

Depression and heart disease in US adults[☆]Ashwini Niranjana, B.S.^a, Andrea Corujo, B.S.^b, Roy C. Ziegelstein, M.D.^a,
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Abstract

Objective: Major depressive disorder (MDD) with atypical features is characterized by mood reactivity, increased appetite/weight gain and hypersomnia. Since these characteristics may be associated with obesity and diabetes, we examined whether individuals with MDD with atypical features (MDD-AD) are more likely to exhibit cardiovascular disease than those with MDD without atypical features (MDD-NAD). **Methods:** Participants in the National Epidemiologic Survey on Alcohol and Related Conditions, a nationally representative sample of noninstitutionalized US adults, were categorized as having no lifetime depression diagnosis ($n=34,979$), MDD-NAD ($n=4632$) and MDD-AD ($n=1063$) and reported physician-confirmed specific cardiovascular diagnoses in the previous year.

Results: Compared to individuals without depression, those with MDD had a 50% increased odds of any cardiovascular diagnosis ($P<.0001$) independent of sociodemographic factors. Adjusting for sociodemographic differences in MDD subgroups, MDD-AD (compared to MDD-NAD) was associated with 60% ($P<.0001$) and 43% ($P<.005$) increases in the odds of hypertension and any cardiovascular diagnosis, respectively. These latter associations were no longer significant after adjusting for body mass index and substance use.

Conclusion: Individuals with major depression are at increased risk of heart disease. Whereas major depression with atypical features is associated with certain cardiovascular risk factors, there is no greater risk of cardiovascular diagnoses.

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1. Introduction

Major depressive disorder (MDD) is a prevalent condition associated with significant morbidity. The lifetime prevalence of MDD in the general populations has been reported to be approximately 13%–16% and the 12-month prevalence 5%–7% [1,2]. Depression is associated with many cardiovascular risk factors, including cigarette smoking [3], diabetes mellitus [4], physical inactivity [5], obesity and hyperlipidemia [6]. Not surprisingly, MDD has been found to be an independent risk factor for cardiovascular disease [7]. Meta-analyses suggest that individuals with depression

have almost twice the risk of developing heart disease than patients without depression [8–10].

MDD can be subdivided into different subtypes that differ in their clinical presentation [11]. One of these subtypes, so-called atypical depression, is characterized by mood reactivity and at least two of the following: increased appetite or weight gain, hypersomnia, leaden paralysis and long-standing interpersonal rejection sensitivity. Atypical depression is associated with a higher prevalence of obesity and being overweight [12] and a higher risk of diabetes [13]. These associations would be expected to result in an even stronger relationship between this depression subtype and cardiovascular disease than is found with MDD without atypical features.

Using data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a representative sample of the noninstitutionalized adult population of the United States, Herbst et al. (2007) found that MDD was associated with a two-fold increased risk of coronary heart

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disease among individuals 60 years of age and older [14]. We examined the NESARC data to determine whether MDD is associated with heart disease in the cohort as a whole and to test the hypothesis that atypical depression may be uniquely associated with heart disease given its association with multiple cardiovascular risk factors.

2. Methods

2.1. Data extraction

Data were obtained from the NESARC, a publicly available database that contains information on behavioral patterns and mental and medical conditions of a large representative sample of the United States population [15]. Details of the NESARC survey design, measures and implementation have been described [15–17]. Briefly, NESARC involved face-to-face, computer-assisted interviews of 43,093 noninstitutionalized persons 18 years and older sampled through a multistage complex process from all regions of the United States, including Hawaii and Alaska. The survey was conducted by trained, experienced interviewers from the US Census Bureau to ensure good data quality. Written informed consent was obtained from each NESARC respondent.

The NESARC diagnostic interview used the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV (AUDADIS-IV), a structured interview to assess

lifetime and past-year diagnoses of *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) mood and anxiety disorders: major depressive episodes, dysthymia, manic episodes, hypomanic episodes, agoraphobia with panic, agoraphobia without panic, social phobias, specific phobias and generalized anxiety. To receive a DSM-IV diagnosis, the respondent had to meet the DSM-IV criteria for that particular condition. The reliability and validity of these measures have been verified and discussed extensively elsewhere [18,19].

Lifetime MDD was determined as a distinct period of at least a 2-week duration when a participant experienced low mood or anhedonia along with at least five other symptoms of depression, with definite impairment and in the absence of known secondary causes of depression. Bereavement was ruled out in all diagnoses of MDD. We identified symptoms of appetite, sleep and weight changes from the ‘depression’ section of the AUDADIS-IV for the purpose of dichotomizing MDD into atypical and nonatypical subtypes. In this section of the survey, respondents were asked if they “slept more than usual nearly every day for 2+ weeks,” “wanted to eat more than usual most days for 2+ weeks” and/or “gained 2+ pounds/week for several weeks or 10+ pounds in month, when not pregnant.” For the purpose of this study, atypical depression in MDD is defined by an affirmative response to increased sleep along with increased appetite or weight gain, collectively referred to as ‘reversed vegetative symptoms.’

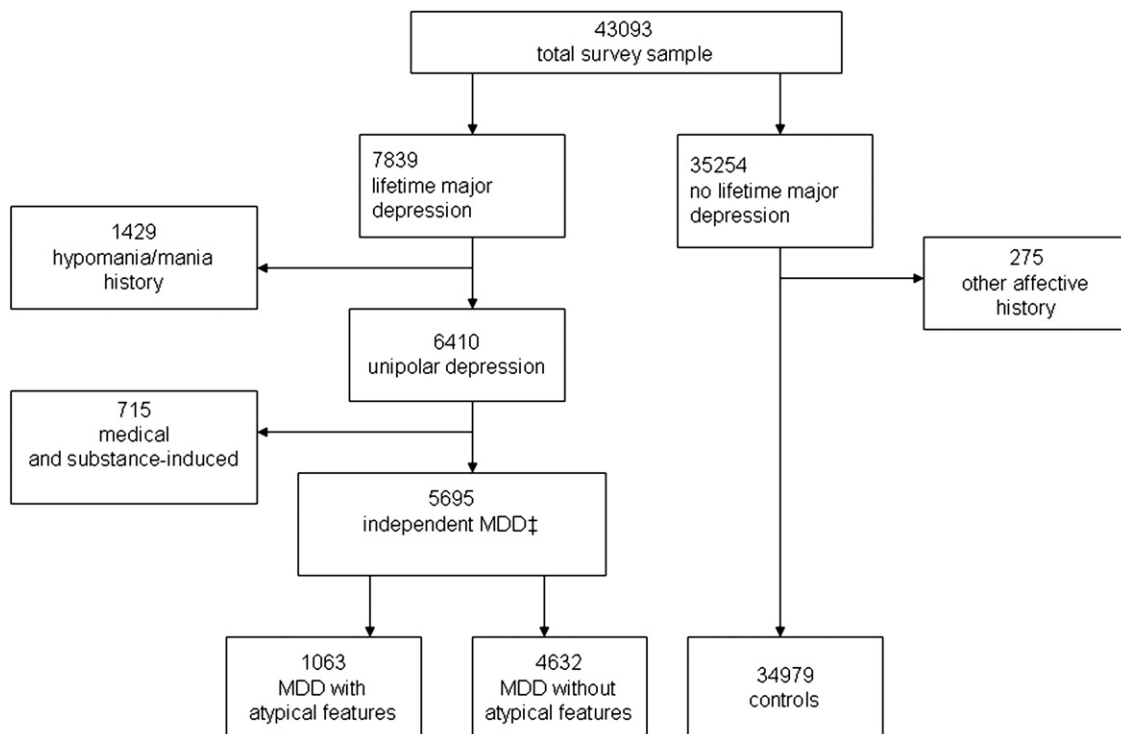


Fig. 1. Flowchart of selection of study base from the total NESARC survey participants. Selection of NESARC respondents without MDD (controls) and respondents with MDD, subdivided into MDD subgroup with and without atypical features of depression in their lifetime episodes. Numbers are unweighted for sampling scheme. ‡Independent MDD: major depression diagnosis ruled out for substance-induced depression and depression secondary to general medical condition.

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