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Title: Use of Psychiatric Medication by College Students: A Decade of Data

Running Title: Use of Psychiatric Medication by College Students

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Abstract

Objectives: Given the rising prevalence of psychiatric symptomatology among college students, this analysis aims to identify temporal trends in psychiatric medication usage.

Methods: This analysis used data from the Healthy Minds Study Survey administered between 2007 and 2019, yielding a sample of 320,817 university students. Survey data was examined via descriptive analyses.

Results: Over the last decade from 2007 to 2018-2019, there was an increase in use of nearly all classes of psychiatric medications, with reported antidepressant medication (selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), etc.) use increasing from 8.0% to 15.3%, anti-anxiety medication (benzodiazepines, buspirone, etc.) from 3.0% to 7.6%, psychostimulants from 2.1% to 6.3%, antipsychotics from 0.38% to 0.92%, and mood stabilizers from 0.8% to 2.0% (all $p<0.0001$), respectively. In addition, the use of more than one category of medication at a time has increased, from 28.2% in 2007 to 40.8% in 2018-2019 ($p<0.0001$). The proportion of students who received their most recent prescription for psychiatric medication from primary care providers has risen from 49.1% in 2007 to 58.8% in 2018-2019 ($p<0.0001$), while the proportion receiving these prescriptions from psychiatric providers did not increase significantly and stands at 36.1% in 2018-2019. The percentage of students taking psychiatric medication without a prescription varied from year to year, starting at 11.9% in 2007 and ending at 7.7% in 2018-2019 ($p<.0001$). The proportion of students who discussed their use of psychiatric medication with their doctor or other health professional three or more times in the previous year has increased from 39.2% in 2007 to 49.5% in 2018-2019 ($p<0.0001$).

Conclusions: The proportion of college students who have taken psychiatric medications of all categories has risen in the last decade; these students are increasingly likely to be on more than one kind of psychiatric medication and be treated by health care providers at a greater frequency. Despite the growing complexity of student treatment, the proportion of students receiving psychiatric medication management by psychiatric providers has not changed, while the proportion receiving services in primary care settings has increased.

Keywords: college mental health; psychiatric medication; antidepressants; benzodiazepines; polypharmacy

Introduction

There is widespread concern regarding the rising rate and severity of mental health conditions among college students (1,2). In a single decade, lifetime prevalence of a mental health diagnosis in primarily North American college students increased from 22% in 2007 to 36% in 2016-2017 (3). Accordingly, there is some evidence of increased utilization of both prescribed and non-prescribed psychiatric medications (3,4,5). Past-year psychiatric medication use has increased 11% within a decade, and a fourth of university students endorsed use of a prescribed psychiatric drug in 2016-2017 (3).

Despite rising use of psychiatric medications, few studies have evaluated temporal trends of specific categories of psychiatric medication use among college students and associated prescribing practices. Using data from the 1999 – 2012 National Health and Nutrition Examination Survey (NHANES) cycles, Kantor and colleagues (2015) examined temporal changes in the prevalence of prescription medication utilization among adults in the United States. Although the authors found that use of anti-depressants nearly doubled over the 10-year period and use of anti-psychotics also increased, these findings are not up to date and may not extend to the college-aged population (6). Two studies used cross sectional data collected from college students participating in the Healthy Minds Study, one from 2009 that reviewed the kinds of psychiatric medications used, and the other from 2007 and 2009 that evaluated treatment for depression provided by psychiatrists and primary care providers (7,8). However, these studies did not look at trends in psychiatric medication use over time.

Some studies have investigated the non-medical use of prescription psychiatric medications and are limited to a small number of medication classes. Zullig and Divin (2012) cross-sectionally identified the proportion of college students who stated that they used medications, including stimulants and antidepressants, without a prescription (9). Another cross-sectional investigation analyzed the association between rates of prescription medication misuse and educational status among young adults, but only stimulants, opioids, and tranquilizers/sedatives (benzodiazepines, muscle relaxants, and sleeping pills) were examined (10). In both studies, data collection methods did not evaluate temporal trends in the prevalence of non-medical prescription medication use. Although these studies evaluated misuse, they have

not explored prescribing practices for stimulants and anti-anxiety medications (benzodiazepines) in college students over time.

Understanding temporal variation in the prescribing practices of anti-anxiety medication (benzodiazepines) among college students is important, given concerns about benzodiazepine misuse and involvement in drug overdose deaths. Nationally in adults, prescriptions of benzodiazepines have increased over time. The number of adults who filled a prescription for benzodiazepines increased by 67% from 1996 to 2013 (11). Subsequently, a review of prescription medication use in the United States showed a 12.1% decrease in anti-anxiety medication (benzodiazepines) prescriptions between 2015 and 2019, followed by an increase of 37.7% in benzodiazepine prescriptions at the time of the COVID-19 pandemic from mid-February to mid-March 2020 (12). There is evidence of misuse among a high proportion of adults when benzodiazepines are prescribed on an as-needed basis (13). Nationally, benzodiazepines have been involved in a significant number of overdose deaths (14). Anecdotally, many college psychiatrists are wary of prescribing benzodiazepines to the young adult population due to concerns about misuse and have practice guidelines limiting their use.

Another area of interest is the increase in polypharmacy (use of two or more medications) among the general population, and the extent to which this applies to psychiatric medication use among college students. Previous investigation of outpatient psychiatrists treating adult patients between 1996 and 2006 showed an increase in prescribing of two or more psychiatric medications at a visit, from 42.6% in 1996-1997 to 59.8% in 2005-2006, with the median number of medications increasing from 1 to 2 (15). A 2013 study showed polypharmacy with psychiatric medications occurs at a rate of 13% to 90% (16). More recent literature was not found about trends in polypharmacy in college students. Some polypharmacy, such as prescribing certain antipsychotics as augmenting agents to antidepressants, is evidence-based and beneficial. However, polypharmacy also increases the risk of drug interactions and side effects (15).

To address these crucial public health issues, this study aimed to identify longitudinal and current trends in psychiatric medication use among undergraduate and graduate college students. National survey data from the University of Michigan's Healthy Minds Study (HMS) was examined to identify how psychiatric medication use has evolved over the past decade in terms of 1) types of medications used (stimulants, antianxiety medications, antidepressants, mood

stabilizers, antipsychotics), 2) number of different classes of medications used (psychiatric medication polypharmacy), 3) whether these medications were prescribed by a psychiatrist, a primary care provider, or were nonprescribed, and 4) the frequency of visits with the prescribing provider. Based on prior research, we hypothesized that use of all types of medications increased over the past decade (3,7). Since students are described as having an increasing number of severe mental health concerns, it is hypothesized that the prevalence of psychiatric medication polypharmacy, as well as the number of visits with a prescribing provider, rose over the past decade (1). Increased understanding of these trends may allow clinicians to proactively prepare for patients' future psychiatric needs.

Methods

The Healthy Minds Study (HMS) is an online survey examining the psychosocial and mental well-being of college students, primarily in North America. Created in 2007 at the University of Michigan, the HMS has been distributed annually (except for 2008) to undergraduate and graduate students at more than 320 academic institutions – most of which are in the United States and Canada. In this study, the HMS data, spanning 2007 through the 2018-2019 academic year, was examined. The questionnaires for 2007 and 2009-2013 adhered to the annual calendar whereas the surveys for 2014-2019 followed the academic calendar. Students received the questionnaire through a link unique to them and could only complete the questionnaire once during the time it was requested. In 2007, the HMS questionnaire was sent to students in 13 academic institutions and had an overall response rate of 42.7%. Over time, the number of participating universities and colleges were as follows: 15 in 2009, 26 in 2010, 11 in 2011, 31 in 2012, 17 in 2013, 20 in 2014, 17 in 2014-2015, 23 in 2015-2016, 54 in 2016-2017, 60 in 2017-2018, and 79 in 2018-2019. Additionally, the overall response rates for the previously mentioned years were 42% in 2009, 25% in 2010, 26% in 2011, 23% in 2012, 16% in 2013, 29% in 2014, 23% in 2014-2015, 27% in 2015-2016, 23% in 2016-2017, 23% in 2017-2018, and 16% in 2018-2019.

After obtaining approval from the Institutional Review Boards for all participating academic institutions, the HMS study team at the University of Michigan randomly recruited 4,000 students from each university. If a university had fewer than 4,000 undergraduate and

graduate students combined, then all of the eligible student body was recruited. To participate in the study, students had to be at least 18 years of age and classified as degree-seeking. To address differences between responders and non-responders, data was weighted using information provided by the Healthy Minds Study group. For this analysis, 32,079 (9.1%) of 352,896 weighted survey responses from the 2007 through 2018-2019 HMS questionnaires were excluded for missing or incomplete responses to questions regarding current or past 12-month data of the types of psychiatric medications used. As a result, 320,817 weighted survey responses were utilized for this study's analyses. A total of 12,621 (3.9%) weighted observations were gathered from the 2007 dataset, 14,531 (4.5%) from 2009, 25,115 (7.8%) from 2010, 10,536 (3.3%) from 2011, 27,695 (8.6%) from 2012, 16,099 (5.0%) from 2013, 18,925 (5.9%) from 2014-2015, 23,171 (7.2%) from 2015-2016, 47,447 (14.8%) from 2016-2017, 56,572 (17.6%) from 2017-2018, and 68,104 (21.2%) from 2018-2019. No additional exclusion criteria were applied.

From participating universities, students were recruited via email that linked potential participants to web-based informed consent. Participant remuneration varied by study year. In 2007 and 2009, all participants received $1 via postal service. Though participants in subsequent waves were not promised remuneration, a system was used to randomly distribute $2,000 worth of prizes to those completing the survey.

Demographics

The HMS survey was used to gather demographic characteristics of the students who responded to the HMS survey in 2007 and 2009-2019. These characteristics included gender, age, race/ethnicity, degree program, international status, first generation status, and on- or off-campus housing.

Use of Psychiatric Medications

To determine trends and prevalence of psychiatric medication usage in college students, we examined the following five measures: 1) current prescription medication use, 2) past 12-month prescription medication use, 3) current polypharmacy, 4) past 12-month polypharmacy, 5) type of prescribing provider, and 6) number of contacts per year with prescribing provider.

First, participants were asked about use of the following psychiatric medication types within the last year: anti-anxiety, anti-depressants, sleep medications, mood stabilizers, psychostimulants, anti-psychotics, and other psychiatric medications. Table 1 outlines examples of medications included in each category but is not meant to be an exhaustive list for students answering the question. For example, when students are asked if they have taken anti-depressants, they are given a list of examples which ends in etc.: "e.g., Fluoxetine (Prozac), sertraline (Zoloft), paroxetine (Paxil), escitalopram (Lexapro), venlafaxine (Effexor), bupropion (Wellbutrin), etc." If a participant endorsed use of one or more psychiatric medication categories, the participant was classified as taking at least one psychiatric medication. Those who reported no medication use, as well as those who reported not knowing whether they used prescription medications, were classified as not taking any psychiatric medications. Students were then asked to select the number of times they had discussed the use of their medication with a health professional in the last 12 months (not at all, 1-2 times, 3-5 times, more than 5 times, unknown). Students were also asked who wrote their most recent prescription (psychiatrist, primary care provider, other health care professional, obtained without prescription, unknown). There were no specific questions about whether this was an initial prescription or a refill.

Lastly, students were asked to select which type of medications they were taking currently. Among students reporting current use of psychiatric medication, we examined current poly-use through enumeration of all medication classes endorsed. The same method was used to quantify the total number of medication classes used in the past 12 months. For both measures, the number of possible psychiatric medication classes ranged from one (monopharmacy) to seven (seven-medication polypharmacy).

The specific questions that were asked are available on the Healthy Minds Network website (https://healthymindsnetwork.org/research/data-for-researchers/).

Statistical Analysis

Data were examined for normality and missing values. Pearson's chi-square tests were used to compare the demographic attributes of students who endorsed past 12-month use of psychiatric medications and those who did not. We then assessed the prevalence of psychiatric medication use by survey year and plotted temporal trends by medication class. Among medication users, descriptive analyses were used to plot the temporal prevalence of

polypharmacy and to examine changes in prescribing practices over the last decade. For all temporal trends assessed, Pearson's chi-square tests were used to determine statistically significant changes in the prevalence of psychiatric medication use among college students in 2007 and in 2018-2019.

Results

Of 320,817 weighted survey responses collected between 2007 and 2019, 65,899 (20.5%) endorsed past 12-month use of psychiatric medications and 254,918 (79.5%) did not. Demographic attributes of survey respondents are outlined in Table 2; for all variables, we observed statistically significant differences between those reporting use of medications and those reporting no use. Compared to students reporting no use in the last year, those using psychiatric medications were slightly more likely to be white females living in off-campus residences. Additionally, students reporting past 12-month use of psychiatric medications were approximately 65% less likely to report being Asian American or Asian than those who did not use psychiatric medications (making up 6.0% of those who reported medication use vs. 13.7% of those who reported no medication use); they were just over 55% less likely to report being African American/Black (making up 5.1% of those who reported medication use vs. 9.1% of those who reported no medication use), and more than 35% less likely to report being Hispanic/Latino (making up 7.0% of those who reported medication use vs. 9.1% of those who reported no medication use).

Use of Psychiatric Medications

From 2007 to 2018-2019, the proportion of students using any psychiatric medications in the last 12 months increased from 13.5% to 23.5% ($p<0.0001$). Temporal trends by medication type are depicted in Figure 1. With the exception of sleep medications, the proportion of students using all other classes of psychiatric medication in the last 12 months increased from 2007 to 2018-2019. Specifically, use of anti-depressants, anti-anxiety medications, and mood stabilizers doubled (8.0% vs. 15.3%, 3.0% vs. 7.6%, 0.8% vs. 2.0%, respectively; All $p<.0001$)), and use of anti-psychotics and psychostimulants nearly tripled (0.38% vs 0.92%, 2.1% vs. 6.3%,

respectively; All p<0.0001) from 2007 to 2018-2019. Among those who endorsed current use of psychiatric medication, the use of psychostimulants, anti-depressants, anti-anxiety medications, mood stabilizers, and anti-psychotics increased between 2007 and 2018-2019 (1.4% vs. 4.6%, 5.6% vs. 12.3%, 1.5% vs. 4.9%, 0.7% vs. 1.4%, and 0.2% vs. 0.6%, respectively; All p<0.0001).

Temporal trends also indicate an increase in the number of medication classes used. Among students using psychiatric medications in the last 12-months, we observed a 45% increase in the prevalence of past-year polypharmacy from 28.2% in 2007 to 40.8% in 2018-2019 (p<0.0001; Figure 2). The same trend was observed among current medication users (23.5% in 2007 vs. 34.7% in 2018-2019, p<0.0001).

Prescribing Practices

Between 2007 and 2018-2019, the proportion of past 12-month medication users who reported receiving their most recent prescription from a psychiatrist remained stable; overall, approximately 1 in 3 students (35.8%) were prescribed psychiatric medications by a psychiatrist (Figure 3). In contrast, the proportion of past 12-month medication users who reported receiving their most recent prescription from a general practitioner, nurse practitioner, or primary care physician increased approximately 20% (49.1% in 2007 vs. 58.8% in 2018-2019, p<0.0001). Students using psychiatric medications reported discussing their medications with their prescribing provider more frequently in recent years (Figure 4). Specifically, we observed a 26.2% increase in the proportion of medication users who reported discussing medications with their prescribing provider three or more times in the past year (39.2% in 2007vs. 49.5% in 2018-2019, p<0.0001). For the entire sample, 11.7% of students obtained their medications without a prescription. The percentage of students taking psychiatric medication without a prescription varied from year to year, ranging from 11.9% in 2007 to 7.7% in 2018-2019 (p<0.0001), and peaking at 21.1% in 2010.

Discussion

Findings of this investigation indicate a two-fold increase in psychiatric medication use over the last decade; all categories of psychiatric medication (psychostimulants, antidepressants, anti-psychotic, anti-anxiety medications, and mood stabilizers) increased, except for sleeping medication. Given that sleep medications present a risk of dependency, the lack of increase is a favorable trend. In fact, university wellness programs to improve sleep and sleep apps may be providing alternative approaches to addressing insomnia. However, the general increase in psychiatric medication use likely reflects the growing rates of psychiatric problems on campus. The doubling of antidepressant and anti-anxiety use is not surprising, given the growing rates of depression and anxiety. The tripling of antipsychotic medication use may speak to the increasing number of United States Food and Drug Administration (FDA)-approved indications for different antipsychotics, including for depression, bipolar disorder, and psychotic disorders. In addition, the antipsychotic quetiapine is sometimes used off label for treatment of anxiety and insomnia.

In this investigation, the anti-anxiety medication class included both benzodiazepines, such as lorazepam, clonazepam, and alprazolam, and the non-benzodiazepine buspirone. Buspirone, approved by the FDA for the treatment of generalized anxiety disorder, is often preferred in the college setting, as benzodiazepines have the potential for dependency and abuse. In fact, on September 23, 2020, the FDA highlighted the potential dangers of benzodiazepine use by issuing a Drug Safety Communication requiring an updated Black Box Warning to highlight the risks of misuse and addiction (17). Our analysis indicates a doubling of anti-anxiety medication use – a trend that may be particularly problematic if this is mostly referring to benzodiazepines. Given that the benzodiazepines alprazolam and lorazepam were among the top ten psychiatric medications prescribed in the United States in 2018 (with over 60 million prescriptions combined), and buspirone was not among the top 25 medications prescribed, it is highly likely that benzodiazepine use accounted for the majority of anti-anxiety medications prescribed to college participants in this investigation (18). Assuming this data suggests an increase in benzodiazepine use, college prescribers should continue to reduce the prescription of benzodiazepines and offer safer treatments for anxiety that are more effective in the long-term, such as cognitive behavioral therapy and certain antidepressants.

The proportion of students using more than one category of psychiatric medication in the last year (40.8%) as well as currently (34.7%) has increased significantly over the last decade,

indicating a trend toward polypharmacy. This may speak to the complexity of the conditions for which college students are seeking care. Even more alarming is the potential for psychiatric polypharmacy that is not detected by this survey. Specifically, our analysis does not accurately reflect the actual number of psychiatric medications students are taking, as the HMS survey only queries about categories of medications. Psychiatrists may prescribe two medications from the antidepressant category at the same time, such as sertraline for depression and trazodone at night for sleep, or escitalopram along with bupropion for augmentation. Psychiatrists and primary care providers working with college students should continue to check for side effects and evaluate for drug interactions if more than one medication is prescribed. They should continually review the medication list including psychiatric and non-psychiatric medications to see if any can be discontinued. As an additional option, prescribers may enlist the help of pharmacists regarding their knowledge of drug interactions and ability to conduct comprehensive medication therapy management aimed at reduction in non-essential medications.

This study warrants further review of psychiatric services on campus and in the surrounding communities, given our findings that primary care providers prescribe a larger proportion of psychiatric medications than psychiatrists, and that the proportion of medications prescribed by primary care providers has increased, with primary care doctors prescribing 58.8% of psychiatric medications versus psychiatrists prescribing 36.1%. The trend of primary care providers prescribing more psychiatric medications than psychiatrists may reflect a national psychiatrist shortage that is growing in this country, putting primary care providers in the challenging situation of prescribing medication for increasingly complex psychiatric conditions (19). This may not always be in the best interests of students, as some studies have demonstrated psychiatry services are able to provide more comprehensive care than primary care services. A recent study by Wetzler and colleagues, although not specifically focused on college students, showed a reduction in hospitalization rates when patients went to a specialty psychiatry clinic versus an outpatient medical setting for their psychiatric medications (20). Another study by Eisenberg and colleagues reported that minimally adequate treatment for depression in college students was more likely to occur when medication was prescribed by a psychiatrist versus a primary care provider (8). With literature demonstrating benefits of specialty treatment and with primary care providers overburdened by the COVID-19 pandemic and perhaps future pandemics, consideration should be given to increasing psychiatry services on campus and in the local

community, such as establishing a college clinic at a local academic center with psychiatry residents and fellows. On a positive note, we found an increase in health care contacts among students using psychiatric medication over the last decade, which is likely to improve outcomes in treatment. Primary care providers continue to be important partners in providing mental health care to college students.

There was a lower use of non-prescribed psychiatric medications reported than expected, most recently at 7.7%, given that rates of stimulant misuse are reported to range from 5 to 35% (21). Future work should explore how to further lower the rate of nonprescribed psychiatric medication use.

Lastly, the demographic characteristics of students using prescription medications in this analysis was consistent with that of previous investigation, with Asian and Asian American students being least likely to take psychiatric medications, and with Hispanic and Latinx students less likely to take psychiatric medications than white students with any mental health problem (22). A future study could look at trends in treatment for different ethnic and racial groups over the last decade who have a mental health problem.

Limitations

As our investigation is limited by our inability to delineate specific medications used, we encourage nationwide research networks, like the HMS, to expand health surveys to allow for a more detailed investigation of psychiatric medication use and prescribing practices. For example, we recommend that questionnaires further distinguish between medications, like buspirone and benzodiazepines. In addition, several antidepressant medications in the SSRI and SNRI category are FDA approved for the treatment of anxiety disorders – when students endorse taking an antidepressant, it may have been prescribed for depression, anxiety, or both. In future investigations, it might be helpful to ask about more specific categories of medications based on their mode of action, like SSRIs, SNRIs, and benzodiazepines, while listing the names of medications in each category. Alternatively, questionnaires could ask students to endorse what they are prescribed from a list of commonly used medications. In addition, the categories in the HMS questionnaire do not include some commonly used medications. For example, quetiapine (Seroquel) and aripiprazole (Abilify) are not listed in the antipsychotic category in the HMS

survey. Students who have taken these medications as augmenting agents for depression may not realize they are taking antipsychotics, thus reducing the number of students who would endorse antipsychotic use on the survey. A future study that includes a chart review or a review of insurance company records would give the most accurate picture of specific psychiatric medications used among college students with specific needs. This analysis did not restrict medication use to those students who endorsed specific psychiatric problems; we analyzed medication/drug use among all students regardless of symptomatology. An additional limitation to the study is that the number of participants in the study varied by year, with a trend toward increasing with each year. It is hard to know how this impacted the rates of medication use reported. There is also potential bias in which students chose to fill out the survey. For example, it is possible that students with more severe depression were more impaired and less likely to complete the survey. On the other hand, it is possible that students who had symptoms of anxiety and depression chose to fill out the survey given the topics' relevance to their lives and as self-advocacy to inform school administration on the prevalence of anxiety and depression on campus and the need for services. As stated above, a review of insurance company records may give a more accurate picture of rates of medication use among college students. Lastly, the survey does not give a full picture of the rate of prescribing by primary care providers versus psychiatrists, as it asks participants to indicate who provided the most recent prescription. An additional question in the survey might ask who provided prescriptions in the last year, allowing responses for a combination of health care providers. In college health care settings, a primary care provider might start a student on treatment, and if there is no response after a few different psychiatric medications, might then transfer care to a psychiatrist.

Conclusion

Psychiatric and primary care providers working with college students on campus are providing treatment to students with complex psychiatric health conditions and prescription needs. It is incumbent on these providers to be mindful of drug interactions. With the number of students taking psychiatric medications growing, consideration should be given to shifting more care of students on complex psychiatric medications to specialty psychiatry clinics on- or off-campus. College psychiatrists may also want to provide more training to primary care providers, who provide the majority of psychiatric medication prescriptions to college students. Psychiatry

residency programs may want to expand training in college mental health and offer college psychiatry fellowships, of which only a handful currently exist in in the United States. Future studies should look at the impact of the COVID-19 pandemic on psychiatric medication use in college students.

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Table 1: Medications in Healthy Minds Study

Questionnaire Categories of Medications	**Examples of Medications included in each Category**
Anti-anxiety medications	Alprazolam (Xanax)
	Buspirone (BuSpar)
	Clonazepam (Klonopin)
	Lorazepam (Ativan)
Antidepressants	Bupropion (Wellbutrin)
	Escitalopram (Lexapro)
	Fluoxetine (Prozac)
	Paroxetine (Paxil)
	Sertraline (Zoloft)
	Venlafaxine (Effexor)
Anti-psychotics	Clozapine (Clozaril)
	Haloperidol (Haldol)
	Olanzapine (Zyprexa)
	Risperidone (Risperdal)
Mood stabilizers	Carbamazepine (Tegretol)
	Lamotrigine (Lamictal)
	Lithium
	Valproate (Depakote)
Psychostimulants	Amphetamine salts (Adderall)
	Dextroamphetamine (Dexedrine)
	Methylphenidate (Ritalin or Concerta)

Table 2: Demographic characteristics of study sample, by past 12-month use of psychiatric medications

	Total Sample N=320,817	Medication Use N=65,899	No Medication Use N=254,918	p
Gender[a]				
Male	135065 (42.1)	22183 (33.7)	112883 (44.3)	<0.0001
Female	180162 (56.2)	41216 (62.6)	138946 (54.6)	
Other	5308 (1.7)	2430 (3.7)	2879 (1.1)	
Age (y)				
18-22	218010 (68.0)	42165 (64.0)	175844 (69.0)	<0.0001
23-30	70634 (22.0)	15181 (23.0)	55454 (21.8)	
31+	32173 (10.0)	8553 (13.0)	23620 (9.3)	
Race/Ethnicity[b]				<0.0001
White	211085 (66.3)	50530 (77.2)	160555 (63.5)	
African American/Black	26031 (8.3)	3348 (5.1)	22953 (9.1)	
Hispanic/Latino	24634 (8.7)	4608 (7.0)	23026 (9.1)	
Asian American/Asian	38513 (12.1)	3901 (6.0)	34612 (13.7)	
Other/Mixed	14764 (4.6)	3027 (4.6)	11737 (4.6)	
Degree Program[c]				
Undergraduate	252954 (79.0)	52580 (79.9)	200373 (78.8)	<0.0001
Graduate	56860 (17.8)	10901 (16.6)	45958 (18.1)	
Other	10409 (3.3)	2306 (3.5)	8103 (3.2)	
International Student[d]	23079 (7.2)	1940 (2.9)	21139 (8.3)	<0.0001
First Generation Student[e]	74771 (24.6)	14623 (23.1)	60147 (25.0)	<0.0001
Housing				<0.0001
On-Campus	123555 (38.5)	22939 (34.8)	100616 (39.5)	
Off-Campus	186738 (58.2)	40439 (61.4)	146299 (57.4)	
Other	10367 (3.2)	2489 (3.8)	7877 (3.1)	

[a]N=320,536; [b]N=318,298; [c]N=320,223; [d]N=320,456; [e]N=320,659;

Figure 1: Proportion of Students Reporting Past 12-Month Use of Psychiatric Medications

Healthy Minds Study, 10 Year Trends

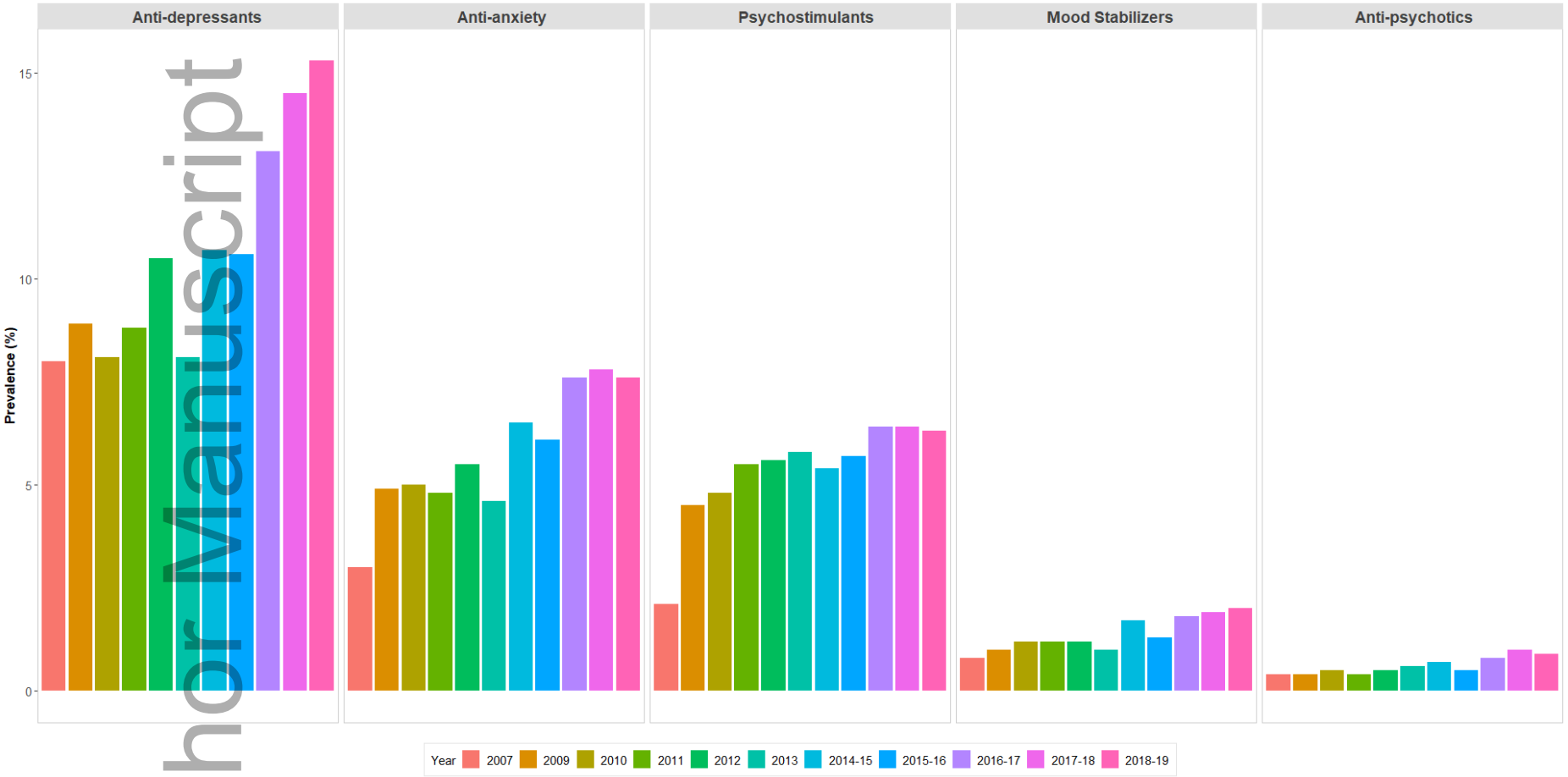

Figure 2: Proportion of Psychiatric Medication Users Using More than One Class of Medication

Healthy Minds Study, 10 Year Trends

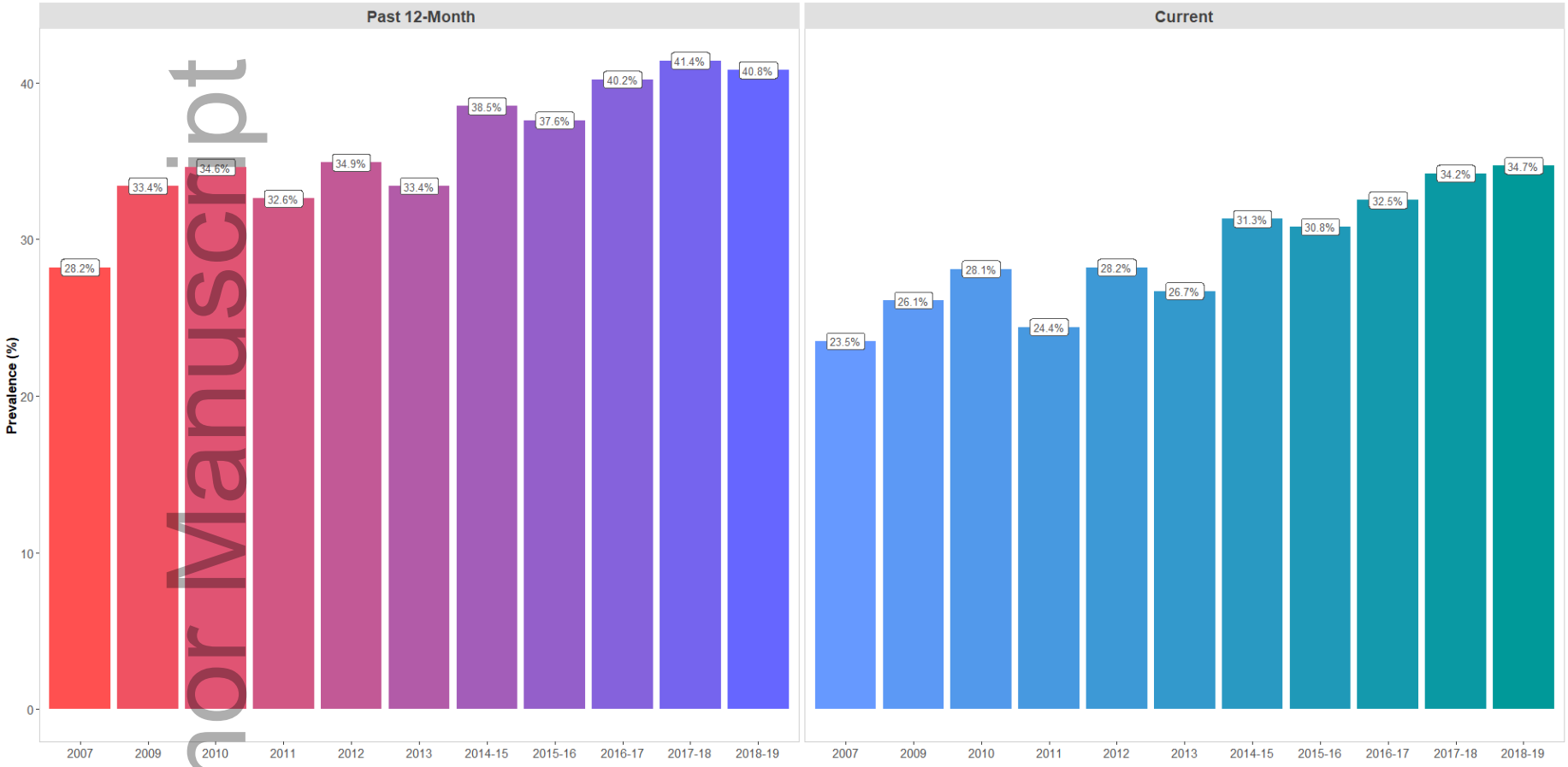

Figure 3: Proportion of Psychiatric Medication Users Receiving Prescriptions from Psychiatrists and Primary Care Physicians

Healthy Minds Study, 10 Year Trends

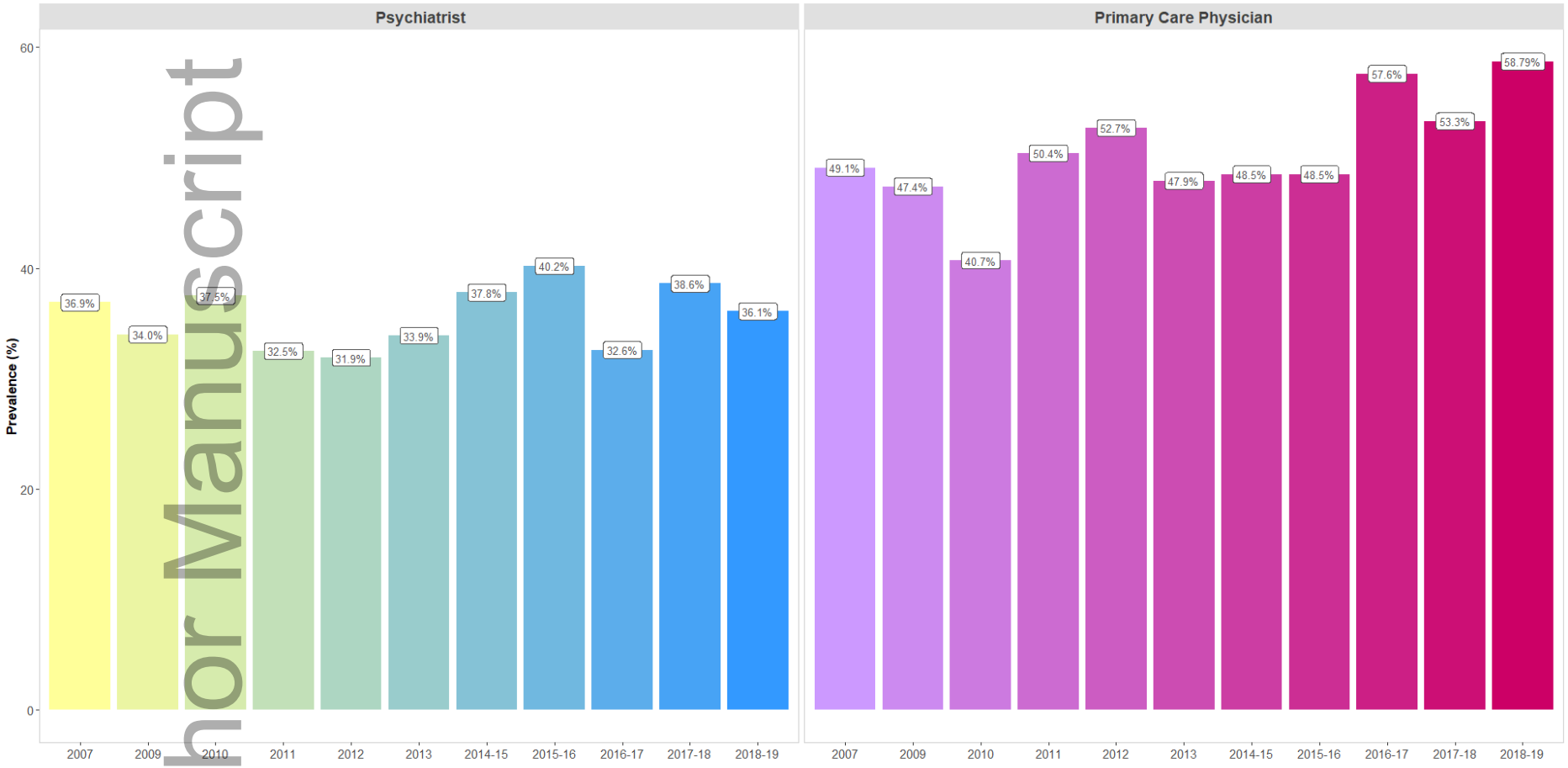

Figure 4: Proportion of Psychiatric Medication Users Discussing Their Medication with their Provider Three or More Times Per Year

Healthy Minds Study, 10 Year Trends