Nondaily Cigarette Smoking Is Increasing Among People With Common Mental Health and Substance Use Problems in the United States:

Data From Representative Samples of US Adults, 2005–2014

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ABSTRACT

Objective: The current study estimated trends in the prevalence of daily and nondaily cigarette smoking among United States adults with any common mental health or substance use problem (MHSUP), compared to US adults without MHSUP, from 2005 to 2014.

Methods: Data were drawn from the years 2005 to 2014 from the public use data files for the annually conducted National Survey on Drug Use and Health. Linear time trends of current, daily, and nondaily cigarette smoking among adults (age 18 years and older) with and without MHSUP were assessed using logistic regression models with continuous year as the predictor.

Results: In 2014, the prevalence of current cigarette smoking among those with MHSUP was more than twice that of those without MHSUP. Nondaily cigarette smoking increased significantly from 2005 to 2014 among those with MHSUP ($P = .001$) in contrast to a decline in nondaily cigarette smoking among those without MHSUP ($P < .01$). The rate of change differed significantly ($P < .001$). Daily cigarette smoking declined significantly from 2005 to 2014 among those with and without MHSUP (P values $< .001$).

Conclusions: The prevalence of nondaily cigarette smoking is increasing among US adults with common mental health and substance use problems, while it continues to decline among those without these vulnerabilities. The disparity in prevalence of daily cigarette smoking between those with and without MHSUP remains substantial. Conclusions about how to reach the tobacco endgame may need to be reconsidered to develop targeted tobacco control public health approaches that address common MHSUP.

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While cigarette smoking remains the leading cause of preventable death and disability in the United States, the prevalence of smoking has declined substantially over the past several decades.[1] However, it is not clear that groups with vulnerabilities linked to high prevalences of cigarette smoking have shown declines in smoking at the same rate as those without these vulnerabilities. One such group may be persons with common mental health and substance use problems (MHSUP; eg, depression, substance use disorders [SUDs]).

Persons with MHSUP report higher prevalences of cigarette smoking and use more cigarettes per day (CPD) than those without MHSUP.[2–8] Though studies have not found differences by MHSUP status in desire or attempts to quit smoking,[6,9–11] depression, anxiety, and SUDs are associated with lower cigarette smoking quit rates.[4,12–16] Further, persons with MHSUP have been designated as a tobacco use disparity group[7] and as such are a priority for research, clinical, and public health efforts.

Most studies on MHSUP and cigarette smoking prevalence have analyzed cross-sectional data from 1 timepoint (eg, Richter et al,[4] Lasser et al[17]); less is known about changes in cigarette smoking prevalence over time. Further, the studies that have examined persons with MHSUP have focused on 1 disorder or certain types of mental health symptoms. Few studies included SUDs, which are highly comorbid with mental health problems, yet prior studies have not examined trends in smoking in this broader group combined. Prior studies on this topic have reported somewhat mixed results. For example, Lawrence and Williams[18] found that rates of cigarette smoking substantially declined among US adults without psychological distress (measured using the Kessler Psychological Distress Scale) with smaller and nonsignificant reductions in cigarette smoking observed among US adults with higher levels of psychological distress. Similarly, Lê Cook and colleagues[2] found that cigarette smoking did not change significantly from 2004 to 2011 among US adults with mental illness (defined as self-reported severe psychological distress, probable depressive disorder, or past-year mental illness treatment); Szatkowski and McNeill[19] reported that cigarette

Clinical Points

- Cigarette smoking is the leading preventable cause of mortality and morbidity in the United States. While cigarette smoking prevalence has decreased in the general US population over time, it is not known whether the prevalence of cigarette smoking has similarly decreased among persons with mental health and substance use problems.
- The prevalence of nondaily cigarette smoking increased from 2005 to 2014 among US adults with common mental health and substance use problems, while it simultaneously declined among those without common mental health and substance use problems.
- While the prevalence of daily cigarette smoking decreased from 2005 to 2014 among US adults with and without common mental health and substance use problems, the prevalence of daily smoking for persons with common mental health and substance use problems remains more than double that of persons without these problems.

smoking did not change from 1993 to 2011 among adults in England with mental illness (defined as self-reported long-standing mental illness, depression, or anxiety); and Steinberg and colleagues[6] found that cigarette smoking did not change from 2001 to 2010 among US adults with poorer mental health (defined as the report of "not good" mental health ≥ 14 days in the past month on the Behavioral Risk Factor Surveillance System). These findings were in contrast to a decline in cigarette smoking over time among those without mental illness/health indicators. In contrast, a recent study found that smoking declined over time among those both with and without depression, though the prevalence of cigarette smoking remained over 2-fold higher among those with depression.[20] With regard to SUDs, one study reported that the prevalence of cigarette smoking declined over time among those without SUDs but increased overall among those with SUDs (with the exception of cannabis use disorder).[21] The broader question of whether trends in cigarette use vary in rate and direction among those with and without any common MHSUP in the United States has not been addressed.

It is important to note that previous studies of MHSUP combined both daily and nondaily cigarette smokers. The proportion of cigarette smokers who report nondaily cigarette smoking is increasing,[22–25] and nondaily smoking is associated with negative health consequences.[26,27] Persons with self-reported poorer mental health report a greater prevalence of intermittent cigarette smoking compared to persons with better mental health.[6] No study has yet examined trends in daily and nondaily cigarette smoking prevalence separately over time among persons with MHSUP.

The goal of the current study is to examine the prevalence of daily and nondaily cigarette use over time among those with and without MHSUP in a national sample of US adults. Given that policy decisions and their implementation about how to best address smoking cessation in vulnerable segments of the population are unlikely to be made in a diagnosis-specific way (eg, cannabis use disorder vs alcohol use disorder, major depressive disorder versus generalized anxiety disorder), but instead would be made in a broader capacity (eg, any substance use problem, any mental health problem), the current study assessed trends in cigarette smoking among those with versus without any MHSUP. The first aim was to estimate the prevalence of current cigarette smoking among those with and without any MHSUP from 2005 to 2014, adjusting for demographic characteristics. The second aim was to estimate the prevalence of daily cigarette smoking among those with and without any MHSUPs from 2005 to 2014, adjusting for demographics. The third aim was to estimate the prevalence of nondaily cigarette smoking in the same groups from 2005 to 2014, adjusting for demographic characteristics.

METHODS

Study Population

Data for this study came from the National Survey on Drug Use and Health (NSDUH), which is designed to provide estimates of legal and illegal drug use in US persons age 12 years and older. The survey employs a 50-state design with an independent multistage area probability sample for each of the 50 states and the District of Columbia. African-Americans, Hispanics, and young people were oversampled. The present analyses are based on deidentified data that are exempt from institutional review board review.

For the current analyses, data were obtained for adults age ≥ 18 from the 2005 (n = 40,386), 2006 (n = 39,871), 2007 (n = 40,565), 2008 (n = 40,266), 2009 (n = 40,479), 2010 (n = 41,706), 2011 (n = 41,938), 2012 (n = 40,526), 2013 (n = 40,165), and 2014 (n = 43,864) NSDUH public use data files, which can be accessed at http://datafiles.samhsa.gov/, for a combined total sample size of 409,718 individuals. Further descriptions of the NSDUH are found elsewhere.[28]

Measures

Sociodemographic variables. Sociodemographic variables included gender (male, female), race/ethnicity (White, African-American/Black, Hispanic, Other [Native American/Alaska Native, Native Hawaiian/Other Pacific Islander, Asian, > 1 race]), age (12–17 years, 18–25 years, 26 years and older), and total annual family income (< $20,000, $20,000–$74,999, ≥ $75,000).

Mental health and substance use problems. A dichotomous variable was created to identify persons with and without MHSUP. Individuals who reported experiencing past-year major depressive episode (MDE), serious psychological distress, SUDs, alcohol use disorders, heavy alcohol use, or daily cannabis use were coded as having any MHSUP, while individuals who did not report any of the above were coded as not having any MHSUP. Past-year MDE was defined as experiencing ≥ 5 out of 9 MDE criteria where at least 1 criterion was depressed mood or loss of interest or

pleasure in daily activities. Past-year serious psychological distress was defined as a score of ≥ 13 on the 6-item Kessler Psychological Distress Scale (range, 0–24),[29,30] consistent with other studies of psychological distress and cigarette smoking.[2,18] SUDs were assessed via *DSM-IV-TR* criteria[31] for abuse and/or dependence on prescription pain relievers, cocaine, hallucinogens, heroin, inhalants, cannabis, sedatives, stimulants, and tranquilizers. A dichotomous variable was created to indicate the presence of any SUD versus no SUDs. Alcohol use disorder was also assessed using *DSM-IV-TR* criteria and represented via a dichotomous (yes/no) variable. Heavy alcohol use was defined as drinking ≥ 5 drinks on the same occasion on each of 5 or more days within the past 30 days. Participants who reported using cannabis on 300 days or greater in the past year were classified as "daily users," while those reporting use on < 300 days were classified as "nondaily users."[32–35]

Cigarette smoking variables. Individuals who reported smoking at least 100 cigarettes in their lifetime *and* at least 1 cigarette within the past 30 days were classified as current cigarette smokers. Current cigarette smokers were then subdivided based on frequency of smoking: those who smoked 1 to 29 days of past 30 days were classified as nondaily cigarette smokers, and those who smoked 30 of the past 30 days were classified as daily cigarette smokers. Individuals who never smoked part or all of a cigarette or smoked fewer than 100 cigarettes in their lifetime were classified as nonsmokers.

Statistical Analysis

Data were weighted to reflect the complex design of the NSDUH sample and were analyzed with STATA SE version 12.0 software.[36] Sampling weights for the NSDUH were computed to control for unit-level and individual-level nonresponse and were adjusted to ensure consistency with population estimates obtained from the US Census Bureau. In order to use data from the 10 years of combined data, a new weight was created upon aggregating the 10 datasets by dividing the original weight by the number of data sets combined. We used Taylor series estimation methods (STATA "svy" commands) to obtain proper standard error estimates for the cross-tabulations. We examined the prevalence of any current cigarette smoking, daily cigarette smoking, and nondaily cigarette smoking from 2005 to 2014 between individuals with MHSUP versus no MHSUP, controlling for sociodemographics (ie, gender, age, race/ethnicity, income). Within these analyses, odds ratios (ORs) indicate the slope of the increase/decrease (ie, rapidity of change) in cigarette smoking between 2005 and 2014. Furthermore, models with year-by–cigarette smoking status interaction terms, and *F* tests to test the significance of these interactions, were used to assess differential time trends (ie, differences in the rapidity of change between individuals with vs without MHSUP). Additional analyses replicated these analyses comparing 4 distinct groups: individuals without any MHSUP; individuals with substance use problems only (SUP only); individuals with mental health problems only (MH only); and individuals with comorbid mental health and substance use problems.

RESULTS

Cigarette Use Among Persons With and Without Any MHSUP, 2014

In 2014, the prevalence of any current cigarette smoking was significantly higher among those with MHSUP relative to those without any MHSUP (38.45% vs 15.36%, $P < .001$). Similarly, in 2014, both daily and nondaily cigarette smoking were significantly higher among those with MHSUP compared to those without MHSUP (24.21% vs 10.21%, $P < .001$, and 33.73% vs 27.34%, $P < .001$, respectively).

Among cigarette smokers, 38.49% smoked 1–5 CPD, 32.47% smoked 6–15 CPD, and 29.03% smoked ≥ 16 CPD, and those with and without any MHSUP did not differ in CPD. Among daily cigarette smokers, those with MHSUP, compared to those without MHSUP, were less likely to smoke 1–5 CPD (17.61% vs 20.24%) and more likely to smoke ≥ 16 CPD (44.13% vs 39.14%; $\chi^2_2 = 148.99$, N = 6,050, $P = .014$). Among nondaily cigarette smokers, persons with MHSUP, compared to those without MHSUP, were less likely to smoke 1–5 CPD (69.0% vs 74.7%) and more likely to smoke 6–15 CPD (22.2% vs 16.3%; $\chi^2_2 = 270.10$, N = 3,518, $P = .015$).

Cigarette Use Among Persons With and Without Any MHSUP, 2005–2014

Current cigarette smoking declined significantly between 2005 and 2014 among individuals with MHSUP (from 43.22% to 38.45%, $P < .001$) and without MHSUP (from 19.36% to 15.36%, $P < .001$). The rate of change did not differ between groups ($P = .619$; see Table 1). Results of additional subgroup-specific analyses indicated that the prevalence of current cigarette smoking declined significantly between 2005 and 2014 among persons with no MHSUP (adjusted OR [aOR] = 0.97, 95% CI = 0.96 to 0.98), SUP only (aOR = 0.97, 95% CI = 0.97 to 0.98), MH only (aOR = 0.98, 95% CI = 0.97 to 0.98), and MHSUP (aOR = 0.97, 95% CI = 0.96 to 0.99). There were no differences in the rate of change across these groups (data not shown).

Daily Cigarette Use Among Persons With and Without Any MHSUP, 2005–2014

The prevalence of daily cigarette smoking declined significantly between 2005 and 2014 among individuals with MHSUP (from 29.42% to 24.21%, $P < .001$) and without MHSUP (from 13.48% to 10.21%, $P < .001$). The rate of change did not differ significantly between groups ($P = .439$; see Table 2). Results of additional subgroup-specific analyses indicated that the prevalence of daily cigarette smoking declined significantly between 2005 and 2014 among persons with no MHSUP (aOR = 0.97, 95% CI = 0.96 to 0.98), SUP only (aOR = 0.97, 95% CI = 0.96 to 0.98), MH only (aOR = 0.97, 95% CI = 0.96 to 0.98), and MHSUP (aOR = 0.96, 95% CI = 0.94 to 0.97). There were no differences in the rate of change across these groups (data not shown).

Table 1. Prevalence of Any Current (Past 30 Days) Cigarette Smoking for Overall Analytic Sample and by Past-Year MHSUP Status (NSDUH, 2005–2014, Persons 18 Years and Older)[a]

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Linear Trend: OR (95% CI) *t* Test (*P* Value) β (95% CI)	Linear Trend: aOR[b] (95% CI) *t* Test (*P* Value) β (95% CI)
Current cigarette smoking, n	11,185	10,872	10,847	10,523	10,383	10,354	10,325	9,686	9,363	9,579	**0.97 (0.97 to 0.98) *t* = −13.49 (<.001) −0.03 (−0.03 to −0.02)**	**0.98 (0.97 to 0.98) *t* = −11.53 (<.001) −0.02 (−0.03 to −0.02)**
Weighted %	24.81	24.70	23.82	23.50	23.06	22.56	21.56	21.73	20.93	20.73		
SE	0.40	0.34	0.36	0.44	0.36	0.37	0.40	0.35	0.32	0.27		
Current cigarette smoking among those with any MHSUP,[c] n	5,613	5,440	5,429	5,374	5,346	5,273	5,132	4,920	4,622	4,564	**0.97 (0.97 to 0.98) *t* = −8.23 (<.001) −0.03 (−0.03 to −0.02)**	**0.98 (0.97 to 0.98) *t* = −7.44 (<.001) −0.03 (−0.03 to −0.02)**
Weighted %	43.22	43.61	41.24	42.50	40.86	39.53	39.39	38.92	37.65	38.45		
SE	0.95	0.69	0.77	1.00	0.81	0.95	0.78	0.73	0.67	0.60		
Current cigarette smoking among those without any MHSUP, n	5,572	5,432	5,418	5,149	5,037	5,081	5,193	4,766	4,741	5,015	**0.97 (0.96 to 0.98) *t* = −11.07 (<.001) −0.03 (−0.04 to −0.03)**	**0.97 (0.97 to 0.98) *t* = −9.33 (<.001) −0.03 (−0.03 to −0.02)**
Weighted %	19.36	18.96	18.58	17.57	17.57	17.42	16.38	16.40	15.82	15.36		
SE	0.41	0.35	0.41	0.44	0.38	0.41	0.37	0.37	0.34	0.29		
											Unadjusted *F* (*P* Value)	Adjusted *F* (*P* Value)
Differential time trend: year as continuous × past-year MHSUP status											$F_1 = 0.06$ (.813)	$F_1 = 0.25$ (.619)

[a]Boldface indicates statistical significance.
[b]Adjusted for gender, age, race/ethnicity, and income.
[c]MHSUP was defined as having past-year major depressive episode, serious psychological distress, alcohol or substance use disorder(s), heavy alcohol use, or daily cannabis use.
Abbreviations: aOR = adjusted odds ratio, CI = confidence interval, MHSUP = mental health or substance use problem, NSDUH = National Survey on Drug Use and Health, OR = odds ratio, SE = standard error.

Table 2. Prevalence of Current Daily Cigarette Smoking Among Those With Past-Year MHSUP and No Past-Year MHSUP (NSDUH, 2005–2014, Persons 18 Years and Older)[a]

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Linear Trend: OR (95% CI) *t* Test (*P* Value) β (95% CI)	Linear Trend: aOR[b] (95% CI) *t* Test (*P* Value) β (95% CI)
Daily cigarette smoking, n	7,370	7,135	7,073	6,864	6,735	6,602	6,633	6,282	5,868	6,058	**0.97 (0.96 to 0.97) *t* = −15.09 (<.001) −0.03 (−0.04 to −0.03)**	**0.97 (0.97 to 0.98) *t* = −12.59 (<.001) −0.03 (−0.03 to −0.02)**
Weighted %	17.12	16.90	15.97	15.99	15.66	14.98	14.58	14.53	13.64	13.47		
SE	0.35	0.28	0.28	0.37	0.31	0.34	0.27	0.33	0.26	0.21		
Daily cigarette smoking among those with any MHSUP,[c] n	3,612	3,447	3,495	3,376	3,413	3,233	3,244	3,128	2,793	2,798	**0.97 (0.96 to 0.98) *t* = −9.18 (<.001) −0.03 (−0.04 to −0.02)**	**0.97 (0.96 to 0.98) *t* = −8.72 (<.001) −0.03 (−0.04 to −0.02)**
Weighted %	29.42	29.27	27.63	27.35	27.24	25.59	26.45	25.54	23.52	24.21		
SE	0.74	0.61	0.71	0.76	0.62	0.84	0.70	0.66	0.65	0.54		
Daily cigarette smoking among those without any MHSUP, n	3,758	3,688	3,578	3,488	3,322	3,369	3,389	3,154	3,075	3,260	**0.97 (0.96 to 0.97) *t* = −10.18 (<.001) −0.03 (−0.04 to −0.03)**	**0.97 (0.97 to 0.98) *t* = −8.22 (<.001) −0.03 (−0.03 to −0.02)**
Weighted %	13.48	13.15	12.46	12.45	12.10	11.76	11.14	11.12	10.62	10.21		
SE	0.39	0.29	0.30	0.38	0.35	0.37	0.28	0.37	0.29	0.22		
											Unadjusted *F* (*P* Value)	Adjusted *F* (*P* Value)
Differential time trend: year as continuous × past year MHSUP status											$F_1 = 0.14$ (.711)	$F_1 = 0.60$ (.439)

[a]Boldface indicates statistical significance.
[b]Adjusted for gender, age, race/ethnicity, and income.
[c]MHSUP was defined as having past-year major depressive episode, serious psychological distress, alcohol or substance use disorder(s), heavy alcohol use, or daily cannabis use.
Abbreviations: aOR = adjusted odds ratio, CI = confidence interval, MHSUP = mental health or substance use problem, NSDUH = National Survey on Drug Use and Health, OR = odds ratio, SE = standard error.

Nondaily Cigarette Use Among Persons With and Without Any MHSUP, 2005–2014

The prevalence of nondaily cigarette smoking increased from 29.54% in 2005% to 33.73% in 2014 among individuals with any MHSUP ($P = .001$). Conversely, nondaily cigarette smoking declined from 29.13% in 2005% to 27.43% in 2014 among individuals without any disorder ($P < .001$). The rate of change was significantly different between groups ($P < .001$; see Table 3). Results of additional subgroup-specific analyses indicated that, between 2005 and 2014, the prevalence of nondaily cigarette smoking declined significantly among individuals with no MHSUP (aOR = 0.99, 95% CI = 0.98

Table 3. Prevalence of Current Nondaily Cigarette Smoking Among Those With Any Past-Year MHSUP vs No MHSUP (NSDUH, 2005–2014, Persons 18 Years and Older)[a]

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Linear Trend: OR (95% CI) *t* Test (*P* Value) β (95% CI)	Linear Trend: aOR[b] (95% CI) *t* Test (*P* Value) β (95% CI)
Current nondaily cigarette smoking, n	8,882	8,985	9,104	8,725	8,751	8,962	8,883	8,594	8,641	10,364	**0.99 (0.99 to 1.00) *t* = −2.85 (.005) −0.01 (−0.01 to 0.00)**	1.00 (0.99 to 1.00) *t* = −1.41 (.162) −0.01 (−0.01 to 0.01)
Weighted %	29.23	30.09	30.39	29.64	29.34	29.33	28.56	29.30	29.39	28.83		
SE	0.46	0.41	0.35	0.48	0.38	0.39	0.43	0.45	0.36	0.36		
Current nondaily cigarette smoking among those with any MHSUP,[c] n	3,291	3,265	3,358	3,317	3,279	3,407	3,220	3,149	3,166	3,532	**(1.00 to 1.02) *t* = 3.56 (.001) 0.01 (0.01 to 0.02)**	**1.01 (1.01 to 1.02) *t* = 3.42 (.001) 0.01 (0.01 to 0.02)**
Weighted %	29.54	30.82	32.22	32.43	32.14	31.67	30.52	31.51	33.22	33.73		
SE	0.66	0.76	0.71	0.79	0.86	0.90	0.77	0.75	0.76	0.60		
Current nondaily cigarette smoking among those without any MHSUP, n	5,591	5,720	5,746	5,408	5,472	5,555	5,663	5,445	5,475	6,832	**0.99 (0.98 to 0.99) *t* = −4.77 (<.001) −0.01 (−0.02 to −0.01)**	**0.99 (0.99 to 1.00) *t* = −3.06 (.003) −0.01 (−0.01 to 0.00)**
Weighted %	29.13	29.87	29.84	28.77	28.48	28.62	28.00	28.62	28.22	27.34		
SE	0.56	0.43	0.38	0.58	0.41	0.41	0.57	0.50	0.50	0.41		
											Unadjusted *F* (*P* Value)	Adjusted *F* (*P* Value)
Differential time trend: year as continuous × past year MHSUP status											**F_1 = 23.94 (<.001)**	**F_1 = 16.02 (<.001)**

[a]Boldface indicates statistical significance.
[b]Adjusted for gender, age, race/ethnicity, and income.
[c]MHSUP was defined as having past-year major depressive episode, serious psychological distress, alcohol or substance use disorder(s), heavy alcohol use, or daily cannabis use.
Abbreviations: aOR = adjusted odds ratio, CI = confidence interval, MHSUP = mental health or substance use problem, NSDUH = National Survey on Drug Use and Health, OR = odds ratio, SE = standard error.

to 0.99). The prevalence of nondaily smoking increased significantly among participants with SUP only (aOR = 1.02, 95% CI = 1.01 to 1.02), MH only (aOR = 1.01, 95% CI = 1.00 to 1.02), and MHSUP (aOR = 1.03, 95% CI = 1.01 to 1.05). Moreover, the rate of change differed significantly among the 4 groups ($F_{3,\ 108} = 8.12$, $P < .001$; data not shown).

DISCUSSION

This study examined the prevalence of daily and nondaily cigarette smoking among US persons with and without MHSUP from 2005 to 2014. First, the prevalence of nondaily cigarette smoking is increasing among those with any MHSUP, whereas it is decreasing among those without any MHSUP. The increase was more rapid for those with both mental health and substance use problems compared with those with SUP only, and both of these groups demonstrated a more rapid increase in nondaily smoking than those with mental health problems alone. The increase in nondaily smoking for all MHSUP groups significantly differed from the decrease in nondaily smoking shown for those without MHSUP. Second, the prevalence of daily cigarette smoking is declining over time among both those with and without any MHSUP. This decline was observed among those with MH problems alone, substance use problems alone, and both mental health and substance use problems. Finally, despite declines in daily cigarette smoking for persons with and without MHSUP, disparities in smoking persist: the prevalence of daily cigarette smoking and nondaily cigarette smoking remains nearly 2-fold higher among those with, compared to without, any MHSUP.

While the decrease in daily cigarette smoking among persons with MHSUP is promising, the prevalence of cigarette smoking among persons with MHSUP remained very high. This finding is consistent with prior studies of smoking prevalences among persons with specific mental disorders and SUDs in the US population (eg, Smith et al,[8] Weinberger et al[37]). Further, even though a decline in cigarette smoking was seen for persons with MHSUP, the rate of decline did not differ by MHSUP status, suggesting that the MHSUP disparities in cigarette smoking are not shrinking over time (ie, which would have required a faster rate of decline for those with MHSUP compared to those without MHSUP). This trend suggests that those with MHSUP will continue to exhibit much higher cigarette smoking prevalences than those without MHSUP. While public health efforts may be reaching persons with MHSUP, more work is needed in order to attenuate the disparity between those with and without MHSUP. This type of endeavor would likely require national efforts (and resources) focused on a range of tobacco control and treatment initiatives.[7]

While nondaily cigarette smoking decreased among persons without MHSUP, the prevalence of nondaily cigarette smoking *increased* from 2005 to 2014 for persons with MHSUP. Further, those with both mental health and substance use problems showed a more rapid increase in nondaily smoking over time compared to those with SUP only or MH only. The current findings are consistent with a previous study of US adults[6] that found a significant increase in the prevalence of nondaily smoking among persons who self-reported poorer mental health (ie, depression, stress, problems with emotions) compared to better mental health.

There is a commonly held view that nondaily cigarette smoking is not harmful[38]; however, nondaily cigarette smoking has negative health consequences,[26] many nondaily smokers eventually increase to daily cigarette consumption,[39–41] and nondaily cigarette smokers are less likely to express an intention to quit smoking relative to daily smokers.[23] Interestingly, among persons with self-reported better mental health, a greater percentage of nondaily smokers than daily smokers reported a past-year quit attempt.[6] A similar pattern was seen for those with poorer mental health, although the comparisons largely did not reach statistical significance, potentially due to smaller sample sizes. It is not clear whether the increase in nondaily cigarette smoking for persons with MHSUP is due to persons decreasing cigarette smoking from daily to nondaily levels or incident nondaily cigarette smoking. Future studies should examine reasons for the increase in nondaily cigarette smoking to determine what resources are most needed (eg, efforts to prevent incident nondaily cigarette smoking, efforts to help daily smokers quit completely rather than decrease to nondaily smoking). Persons who present with both mental health and substance use problems may need additional research and clinical attention to understand and address their greater increasing trend in nondaily smoking.

The 2008 Update to the Clinical Practice Guidelines for Treating Tobacco Use and Dependence[42] recommends routine screening for cigarette smoking in medical settings. It is recommended that physicians use the "5 *A*'s" with all patients (*Ask* patients if they smoke, *Advise* patients to quit, *Assess* patients' motivation for quitting, *Assist* with quit attempts, *Arrange* follow-up contacts). The number of physicians who ask about smoking status varies widely (33%–65%), and fewer physicians assist patients with smoking cessation counseling.[43–46] When patients enter treatment for MHSUP, it provides an opportunity to identify smokers (nondaily and daily) and provide cessation treatment options.

This study had a number of limitations. First, results may not generalize to persons under age 18, outside of the United States, or who use non-cigarette tobacco products. Second, the data were cross-sectional, which prevented the examination of variables over time that would require longitudinal data (eg, changes in MHSUP, smoking quit attempts). Third, cigarette smoking and substance use were self-reported and not biochemically confirmed. Substance use behaviors, including cigarettes and illicit substances, may be underreported.[47,48] Self-report data and epidemiologic studies are also subject to a number of biases such as recall bias[49,50] and selection bias.[51,52] It would also be useful for future investigations to examine non-cigarette tobacco products and potential moderators of the relationship between MHSUP and cigarette smoking (eg, gender, race).

CONCLUSIONS

The prevalence of nondaily cigarette smoking has increased over time among persons with MHSUP while daily smoking has declined among those with and without MHSUP. Overall, the prevalence of both daily and nondaily smoking remains much higher among those with MHSUP compared with those without MHSUP. Development of targeted tobacco control public health approaches that address common mental health and substance use problems in the community may be needed to lower the prevalence.

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