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Trends in Older Adult Nonmedical Prescription Drug Use Prevalence: Results from the 2002-2003 and 2012-2013 National Survey on Drug Use and Health

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Abstract

Background—Based on projections of increasing older adult nonmedical prescription drug use (NMPDU) prevalence, we investigated whether increases had occurred in opioid, tranquilizer and stimulant NMPDU in older adults from 2002-2003 to 2012-2013, using the National Survey on Drug Use and Health (NSDUH).

Methods—The NSDUH is a nationally representative survey of the US population, with assessments of lifetime, past-year and past 30-day NMPDU from opioids, tranquilizers and stimulants. Weighted cross-tabulations were used to compute prevalence rates, and design-based logistic regressions were used to examine change in NMPDU. Regressions controlled for gender, race/ethnicity and population density of respondent residence.

Results—Across medication classes, lifetime NMPDU rates increased in all older adults and two sub-groups: those aged 50 to 64 and those 65 years and older. Rates of past year opioid NMPDU also increased from 2002-2003 to 2012-2013 in all examined age ranges. Trend-level results were also found for past-30 day opioid NMPDU and past-year tranquilizer NMPDU in adults aged 50 years and older.

Conclusions—The results support projections of increasing older adult NMPDU rates. As NMPDU in older adults may impart greater risk for adverse events, public health efforts are needed to reverse the increases in older adult NMPDU.

Keywords

Older adults; prevalence; nonmedical use; opioid; tranquilizer; stimulant

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1. Introduction

US adults born between 1946 and 1964 are called “Baby Boomers” due to the notable increase in the birth rate after World War II. These adults have aged into older adulthood (here, 50 years and older), increasing the proportion of US older adults to the largest ever (Colby & Ortman, 2014). For substance use and related consequences, this could be problematic, as “Baby Boomers” have had higher rates of substance use than preceding generations, with elevated use rates continuing into older adulthood (Dowling, Weiss, & Condon, 2008; Johnston, O’Malley, Bachman, Schulenberg, & Miech, 2015). Projections of older adult drug use in 2020 forecast increases in past-year drug use, substance use disorder, substance treatment utilization, and overall healthcare utilization (Colliver, Compton, Gfroerer, & Condon, 2006; Gfroerer, Penne, Pemberton, & Folsom, 2003; Han, Gfroerer, Colliver, & Penne, 2009), owing primarily to the aging of the “Baby Boomer” cohort and extended life expectancy. Nationally representative and localized data partially supported these projections, with rates of non-alcohol substance use treatment increasing in US adults 55 and older from 1998 to 2006 (Duncan, Nicholson, White, Bradley, & Bonaguro, 2010) and rates of opioid treatment increasing in those 50 and older from 1996 to 2012 (Han, et al., 2015).

Nonmedical prescription use (NMPDU) is often defined as use of a potentially addictive medication that was not prescribed for the user or use in ways the prescribing clinician did not intend (Barrett, Meisner, & Stewart, 2008). Indeed, NMPDU in older adults may be an area of particular concern. Blanco and colleagues (2007) found increases in past-year NMPDU from 1991-1992 to 2001-2002 in adults 55 and older using nationally representative data; also, poison control center call data indicated that opioid NMPDU-related fatal overdose and use with suicidal intent increased from 2006 to 2013 in adults aged 60 and older (West, Severtson, Green, & Dart, 2015).

Across medications, older adults consume a larger proportion of prescription drugs than the relative size of their cohort would indicate, with the highest long-term opioid (Campbell, et al., 2010) and benzodiazepine use rates (Olfson, King, & Schoenbaum, 2015) in adults 65 and older. Older adults may be particularly vulnerable to dangerous adverse effects from controlled medications due to pharmacokinetic changes and a greater tendency towards polypharmacy (Kalapatapu & Sullivan, 2010). Thus, while NMPDU rates in older adults are lower than in other age groups, the associated consequences may be greater (Chou, et al., 2014). Given data projecting increased NMPDU and NMPDU-related consequences, studies of recent changes in older adult NMPDU are needed, especially to examine specific prescription drug classes.

The primary aim was to evaluate whether rates of lifetime, past-year and past 30-day NMPDU with prescription opioid, tranquilizer or stimulant medication increased in older adults in the period from 2002-2003 to 2012-2013. In addition, analyses examined change in NMPDU in two sub-groups: those aged 50 to 64 years and those 65 years and older.

2. Material and Methods

The selected NSDUH versions used an independent, multistage area probability sample for all states and the District of Columbia. All versions used audio computer-assisted self-interviewing methods to assess NMPDU and preserve respondent privacy and increase honest responding. The examined versions of the NSDUH included automatic skip-outs, consistency checks and imputation to increase full responding and data consistency. Weighted screening response rates ranged from 91% in both 2002 and 2003 to 83.9% in 2013; weighted full interview response rates ranged from 79% in 2002 to 71.7% in 2013. All data were weighted to represent the US population at the time of the survey and to allow for unbiased population-based estimates of assessed behaviors using the 2000 and 2010 Census data for 2002-2003 and 2012-2013, respectively (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Further details are available elsewhere (Research Triangle Institute, 2004, 2005, 2013).

2.1 Participants

A total of 109,309 cases were in the 2002 and 2003 public use files, with 110,428 cases in the combined 2012 and 2013 public use files. Of these, 9,793 and 12,696 (33.9% and 39.7% of the weighted sample, respectively). In both sets of years, the majority of participants were in the 50 to 64 year subcohort, female and Caucasian. More detailed information on the demographic characteristics of examined participants is included in the online-only Supplementary Table 1.

2.2 Measures

Nonmedical Prescription Drug Use (NMPDU)—For opioids, stimulants and tranquilizers, participants are asked whether they have ever nonmedically used a medication from that class: “Have you ever, even once, used [medication] that was not prescribed for you or that you took only for the experience or feeling it caused?” To aid recall, participants are shown medication cards that have pictures of all queried medications. The NSDUH assessment of NMPDU is considered to be a reliable and valid measure (Barrett, et al., 2008; SAMHSA, 2010)

Recency of NMPDU—For participants endorsing lifetime NMPDU, follow-up questions are asked about time since their last episode: “How long has it been since you last used any [prescription medication class] that was not prescribed for you or that you took only for the experience or feeling it caused?” Dichotomous (yes/no) variables are created for both past 30- day and past 12-month NMPDU within each medication class.

Sociodemographic Variables—Gender, race/ethnicity and population density of the respondent’s residence at the time of the survey.

2.3 Data Analysis

Initial analyses employed weighted cross-tabulations to estimate prevalence and 95% confidence intervals (95% CIs) of NMPDU in both samples (2002-2003 and 2012-2013). Primary analyses used design-based logistic regression, separately opioids, tranquilizers and

stimulants. For the regressions, lifetime, past-year or past 30-day NMPDU was the dependent variable, with year (2002-2003 or 2012-2013) as the independent variable. Results were reported as Wald F values, corresponding p -values, with adjusted odds ratios (AORs) and 95% CIs, controlling for the sociodemographic variables listed above. Analyses were performed in SUDAAN 10.0.1 (RTI International, 2010). Data were weighted, clustered on primary sampling units, and stratified appropriately. We used the Taylor series approximation, with adjusted degrees of freedom, to create robust variance estimates. We included models only if the cell sizes were above 10 unweighted individuals and if models evidenced adequate fit with a significant omnibus regression χ^2 value.

3. Results

Weighted cross-tabulation prevalence results, with 95% CIs, are in Table 1. Except for past 30-day tranquilizer NMPDU in all older adults and the 50 to 64 year group, all examined rates rose from 2002-2003 to 2012-2013.

Regression analyses indicated that all examined rates of lifetime NMPDU increased significantly ($p < .05$) from 2002-2003 to 2012-2013. With the 2002-2003 respondents as reference, AORs for lifetime NMPDU ranged from 1.36 (stimulant) to 1.57 (tranquilizer) across the older adult sample, with similar but smaller AORs in the 50 to 64 age group and larger AORs for tranquilizer and stimulant NMPDU in those 65 and older. In addition, past-year opioid NMPDU evidenced significant increases from 2002-2003 to 2012-2013, with AORs of 1.74 (all older adults), 1.66 (50 to 64 years) and 2.09 (65 and older). Finally, past year tranquilizer NMPDU and past 30-day opioid NMPDU in the entire older adult sample had trend-level increases (in both, $p = .051$) over the examined time period. Regression results, including Wald F values, p -values, AORs and 95% CIs are in Table 2.

4. Discussion

Across prescription drug classes, rates of lifetime NMPDU increased in all older adults (50 years or older) and both sub-groups (50 to 64 years and 65 and older) from 2002-2003 to 2012-2013. Furthermore, rates of past-year opioid NMPDU increased across all examined age groups, and increases in past-year tranquilizer NMPDU and past 30-day opioid NMPDU were nearly significant in the entire older adult sample. Finally, while 30-day tranquilizer NMPDU in all older adults and those 50 to 64 years of age evidenced non-significant decreases, all other prevalence rates rose over the examined time frame, even if many increases were non-significant.

These results support projections that rates of NMPDU (Colliver, et al., 2006) would increase as Baby Boomers aged into older adulthood. Furthermore, these results indicate that increases in older adult NMPDU will not come just from the larger generational size but also from increased NMPDU engagement, particularly for opioids. The results are consistent with the notable increases in the number of opioid prescriptions written in the US (Sites, Beach, & Davis, 2014), particularly in older adults (Kuo, Raji, Chen, Hasan, & Goodwin, 2015); when combined with the increased potential for opioid-related adverse events due to age-related pharmacokinetic changes (Tracy & Morrison, 2013) these findings suggest

reasons for concerned about the increasing rates of opioid NMPDU found here. Future work should examine whether increasing rates of older adult opioid NMPDU are due more to factors specific to this group (e.g., attitudes towards drug use) or other factors, including the increases in opioid prescriptions (Sites, et al., 2014) and distal factors like economic indicators (Bretteville-Jensen, 2011).

Also, given the general consensus about the significant risks of tranquilizer use in older adults (American Geriatrics Society Beers Criteria Update Expert Panel, 2012), the trend-level evidence of increased past-year tranquilizer NMPDU should be of concern. Finally, the lack of findings related to more recent stimulant NMPDU may come more from low prevalence rates than any changes in such NMPDU.

4.1 Limitations

First, between 23 and 28.3% of contacted individuals declined to participate, potentially introducing self-selection bias. The NSDUH is designed to minimize such bias, and the bias is unlikely to significantly alter outcomes either due to a respondent declining to participate or to missing data on individual items (Frechtel & Copello, 2007; SAMHSA, 2014). Further selection bias could have come from undersampling of older adults in residential care or hospital settings (Cunningham, et al., 2015). Third, despite NSDUH features intended to increase full and honest reporting, the sensitive nature of the assessment may have resulted in misreporting by respondents. Fourth, Boyd and McCabe (2008) note that the NSDUH assessment of lifetime NMPDU is complex, which could have caused misclassification of NMPDU status. Finally, reporting of use and use rates many have been affected in the 2012-2013 period by economic factors (Bretteville-Jensen, 2011), and examination of only the two discreet periods (versus every year of the span) may have altered results.

4.2 Conclusions

These results indicate increases from 2002-2003 to 2012-2013 in lifetime NMPDU across medication classes in older adults and two sub-groups: 50 to 64 years and 65 years and older. They also provide evidence of increased rates of past year opioid NMPDU across age groups and trend-level increases in past year tranquilizer NMPDU and past 30-day opioid NMPDU in all older adults. With the work of West et al. (2015) finding increases in older adult opioid-related mortality, these results suggest the importance of education of both treating clinicians and older adults about opioid NMPDU. Use of prescribing guidelines (such as Abdulla, et al., 2013) may help clinicians in making decisions about opioid use in older adults. While results were non-significant for more recent stimulant and tranquilizer NMPDU, education about proper use of such medications in older adults is still warranted, with circumscribed tranquilizer use in older adults, per the Beers Criteria (American Geriatrics Society Beers Criteria Update Expert Panel, 2012). Overall, these results suggest the need for public health and educational efforts to reverse increases in older adult NMPDU that may result in increased medication-related morbidity and mortality in the coming years in this age group.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- We examined recent trends in older adult nonmedical prescription drug use (NMPDU).
- Analyses included opioid, tranquilizer and stimulant NMPDU from 2002-03 to 2012-13.
- We included all older adults (≥ 50 years), those 50-64 and those 65 and older.
- Lifetime NMPDU rose across drugs and in all age groups from 2002-03 to 2012-13.
- Past year opioid NMPDU also increased in all age groups during the examined period.

Table 1

Weighted Prevalence Trends of Nonmedical Prescription Drug Use in Older Adults: 2002-03 versus 2012-13

	Lifetime		Past Year		Past 30-day	
	2002-2003	2012-2013	2002-2003	2012-2013	2002-2003	2012-2013
50 and older						
Opioids	5.6% (4.88-6.43)	8.0% (7.15-8.98)	1.0% (0.74-1.45)	1.7% (1.33-2.13)	0.5% (0.27-0.76)	0.8% (0.54-1.05)
Tranquilizers	4.5% (3.84-5.24)	6.6% (5.82-7.51)	0.6% (0.38-0.94)	0.9% (0.60-1.20)	0.3% (0.16-0.55)	0.2% (0.14-0.36)
Stimulants	5.2% (4.46-5.94)	7.1% (6.27-8.01)	0.1% (0.04-0.23)	0.3% (0.14-0.45)	*****	*****
50-64 years						
Opioids	8.3% (7.41-9.21)	11.4% (10.43-12.35)	1.5% (1.19-1.98)	2.5% (2.10-3.05)	0.6% (0.44-0.93)	1.0% (0.71-1.27)
Tranquilizers	6.4% (5.63-7.22)	8.9% (8.05-9.75)	1.1% (0.75-1.48)	1.4% (1.09-1.78)	0.5% (0.28-0.73)	0.5% (0.35-0.78)
Stimulants	8.1% (7.28-9.05)	9.5% (8.67-10.41)	0.2% (0.08-0.41)	0.3% (0.21-0.53)	*****	*****
65 and older						
Opioids	2.2% (1.64-2.88)	3.2% (2.59-3.93)	0.4% (0.25-0.79)	1.0% (0.64-1.46)	0.3% (0.15-0.32)	0.5% (0.31-0.83)
Tranquilizers	1.5% (1.02-2.08)	3.0% (2.40-3.83)	0.2% (0.06-0.46)	0.4% (0.21-0.78)	*****	*****
Stimulants	1.2% (0.86-1.78)	3.0% (2.38-3.75)	*****	*****	*****	*****

Notes: *** indicates that analyses were censored due to unweighted cells below 10 and/or poor model fit; Weighted percentages are followed in the table by 95% confidence intervals, in parentheses.

Logistic Regression Trend Results for Nonmedical Prescription Drug Use in Older Adults: 2002-03 versus 2012-13

Table 2

	Lifetime			Past Year			Past 30-day		
	Wald F	p	AOR (95% CI)	Wald F	p	AOR (95% CI)	Wald F	p	AOR (95% CI)
50 and older									
Opioids	27.1	< .0001	1.45 (1.26-1.67)	13.7	.0002	1.74 (1.30-2.33)	3.8	.051	1.53 (1.00-2.35)
Tranquilizers	31.3	< .0001	1.57 (1.34-1.83)	3.8	.051	1.49 (1.00-2.24)	0.02	.893	1.04 (0.58-1.89)
Stimulants	17.5	< .0001	1.36 (1.18-1.58)	2.3	.130	1.99 (0.82-4.82)	*****	*****	*****
50-64 years									
Opioids	22.6	< .0001	1.45 (1.24-1.69)	9.5	.002	1.66 (1.20-2.29)	2.8	.094	1.52 (0.93-2.49)
Tranquilizers	19.3	< .0001	1.46 (1.24-1.74)	2.0	.154	1.36 (0.89-2.09)	0.3	.614	1.17 (0.63-2.18)
Stimulants	6.7	.010	1.23 (1.05-1.44)	1.6	.211	1.79 (0.72-4.46)	*****	*****	*****
65 and older									
Opioids	4.2	.041	1.47 (1.02-2.12)	4.1	.043	2.09 (1.02-4.28)	1.0	.316	1.56 (0.65-3.75)
Tranquilizers	11.8	.0006	2.13 (1.38-3.28)	2.2	.141	2.55 (0.73-8.86)	*****	*****	*****
Stimulants	16.2	.0001	2.45 (1.58-3.80)	*****	*****	*****	*****	*****	*****

Notes: *** indicates that analyses were censored due to unweighted cells below 10 and/or poor model fit; AOR = Adjusted Odds Ratio, with adjustments for gender, race/ethnicity and population density of the respondent's residence at the time of the survey.