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Economic Burden Among Patients With Major Depressive Disorder: An Analysis of Healthcare Resource Use, Work Productivity, and Direct and Indirect Costs by Depression Severity

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BACKGROUND

Depression is a common mental disorder that negatively affects activities of daily living and is associated with high societal costs and functional impairment.¹⁻³ From 2013 to 2016, an estimated 8.1% of US adults 20 years and older experienced depression in any given 2-week period.³ Depression is the second-leading cause of years lived with disability worldwide, increasing more than 50% since 1990.² Depression is also associated with substantial economic burden.² Between 2005 and 2010, the incremental economic burden of major depressive disorders (MDDs) in the United States increased by 21.5% (from \$173.2 billion to \$210.5 billion, inflation-related dollars).¹ The increase was attributed to higher direct medical costs, which accounted for approximately 45% of total costs.¹ For every dollar of direct costs, an estimated \$6.60 was spent on comorbidities, workplace costs, and suicide-related costs.¹ Depression has been consistently linked with greater economic burden, as measured by greater healthcare resource use (HRU) and reduced work productivity.¹⁻³ However, less is understood about how this burden differs across depression severity, as measured using Patient Health Questionnaire-9 (PHQ-9).

METHODS

To better understand how the burden of depression differs by level of severity among patients living with MDD, Chow et al examined HRU, work productivity impairment, and indirect and direct medical costs using the PHQ-9.⁴ In this cross-sectional study, survey data from 75,000 respondents who participated in the 2013 US National Health and Wellness Survey (NHWS), a self-administered, internet-based general health survey of US adults, were evaluated. To ensure that the NHWS sample was representative of the 2013 US adult population, a stratified, random sampling procedure was used. Patients with a self-reported clinical diagnosis of depression defined as a clinician diagnosis of depression (MDD) were included in the analysis. Furthermore, patients needed to score ≥ 10 on the PHQ-9, or 0 to 9 on the PHQ-9 and, at the time of survey completion, be prescribed 1 antidepressant for depression. Patients with a self-reported clinician diagnosis of bipolar disorder or schizophrenia and those who screened positive on the Mood Disorder Questionnaire were excluded from the analysis.

The primary outcome measures evaluated in the analysis were:

- **HRU:** The percentage of patients utilizing HRU (ie, outpatient visits, emergency department visits, and hospitalizations) and the number of HRU visits during the previous 6 months.
- **Work productivity and activity impairment general health (WPAI/GH):** Work productivity, which included absenteeism and presenteeism, was calculated using responses from the WPAI/GH; it was calculated only for employed patients. Activity impairment was calculated for all patients.
- **Direct costs:** Annual per-patient HRU costs (2 times HRU costs from the previous 6 months); annual HRU for each type of visit (number of visits times the corresponding Medical Expenditure Panel Survey unit cost); and per-patient, per-year costs (sum of all annual direct costs for each type of HRU); all reported in 2013 US dollars.
- **Indirect costs:** Calculated for 3058 patients who were currently employed at the time of survey completion. These costs included presenteeism- and absenteeism-related costs.
- **Total costs:** The sum of direct medical costs and indirect costs in 2013 US dollars for an estimation of total dollars lost or spent (unemployed patients were given a value of \$0 for indirect costs).

RESULTS

A total of 6997 patients met the study inclusion criteria. The demographics that were significantly associated with increasing severity included lower rates of full-time employment, higher rates of Hispanic and non-Hispanic black race, lower rates of being married/living with a partner, higher rates of low income, lower rates of completing a university education, and lower rates of having health insurance ($P < .001$). Health characteristics that were associated with increasing severity included higher mean comorbidity index scores, higher rates of being a current smoker, higher rates of daily alcohol use, and lower rates of exercise in the past 30 days ($P < .001$).

Results Across 3-Category PHQ-9 Subgroups

As shown in **Figure 1**, increasing severity of depression was associated with higher rates of HRU during the prior 6 months ($P < .001$). Likewise, increasing severity of depression was also associated with higher rates of emergency department or hospitalization visits ($P < .001$) and higher rates of absenteeism, presenteeism, overall work impairment, and activity impairment ($P < .001$).

Higher direct, indirect, and total costs during the prior 6 months ($P < .001$) were associated with increasing severity of depression, as shown in **Figure 2**. Increased depression severity among patients who were employed was also associated with higher direct, indirect, and total costs ($P < .001$). The results were generally consistent between 3-category and 5-category PHQ-9 comparisons.

Among the 1238 patients with treatment-resistant depression (defined as treatment with ≥ 2 medications for ≥ 3 months and any PHQ-9 score), increased severity of depression was associated with higher rates of HRU ($P < .01$); higher rates of having emergency department or hospitalization visits ($P < .05$) but not outpatient visits; and higher levels of absenteeism, presenteeism, overall work impairment, and activity impairment ($P < .01$) during the prior 6 months. Increased costs were also associated with increasing severity of depression. Increased depression severity was associated with higher direct, indirect, and total costs ($P < .05$). Increased severity of depression was associated with higher indirect and total costs ($P < .001$) among patients who were employed ($n = 436$) but were not associated with higher direct costs.

CONCLUSIONS

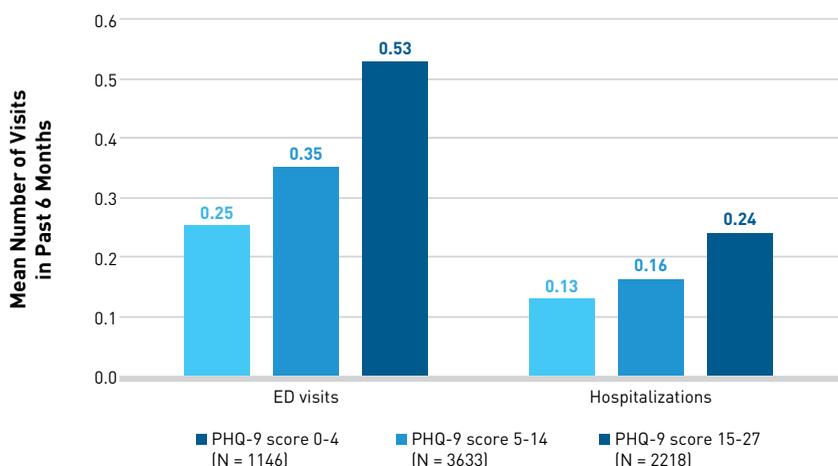
According to the findings, patients with MDD with more severe depression had higher

Understanding Patient Health Questionnaire-9

The PHQ-9 is a screening tool commonly used to evaluate the effect of treatment in patients with major depressive disorder. Scores range from 0 to 27.

In this retrospective analysis, the interval scores reflect severity of depression and included a 3-category breakdown. In this stratification, depression severity was categorized as 0 to 4 (no to minimal), 5 to 14 (mild to moderate), and 15 to 27 (moderately severe to severe).

Figure 1. Mean Healthcare Research Use in the Past 6 Months Among 3-Category PHQ-9 Subgroups^a



ED indicates emergency department; PHQ-9, Patient Health Questionnaire-9.

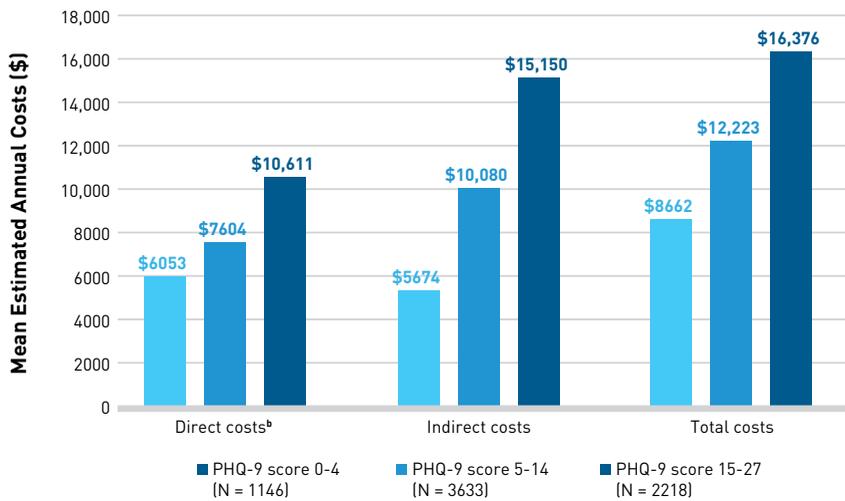
^aOverall difference (ANOVA) is significant at $P < .001$ for 3-category PHQ-9 comparisons.

overall work productivity impairment, higher direct and indirect costs, and higher HRU compared with patients with less severe depression. Especially pertaining to individuals with a greater severity of MDD, future research is needed; it can potentially lead to a better understanding of the unmet needs of patients affected by MDD and how interventions can address these needs. ●

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Figure 2. Annual Direct, Indirect, and Total Costs^a Among 3-Category PHQ-9 Subgroups



ED indicates emergency department; PHQ-9, Patient Health Questionnaire-9.

^aDirect and total costs are based on the full sample (N = 6997), whereas indirect costs are based only on those who were currently employed at the time of the survey (n = 3058). Direct, indirect, and total costs are in 2013 US dollars.

^bDirect costs due to outpatient visits, ED visits, and hospitalizations are displayed.

