

RISING DEPENDENCE OF ANTIDEPRESSANTS AMONG ADULTS IN US: A STUDY BASED ON NHANES FROM 2005 TO 2016

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BACKGROUND

- Depression is the leading cause of disability and ill health across the globe, and affects over 300M people.¹ One of the most common mental health issues in the US, depression affects over 16M adults currently. Further, the prevalence of depression is on the rise - it has been reported that the prevalence has increased from 5.4% in 2005-06 to 7.4% in 2015-16.²
- Antidepressants are the cornerstone drug choice for treatment of depression. It is of interest to evaluate the use rate of antidepressants over the last few years among patients suffering from depression.

OBJECTIVES

- The aim of the study is to assess the utilization rate of antidepressants in the US population suffering with depression, over the period from 2005 to 2016, stratified by the severity of depression.
- To assess the utilization rate among selected socio-demographic characteristics, comorbidities and lifestyle factors

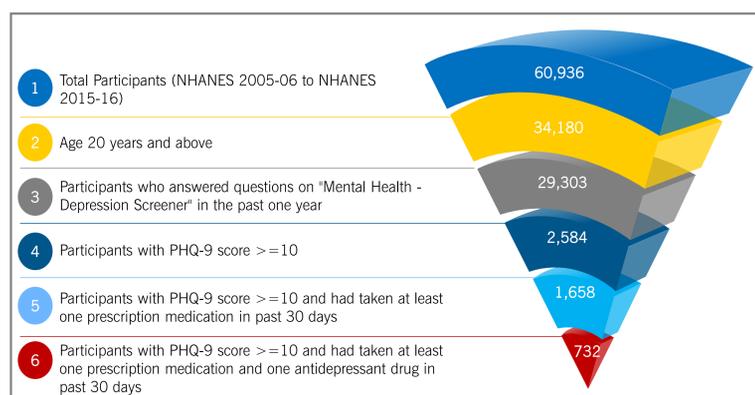
METHODS

- This study used the US National Health and Nutrition Examination Survey (NHANES) data of six combined cycles (2005-2016) to provide a population-based estimate for the prevalence of depression and utilization of antidepressant drugs.
- NHANES is a nationally representative study designed to assess the health and nutritional status of non-institutionalized civilians in the US. Collection of information occurs through home interviews and exams in mobile centers.
- The Patient Health Questionnaire (PHQ-9) was used to identify depression (PHQ-9 score ≥ 10), and categorize depression into three severity levels – moderate (PHQ-9 score 10-14), moderately severe (15-19) and severe (20-27).^{3,4}
- Patients with at least one prescription drug in the past 30 days were included in this study.
- Antidepressant classes that were considered included selective serotonin reuptake inhibitors (SSRI), Monoamine oxidase inhibitors (MOAI), tricyclic antidepressants, atypical antidepressants, serotonin-norepinephrine reuptake inhibitors (SNRI), serotonin-dopamine activity modulators (SDAM) and NMDA receptor antagonist (NMDA).
- Statistical analysis was performed using SAS version 9.4. Procedures SURVEYFREQ, SURVEYMEANS, SURVEYLOGISTICS and statistical test as appropriate were used.

RESULTS

- A total of 29,303 participants from six combined cycles (2005-2016) from the NHANES were included in the analysis, of whom 2,584 participants suffered from depression.
- Of these, 1,658 patients had taken at least one prescription drug in past 30 days, and 732 (44.1%) participants had taken at least one antidepressant drugs.(Figure 1)

Figure 1: Selection of study population



- The mean age of NHANES participants with depression was 47 years. Depression patients on antidepressant drugs were relatively older with mean age of 50 years.
- Of those who had depression and were on antidepressant drugs:
 - 27.9% were males and 77.1% were non-Hispanic whites.
 - 20.2% of them were above 400% FPL and 51.4% had college or higher education.
 - 60.5% had cardiovascular disorder, 56.8% were suffering from obesity and 40.2% had diabetes. (Table 1)

Table 1: Characteristics of NHANES participants included in analysis

	Participants included in analysis	Participants with depression (PHQ-9 score ≥ 10)	Participants with depression and had taken at least one prescription medication in past 30 days	Participants had taken at least one antidepressant drug in past 30 days
Total analysis population	n 29,303	2,584	1,658	732
Age	Mean (SD) 47 (0.2)	46.8 (0.4)	50.4 (0.52)	50.3 (0.7)
	Min-Max 20-85	20 - 85	20 - 85	20 - 80
	Median (IQR) 46 (33-59)	46.6 (34.2 - 57.5)	50.6 (39.1 - 60.4)	50.2 (39.9 - 59)
20-59 years	n 19,549	1,844	1,041	494
	% 74.2%	78.7%	72.5%	75.2%
Male	n 14,370	927	553	207
	% 48.7%	35.0%	32.1%	27.9%
Non-Hispanic white	n 12,897	1,098	784	414
	% 68.8%	63.9%	70.0%	77.1%
$\geq 400\%$ Federal poverty level	n 6,942	236	160	80
	% 34.4%	16.0%	17.7%	20.2%
Education: College and above	n 15,201	1,000	645	332
	% 60.9%	46.2%	47.2%	51.4%
With respiratory disease	n 5,405	839	603	307
	% 19.0%	33.0%	35.8%	40.2%
With cardiovascular disease	n 11,240	1,342	1,078	477
	% 34.2%	48.0%	59.5%	60.5%
With obesity	n 10,972	1,243	903	434
	% 36.3%	46.6%	52.7%	56.8%
With diabetes	n 5,272	514	448	189
	% 13.5%	15.4%	20.4%	20.0%
Chronic alcohol users	n 3,518	360	179	76
	% 13.5%	15.0%	12.0%	10.9%
Current smokers	n 6,099	981	604	287
	% 20.6%	40.3%	38.8%	39.9%

n - Number of survey participants;
% is based on weighted population

Utilization of antidepressants

- Overall, the proportion of patients taking any antidepressants in past 30 days in the 2015-16 survey was 57.4%, reflecting an increase of 28.7% (p-value: $<.0001$) compared to the 2005-06 survey.
- A significant increase was observed across all classes of antidepressants other than of tricyclic antidepressants. The largest increase was seen in SSRIs (an increase of 69% from a use rate of 19.0% in 2005-06 survey to 32.0% in 2015-16 survey) followed by SNRIs (increase of 23.1% between the two survey periods).
- Among survey participants with severe depression, the increase in proportion of patients taking SSRIs and atypical antidepressants over the evaluation period was in excess of 80%. (Table 2)

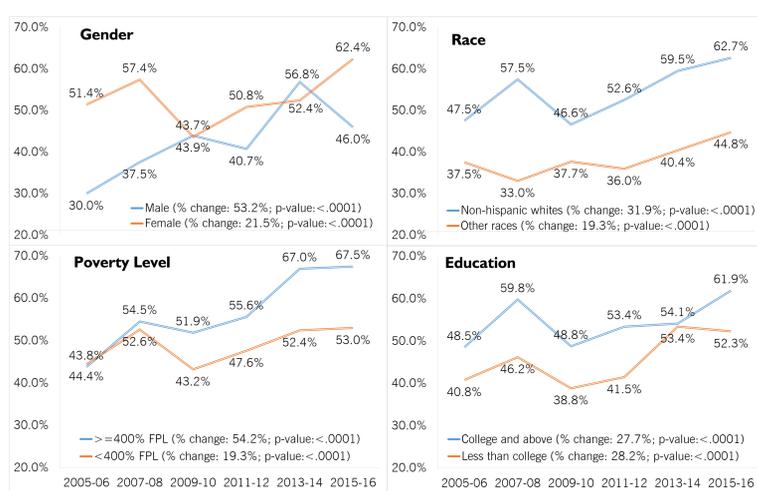
Table 2: Utilization rate of antidepressants stratified by severity of depression

Class of antidepressants	Overall Depression (PHQ Score: ≥ 10)				Severe Depression (PHQ Score: ≥ 20)			
	2005-06	2015-16	% Change	P-value	2005-06	2015-16	% Change	P-value
Any antidepressant	44.6%	57.4%	28.7%	$<.0001$	46.6%	60.0%	28.8%	$<.0001$
SSRI	19.0%	32.0%	68.9%	$<.0001$	14.0%	26.4%	87.8%	$<.0001$
Tricyclic antidepressant	5.8%	4.1%	-30.1%	$<.0001$	8.9%	2.3%	-74.6%	$<.0001$
Atypical antidepressant	16.5%	18.7%	13.0%	$<.0001$	15.7%	28.5%	82.0%	$<.0001$
SNRI	13.2%	16.2%	23.1%	$<.0001$	16.9%	11.8%	-29.8%	$<.0001$
SDAM ^	0.6%	3.9%	528.8%	$<.0001$	2.2%	0.7%	-69.2%	0.0005

% change calculated between two survey periods (2005-06 and 2015-16)
^ SDAM usage data available from 2007-2008

- Antidepressant utilization rate among males increased by 53.2% (p-value $<.0001$) compared to 21.5% (p-value $<.0001$) in females between the two survey periods
- Among non-Hispanic whites, antidepressant utilization rate increased by 31.9% (p-value $<.0001$) compared to 19.3% (p-value $<.0001$) in other races
- Antidepressant utilization rate among $\geq 400\%$ federal poverty line population increased by 54.2% (p-value $<.0001$) compared to 19.3% (p-value $<.0001$) in $<400\%$ federal poverty line population. (Figure 2)

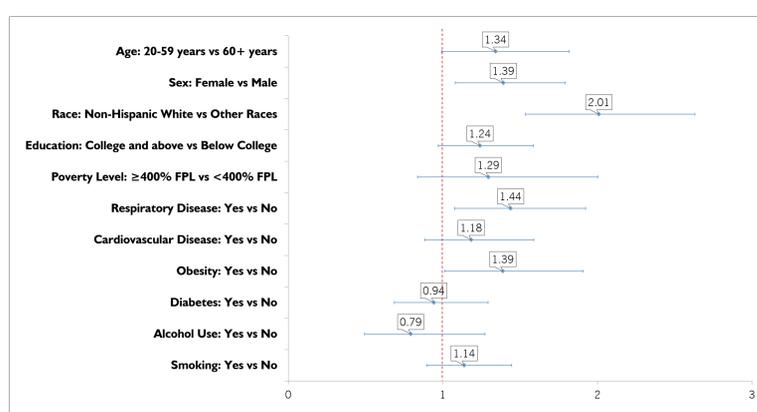
Figure 2: Utilization rate of antidepressants stratified by socio-demographic characteristics and year



Likelihood of antidepressant drugs usage

- The likelihood of antidepressant drug use was significantly higher among females (OR=1.39, CI=1.08-1.79), and among non-Hispanic whites (OR=2.01, CI=1.53-2.63).
- The likelihood of antidepressant drug use was also significantly higher among comorbid patients – those with respiratory disease (OR=1.44, CI=1.08-1.92) and obese patients (OR=1.39, CI=1.01-1.91). (Figure 3)

Figure 3: Odds ratios (OR) of antidepressant drugs usage by socio-demographic characteristics, comorbidities and lifestyle factors



CONCLUSION

- The analysis revealed a significant increase in the proportion of depression patients on antidepressants in the last decade, with significant variability seen among sexes, racial groups and comorbidities.
- Overall, the utilization rate of SSRI, atypical antidepressants, SNRI and SDAM classes showed an increase while tricyclic antidepressants use rate decreased in the last decade. The utilization rate increase of SSRI and atypical antidepressants classes was particularly pronounced among severely depressed patients.
- This study also identified certain socio-demographic factors, comorbidities and lifestyle habits that influence the likelihood of antidepressants utilization.
- The rising use of antidepressant drugs highlights the need for further research into understanding the factors that lead to such an increase.

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