Black Caribbean	1.03 (0.78-1.36)	1.02 (0.77-1.34)	0.99 (0.73-1.33)	0.98 (0.73-1.32)	**1.46 (1.11-2.10)**	**1.47 (1.12-2.12)**	**1.46 (1.10-2.14)**	1.45 (0.99-2.12)	1.02 (0.83-1.25)	0.98 (0.80-1.21)	1.03 (0.82-1.27)	1.02 (0.82-1.27)	1.15 (0.94-1.41)	1.12 (0.91-1.37)	1.16 (0.93-1.44)	1.16 (0.93-1.45)	1.16 (0.95-1.42)	1.13 (0.92-1.39)	1.13 (0.91-1.41)	1.14 (0.91-1.42)	1.13 (0.93-1.39)	1.13 (0.92-1.39)	1.08 (0.87-1.35)	1.08 (0.86-1.35)	1.15 (0.93-1.41)	1.12 (0.91-1.38)	1.11 (0.89-1.39)	1.10 (0.88-1.38)
Black African	0.88 (0.49-1.58)	0.82 (0.45-1.49)	0.78 (0.42-1.44)	0.76 (0.41-1.41)	1.24 (0.57-2.70)	1.22 (0.56-2.68)	1.12 (0.51-2.49)	1.10 (0.50-2.44)	0.88 (0.58-1.35)	0.77 (0.50-1.18)	0.73 (0.47-1.14)	0.72 (0.46-1.12)	1.06 (0.70-1.59)	0.94 (0.62-1.43)	0.85 (0.55-1.31)	0.85 (0.55-1.32)	1.37 (0.90-2.07)	1.23 (0.81-1.87)	1.16 (0.75-1.80)	1.15 (0.74-1.79)	0.91 (0.61-1.37)	0.90 (0.60-1.36)	0.79 (0.52-1.22)	0.79 (0.51-1.22)	0.78 (0.50-1.22)	0.70 (0.45-1.10)	**0.60 (0.38-0.96)**	**0.58 (0.36-0.93)**
Other White	0.91 (0.67-1.24)	0.90 (0.66-1.24)	0.88 (0.63-1.23)	0.86 (0.61-1.20)	0.88 (0.55-1.43)	0.89 (0.55-1.45)	0.97 (0.59-1.57)	0.95 (0.58-1.54)	0.83 (0.66-1.04)	0.80 (0.64-1.01)	0.83 (0.65-1.06)	0.80 (0.63-1.03)	1.14 (0.92-1.42)	1.10 (0.88-1.37)	1.16 (0.91-1.47)	1.16 (0.91-1.47)	0.98 (0.79-1.21)	0.95 (0.77-1.19)	0.97 (0.77-1.23)	0.95 (0.75-1.21)	0.90 (0.72-1.12)	0.89 (0.72-1.11)	0.90 (0.71-1.14)	0.90 (0.71-1.14)	0.97 (0.77-1.22)	0.95 (0.75-1.19)	0.96 (0.76-1.23)	0.93 (0.72-1.18)
White Irish	1.02 (0.74-1.41)	0.98 (0.71-1.35)	1.00 (0.72-1.40)	0.96 (0.69-1.34)	1.26 (0.81-1.96)	1.21 (0.78-1.90)	1.23 (0.78-1.92)	1.19 (0.75-1.87)	1.17 (0.93-1.48)	1.10 (0.87-1.39)	1.07 (0.83-1.37)	1.02 (0.79-1.31)	1.01 (0.80-1.28)	1.00 (0.78-1.26)	1.01 (0.78-1.30)	1.01 (0.79-1.30)	**1.33 (1.05-1.68)**	1.27 (1.00-1.60)	**1.30 (1.03-1.67)**	1.25 (0.97-1.61)	1.03 (0.82-1.30)	1.04 (0.83-1.31)	1.03 (0.81-1.33)	1.02 (0.80-1.31)	**1.34 (1.06-1.70)**	**1.29 (1.02-1.63)**	**1.29 (1.01-1.65)**	**1.21 (0.94-1.55)**
South Asian	1.18 (0.79-1.78)	1.15 (0.76-1.74)	1.16 (0.75-1.78)	1.18 (0.76-1.82)	1.34 (0.75-2.39)	1.33 (0.74-2.39)	1.36 (0.75-2.46)	1.36 (0.75-2.46)	1.09 (0.79-1.50)	1.02 (0.74-1.40)	1.02 (0.73-1.44)	1.04 (0.74-1.46)	0.84 (0.61-1.15)	0.79 (0.57-1.09)	0.74 (0.52-1.04)	0.74 (0.53-1.05)	0.99 (0.73-1.35)	0.94 (0.69-1.29)	0.93 (0.67-1.30)	0.95 (0.68-1.32)	1.11 (0.81-1.51)	1.10 (0.81-1.51)	1.11 (0.79-1.57)	1.12 (0.79-1.57)	1.05 (0.76-1.45)	1.00 (0.72-1.38)	0.96 (0.68-1.35)	0.98 (0.70-1.39)

Bold: p<0.05

Model 1: Crude
Model 2: Age & gender adjusted
Model 3: Adjusted for age, gender, index of multiple deprivation score, depression severity according to HoNOS65+ score, recurrent depression diagnosis
Model 4: Model 3 plus ADL & physical health problems

Supplementary Table 5: **Odds ratios (95% Confidence Intervals) for treatments mentioned in records in logistic regression models**

	Antidepressants before				Antipsychotics before				Antidepressants after				Antipsychotics after				CBT			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
White British	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Black Caribbean	1.08 (0.88-1.32)	1.05 (0.86-1.29)	1.05 (0.85-1.31)	1.04 (0.84-1.29)	1.27 (0.97-1.66)	1.20 (0.92-1.57)	1.27 (0.95-1.69)	1.25 (0.93-1.66)	**0.72 (0.57-0.90)**	**0.70 (0.56-0.88)**	**0.72 (0.56-0.93)**	**0.71 (0.55-0.92)**	1.14 (0.91-1.43)	1.08 (0.86-1.36)	1.21 (0.95-1.55)	1.19 (0.94-1.53)	0.78 (0.59-1.03)	0.73 (0.55-0.96)	0.80 (0.60-1.07)	0.78 (0.58-1.05)
Black African	0.99 (0.65-1.47)	0.90 (0.60-1.36)	0.89 (0.58-1.36)	0.88 (0.57-1.34)	**1.79 (1.10-2.90)**	1.44 (0.88-2.35)	1.59 (0.96-2.64)	1.57 (0.94-2.60)	0.71 (0.46-1.11)	0.67 (0.43-1.04)	**0.58 (0.36-0.94)**	**0.57 (0.35-0.93)**	**1.63 (1.06-2.49)**	1.34 (0.87-2.06)	1.50 (0.96-2.35)	1.48 (0.94-2.32)	0.68 (0.38-1.22)	**0.51 (0.28-0.93)**	**0.53 (0.28-0.96)**	**0.50 (0.27-0.93)**
Other White	1.00 (0.81-1.25)	0.99 (0.79-1.23)	0.98 (0.78-1.24)	0.96 (0.76-1.21)	1.07 (0.79-1.45)	1.02 (0.75-1.38)	1.06 (0.76-1.46)	1.02 (0.74-1.42)	**0.71 (0.56-0.91)**	**0.70 (0.55-0.89)**	**0.75 (0.56-0.99)**	**0.73 (0.55-0.97)**	0.94 (0.73-1.22)	0.89 (0.69-1.16)	0.97 (0.74-1.28)	0.93 (0.71-1.23)	0.86 (0.64-1.15)	0.80 (0.60-1.08)	0.84 (0.62-1.15)	0.78 (0.57-1.07)
White Irish	**1.38 (1.09 – 1.75)**	**1.34 (1.06-1.70)**	1.23 (0.96-1.57)	1.18 (0.92-1.52)	**1.59 (1.19-2.12)**	**1.47 (1.10-1.96)**	1.26 (0.92-1.72)	1.21 (0.88-1.65)	**1.43 (1.05-1.94)**	**1.39 (1.02-1.89)**	1.34 (0.95-1.88)	1.30 (0.93-1.83)	**1.43 (1.11-1.84)**	**1.33 (1.03-1.71)**	1.24 (0.95-1.62)	1.17 (0.89-1.53)	1.08 (0.81-1.44)	0.97 (0.72-1.30)	0.97 (0.72-1.31)	0.87 (0.64-1.19)
South Asian	1.03 (0.75-1.40)	0.99 (0.72-1.35)	0.95 (0.68-1.32)	0.96 (0.69-1.33)	**1.84 (1.27-2.67)**	**1.69 (1.16-2.44)**	**1.61 (1.07-2.40)**	**1.63 (1.08-2.44)**	1.02 (0.70-1.48)	0.99 (0.68-1.44)	1.09 (0.70-1.69)	1.10 (0.71-1.70)	**1.42 (1.01-1.99)**	1.30 (0.92-1.82)	1.31 (0.91-1.97)	1.33 (0.92-1.91)	0.80 (0.52-1.23)	0.71 (0.46-1.09)	0.73 (0.47-1.14)	0.77 (0.49-1.21)

Bold: $p<0.05$

Model 1: Crude
Model 2: Age & gender adjusted
Model 3: Adjusted for age, gender, index of multiple deprivation score, depression severity according to HoNOS65+ score, recurrent depression diagnosis
Model 4: Model 3 plus ADL & physical health problems