

# Overall Prescription Medication Use Among Adults: Findings from the Survey of the Health of Wisconsin

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## ABSTRACT

**Purpose:** To analyze overall prescription medication use patterns among study participants in a representative statewide sample of Wisconsin adults.

**Methods:** We analyzed data on 1572 participants from the 2008-2010 cycles of the Survey of the Health of Wisconsin (SHOW). SHOW is a statewide population-based survey that collects health information, including prescription medications, from 21 to 74 year olds. Prescription medication use was examined according to demographic and socioeconomic characteristics.

**Result:** Almost 55% of participants reported using at least 1 medication in the past month and 14% reported using at least 5 medications. The top 5 medications reported were lisinopril, hydrochlorothiazide, simvastatin, levothyroxine, and metoprolol. Overall prescription medication use increased significantly with age. Medication use was greater among females, former smokers, adults with body mass index (BMI)  $\geq 30$ , or with low family income, and non-hispanic blacks. Adults having health insurance, drug coverage, or a regular source of care were more likely to report medication use.

**Conclusion:** The prevalence of prescription medication use in a general population sample in Wisconsin was high. Age, gender, race, BMI, family income, smoking history, health insurance, prescription drug coverage, and having a regular source of health care were associated with prescription medication use.

## INTRODUCTION

Prescription medications have become a significant component of health care expenditures. According to data from the 2007-2008 National Health and Nutrition Examination Survey (NHANES), the percentage of Americans who took at least 1 prescription

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medication in the past month increased from 43% to 48% during the last decade; the proportion of those using at least 5 prescription medications increased from 6% to 11%, and 53% of women and 43% men used at least 1 prescription medication in the past month.<sup>1</sup> Prescription drug spending was estimated at \$234.1 billion in 2008, more than double the spending in 1999.<sup>1</sup>

The rapid increase in medication use does not appear to result in a proportionally equivalent degree of improved health outcomes, in part because medications are not always prescribed or used appropriately.<sup>2,3</sup> Clinically indicated medications may be omitted, while inappropriate medications may be prescribed even though the potential risks outweigh the clinical benefits.<sup>3,4</sup> For instance, aspirin was reported to be underused in high cardiovascular disease (CVD) risk groups, but overused in low CVD risk

groups among Wisconsin adults.<sup>5</sup> A survey of Iowa Medicare beneficiaries found that 51% of respondents had received at least 1 potentially inappropriate prescription medication.<sup>6</sup> Older adults are particularly vulnerable to medication-related problems because they are more likely to use multiple medications due to chronic diseases. According to another recent study, “a higher number of concurrent medicines is the only significant predictor of inappropriate medicine use.”<sup>7</sup> Inappropriate prescribing of medications among the elderly is now considered a major public health issue, and advocates are calling for new prescribing criteria.<sup>4,7</sup>

Without sufficient knowledge about the prescription medication use patterns at a state or national level, it would be nearly impossible to determine whether or not medications have been prescribed appropriately and which areas public health policies should target. However, population-based studies of prevalence of prescription medication use are scarce. The most recent studies utilizing medication data from the National Social Life,

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Health and Aging Project (NSHAP) and NHANES have shed some light on the current medication use pattern among elderly, obese adults and the general US population.<sup>1,8,9</sup> However, more granular data (eg, at the state level) that can support more targeted and regional evaluation of health care system variations are lacking. The goals of this study are to identify the most commonly used prescription medications, to estimate the prevalence of prescription medication use, and to examine socio-demographic factors related to prescription medication use in a representative sample of Wisconsin adults.

## METHODS

### Data Source

As described elsewhere in detail,<sup>10</sup> the Survey of the Health of Wisconsin (SHOW) is an annual examination survey of representative household-based samples of the adult (21 to 74 years old) population of Wisconsin. SHOW collects data on a breadth of health and health care determinants, including a detailed inventory of prescription medications and medication use.<sup>10</sup> SHOW mimics NHANES, but is focused locally with the purpose of guiding public health and health care programs aimed at improving the health of Wisconsin residents. The present analyses are based on information collected from 1572 participants from the 2008-2010 cycles of SHOW. The study was approved by the UW-Madison Health Sciences Institutional Review Board.

Prescription medication use data were recorded during the household interview by direct observation and information abstraction from medication bottles. The participants were asked: "In the past 30 days, have you used a prescription medication? Include only those products prescribed by a health professional such as a doctor, a nurse practitioner, or a dentist." If the answer was yes, then the field surveyors continued with the following request: "I would like to see the containers for all the prescription medications that you used or took in the past 30 days." The field surveyors then entered medication names from medication bottles directly into secure laptop computers.

The information collected during the household interview includes insurance status and type, prescription drug coverage, and source of care. During the interview, participants were asked: "During the last 12 months, how many months did you have health insurance?" If they answered anything other than "0" they were asked about the type of health insurance (Medicare, Medicaid/Badger Care/Healthy Start/Family Medicaid, Military Health Care, private health plan, or other), prescription drug coverage (covers all of the costs, some of the costs, or none of the costs), and where they most often go to seek medical care or advice when they feel sick.

### Data Processing and Revision

The medication data were reviewed and cleaned by a registered

pharmacist. Data entry inconsistencies and errors (abbreviations, shortened names, and misspellings) were corrected manually and a revised database was created. Next, all brand name medications were translated into generic names, so that the same medications could be aggregated and frequency analyses could be performed. Lexicomp (Walters Kluwer Health, Philadelphia, Pennsylvania, <http://www.lexi.com>) was used as a resource to identify medication spellings and brand or generic names.<sup>11</sup>

Prescription medication use frequency was measured as the aggregate of all medications inventoried by SHOW field surveyors, and specific medication counts were calculated based on the number of unique generic name medications inventoried (Table 1). For the analysis of prescription ingredients, medications that are combination products were treated as single entities and all components were added up (Table 2). For example, simvastatin and simvastatin/ezetimibe (Vytorin) are both counted toward the use of simvastatin. When evaluating the number of prescription drugs taken by a participant, a combination formula (eg, lisinopril/hydrochlorothiazide) is counted as 1 medication.

### Statistical Analysis

Medication use was calculated for each participant based on a series of binary variables. Two binary variables representing medication use were developed. One variable indicates if a participant was taking at least 1 medication ( $\geq 1$ ) and the other if a participant was taking at least 5 medications ( $\geq 5$ ). A continuous number representing the total count of medications taken by each participant also was calculated by summing up all medication counts per respondent.

Microsoft Excel (Microsoft, Redmond, Washington) was used for frequency analyses. All additional statistical analyses were conducted using SAS version 9.3 (SAS Institute Inc., Cary, North Carolina), taking into account the complex sampling design of the SHOW study. The prevalence of medication use and 95% confidence intervals were calculated weighting each observation according to the cluster and stratified sampling design (PROC SURVEYFREQ). The statistical significance of difference in prevalence across different subgroups was assessed using standard chi-squared tests. Logistic regression (PROC SURVEYLOGISTICS) was used for analyses of prescription drug use by health care factors adjusted for demographic variables (age, gender, race/ethnicity). When appropriate, variables were entered as ordinal covariates in the logistic regression model to test the statistical significance of a linear trend.

## RESULTS

Overall, 54.2% of the participants took at least 1 prescription medication in the past month, and 13.5% took at least 5 prescription medications. Prescription medications and prescription ingredients used by at least 2% of the participants are listed in Table 1 and Table 2, respectively.

**Table 1. Most Commonly Used Prescription Medications**

Generic name	Medication Class	Prevalence (%)
Lisinopril	ACEI	7.7
Simvastatin	Antilipemic agent	7.6
Levothyroxine	Synthetic thyroid hormone	7.3
Hydrochlorothiazide	Diuretic	5.4
Metoprolol	β-blocker	5.2
Metformin	Antidiabetic agent	4.2
Omeprazole	Proton pump inhibitor	4.1
Albuterol	β2-agonist	3.7
Atenolol	β-blocker	3.6
Furosemide	Diuretic	3.2
Amlodipine	Calcium-channel blocker	3.0
Citalopram	Antidepressant, SSRI	2.7
Atorvastatin	Antilipemic agent	2.6
Bupropion	Antidepressant	2.5
Sertraline	Antidepressant, SSRI	2.4
Warfarin	Anticoagulant	2.4
Fluticasone	Corticosteroid	2.4
Fluoxetine	Antidepressant, SSRI	2.3
Cyclobenzaprine	Muscle relaxant	2.0
Fluticasone/salmeterol	Corticosteroid/long-acting β2 agonist	2.0
Aspirin	Salicylate	2.0

Data from Survey of the Health of Wisconsin (SHOW), 2008-2010. Generics and brands are combined.  
Abbreviations = ACEI, angiotensin-converting-enzyme inhibitor; SSRI, selective serotonin reuptake inhibitor.

**Table 2. Most Commonly Used Prescription Ingredients**

Generic name	Medication Class	Prevalence (%)
Lisinopril	ACEI	9.2
Hydrochlorothiazide	Diuretic	8.9
Simvastatin	Antilipemic agent	8.4
Levothyroxine	Synthetic thyroid hormone	7.3
Metoprolol	β-blocker	5.2
Metformin	Antidiabetic agent	4.7
Fluticasone	Corticosteroid	4.4
Albuterol	β2-agonist	4.2
Omeprazole	Proton pump inhibitor	4.1
Atenolol	β-blocker	3.7
Acetaminophen	Analgesic	3.6
Amlodipine	Calcium-channel blocker	3.5
Furosemide	Diuretic	3.2
Hydrocodone	Analgesic, opioid	3.2
Citalopram	Antidepressant, SSRI	2.7
Atorvastatin	Antilipemic agent	2.7
Bupropion	Antidepressant	2.5
Sertraline	Antidepressant, SSRI	2.4
Warfarin	Vitamin K antagonist	2.4
Fluoxetine	Antidepressant, SSRI	2.3
Aspirin	Salicylate	2.1
Cyclobenzaprine	Muscle relaxant	2.0
Salmeterol	Long-acting β2-agonist	2.0

Data from Survey of the Health of Wisconsin (SHOW), 2008-2010.  
Abbreviations = ACEI, angiotensin-converting-enzyme inhibitor; SSRI, selective serotonin reuptake inhibitor.

Lisinopril, simvastatin, levothyroxine, hydrochlorothiazide (HCTZ), and metoprolol were the top 5 prescription medications used by sample participants. They also were identified as the top 5 prescription ingredients. One-third of HCTZ was used in various combination products. As a result, use of HCTZ—including that used in combination products—was much higher than the use of HCTZ excluding these products (8.9% vs 5.4%). Lisinopril was the most commonly prescribed medication and ingredient. Nearly 16% of lisinopril was combined with HCTZ. Less than 1% of the participants used combination products for simvastatin (ezetimibe/simvastatin and niacin/simvastatin). Levothyroxine and metoprolol were prescribed as single products.

### Prescription Medication Usage Patterns

Table 3 reports the estimated prevalence of prescription medication use in various subgroups. When age, gender and race were controlled for, prescription medication use increased consistently with age in both categories (≥ 1 medication and ≥ 5 medications). More than 74% of adults aged 60-74 used prescription medications in the past month; in contrast, only about 36% of people aged 21-39 used medications; 27% of subjects aged 60-74 used ≥ 5 medications, but only 3% aged 21-39 used ≥ 5 medications.

Gender, body mass index (BMI), education, family income, smoking history, and race also were correlated with prescription medication use. Women were significantly more likely to use ≥ 5 medications than men (16.3% vs 10.8%). An association between

BMI and any prescription medication use was also found. The prevalence of using ≥ 5 medications was 5 times greater among adults with BMI ≥ 30 compared to those with BMI < 25 (18.4% vs 3.0%). An inverse relationship was observed between family income and medication use. Use of ≥ 5 medications was lower as income became higher. Former smokers were about twice as likely to take ≥ 5 medications as those who never smoked (15.2% vs 8.1%). Use of ≥ 5 medications was more common in blacks than in whites (22.2% vs 13.1%).

Table 4 presents the relationship between health care access and utilization factors and prescription medication use. Factors include insurance status, prescription drug coverage, insurance type, and usual source of care. When age, gender, and race were controlled for, the prevalence of using ≥ 5 medications for those with health insurance doubled compared to those without health insurance for the previous 12 months (5.5% vs 10.8%), though a statistically significant trend could not be seen due to the wide confidence intervals. Among people with health insurance for the past year, those having partial or all prescription drug coverage were almost twice as likely to use ≥ 1 medications and about 3 times as likely to use ≥ 5 medications as those who did not have coverage. Type of insurance and regular source of care also appeared to affect medication use. Less than 10% of people on private insurance or Medicare coverage used ≥ 5 medications in the last month. In comparison, almost 28% of Medicaid beneficiaries used ≥ 5 medications. People who visit a doctor's office, a

hospital outpatient department, or a community health center as their usual place for care were more likely to use prescribed medications as those without a regular source of care (60.1% or 54.1% vs 26.3%).

## DISCUSSION

This is the first paper describing overall prevalence of prescription drug use in a statewide, population-based sample of Wisconsin adult residents (2008-2010). It provides information for comparison with national trends and to support additional monitoring of medication use over time. Our results are consistent with recent national trends and show an even higher prevalence of prescription medication use than that found in national surveys such as NHANES.<sup>1</sup>

The top 10 medications among SHOW participants were prescribed for cardiovascular disorders, diabetes, hypothyroidism, gastric, and respiratory disorders. Hydrocodone was only the 14th most prevalent prescription medication in our study, a result in apparent contrast with a 2006-2010 national survey conducted by IMS Health, where the combination pain medication hydrocodone and acetaminophen was the most commonly prescribed medication.<sup>12</sup> A possible explanation for this discrepancy may be the different way prescription medications were counted in SHOW and in the IMS Health survey. The national counts reported by IMS Health represent the number of prescriptions dispensed, while our counts represent the number of survey participants who use them. Compared to medications prescribed for other chronic disorders, narcotics are more likely to be prescribed in small quantities at a time due to regulations or providers' precautions. This may lead to an increased number of prescriptions dispensed to a limited number of patients, but are not ones that would be found regularly in a medicine cabinet—the main source for identification of prescription drugs used in our study.

Among key factors predicting medication use among this population sample, age was found to be an important determinant in the number of prescription medications used. More than a quarter of all SHOW participants ages 60-74 used 5 or more medications in the past month. It is also common for older adults to use prescription medications along with over-the-counter medications or dietary supplements.<sup>8</sup> These factors pose increased risk of inappropriate prescribing, misuse, drug-related adverse events, and drug-drug interactions among older adults.<sup>1,6,8</sup> It has been reported that polypharmacy strongly predicts adverse outcomes and may even increase the risk of mortality.<sup>3,13-15</sup> A study examining the frequency of medication errors in patients taking  $\geq 5$  medications in Austria reported inappropriate medication use in 93% of patients, dosing errors in 56% of patients and "category X interactions" (the most dangerous potential drug-drug interactions) in 2.4% of patients.<sup>3</sup> Concurrent use of multiple medications in the elderly should,

**Table 3.** Adjusted Prevalence<sup>a</sup> of Using at Least 1 or at Least 5 Prescription Medications

	$\geq 1$ Prescription Medication		$\geq 5$ Prescription Medications	
	Percent (95% CI)	P-value	Percent (95% CI)	P-value
<b>Age (years)<sup>b</sup></b>				
21-39	36.0 (30.8, 41.1)	<0.001	3.4 (1.8, 5.0)	<0.001
40-59	62.2 (55.4, 69.0)		13.5 (10.2, 16.8)	
60-74	69.2 (63.6, 74.7)		27.5 (23.5, 31.4)	
<b>Gender<sup>b</sup></b>				
Men	49.0 (43.4, 54.6)	0.001	10.8 (8.6, 13.0)	0.002
Women	59.4 (53.9, 64.9)		16.3 (13.5, 19.1)	
<b>Race<sup>b</sup></b>				
Non-Hispanic white	56.0 (51.1, 60.9)	0.20	13.1 (10.9, 15.2)	<0.001
Non-Hispanic black	52.2 (43.6, 60.9)		22.2 (13.6, 30.9)	
Hispanic	33.4 (21.2, 45.7)		11.8 (1.9, 21.7)	
Other	41.0 (23.8, 58.2)		10.5 (2.0, 19.0)	
<b>Education<sup>c</sup></b>				
<High school	64.5 (54.4, 73.4)	0.39	10.1 (6.3, 15.9)	0.02
High school	56.1 (33.3, 76.6)		13.3 (4.4, 33.7)	
Some college	56.5 (35.7, 75.3)		12.1 (4.6, 28.2)	
$\geq$ College	55.2 (34.0, 74.6)		7.2 (2.5, 18.7)	
<b>BMI (kg/m<sup>2</sup>)<sup>c</sup></b>				
<25	46.9 (38.3, 55.7)	<0.001	3.0 (1.6, 5.6)	<0.001
$\geq 25$ and <30	46.4 (31.4, 62.2)		8.7 (2.5, 26.2)	
$\geq 30$	70.6 (53.8, 83.2)		18.4 (5.9, 44.9)	
<b>Family income<sup>c</sup></b>				
Don't know	62.9 (34.5, 84.5)	0.19	6.8 (4.0, 11.3)	0.001
<25,000/year	62.5 (41.3, 79.8)		16.7 (4.5, 46.1)	
25,000-49,999/year	56.1 (34.7, 75.5)		16.9 (5.8, 40.0)	
50,000-99,999/year	54.0 (34.7, 72.2)		9.5 (3.0, 26.0)	
$\geq 100,000$ /year	55.3 (45.6, 64.6)		9.6 (3.0, 27.0)	
<b>Smoking<sup>d</sup></b>				
Current	51.3 (36.0, 66.4)	0.11	12.9 (5.6, 27.0)	0.004
Former	62.5 (46.8, 75.9)		15.2 (7.8, 27.5)	
Never	53.8 (47.0, 60.5)		8.1 (6.0, 10.8)	

Data from Survey of the Health of Wisconsin (SHOW), 2008-2010.

<sup>a</sup> Weighted and adjusted for sampling design. Education, BMI, family income, and smoking also were adjusted for age (continuous), gender, and race (non-Hispanic white and other).

<sup>b</sup> P-value for Rao-Scott chi-square test using design adjusted, survey weighted frequencies.

<sup>c</sup> P-value for trend in ordinal independent variable tested using design adjusted, survey weighted logistic regression.

<sup>d</sup> P-value for Wald chi-square test in nominal independent variables tested using design adjusted, survey weighted logistic regression.

therefore, be carefully monitored and programs targeting health care providers as well as seniors to promote safe and appropriate medication use should be strongly supported.

Similar to the NHANES 2007-2008 findings,<sup>1</sup> the prevalence of overall medication use was higher among women than men in SHOW. Other studies have found that prescription medication use was higher in women than men across all age groups.<sup>8</sup> NHANES also reported that whites consumed the highest number of medications and Mexican Americans the lowest.<sup>1</sup> In this Wisconsin sample, Hispanics lagged behind non-Hispanic whites in use of  $\geq 1$  prescription medication. Blacks had the highest prevalence of using  $\geq 5$  medications. Future studies should explore the

**Table 4.** Adjusted Prevalence<sup>a</sup> of Medication Use According to Access to Health Insurance and Usage Characteristics

Characteristics	≥ 1 Prescription Medication		≥ 5 Prescription Medications	
	Percent (95% CI)	P-value	Percent (95% CI)	P-value
<b>Health Insurance<sup>b</sup></b>				
0 month	37.2 (27.2-48.5)	<0.001	5.5 (2.1-14.1)	0.24
1-11 months	47.2 (22.6-73.3)		11.0 (1.1-57.8)	
12 months	58.9 (36.7-78.0)		10.8 (1.5-48.8)	
<b>Prescription Drug Coverage<sup>b</sup></b>				
All	66.9 (54.2-77.0)	<0.001	10.9 (6.3-18.3)	0.01
Some	59.7 (35.5-80.0)		11.5 (3.6-31.2)	
None	36.2 (16.0-62.7)		3.9 (0.8-17.0)	
<b>Insurance Type<sup>c</sup></b>				
None	36.9 (27.3-47.6)	<0.001	5.4 (2.1-13.0)	<0.001
Medicaid	71.1 (45.4-87.9)		27.7 (4.7-75.0)	
Private/Medicare	56.9 (35.7-75.8)		9.1 (1.4-40.4)	
<b>Usual Source of Care<sup>c</sup></b>				
Emergency department	27.8 (14.4-47.0)	<0.001	16.9 (6.0-39.4)	0.05
Physician's office	60.1 (21.6-89.2)		10.3 (1.1-54.7)	
Other (hospital out-patient department, community health center, etc)	54.1 (15.9-88.0)		16.8 (1.5-73.0)	
No regular source of care	26.3 (6.0-66.7)		5.4 (0.4-46.2)	

Data from Survey of the Health of Wisconsin (SHOW), 2008-2010.

<sup>a</sup> Weighted and adjusted for sampling design, as well as age (continuous), gender, and race (non-Hispanic white and other).

<sup>b</sup> P-value for trend in ordinal independent variable tested using design adjusted, survey weighted logistic regression.

<sup>c</sup> P-value for Wald chi-square test in nominal independent variables tested using design adjusted, survey weighted logistic regression.

possible causes for the observed ethnic/race disparities in prescription medication use among Hispanic people.

We also found risk factors such as obesity and smoking history were significant predictors of prescription medication use. Use of at least 5 medications increased substantially with increase in BMI. Participants with BMI ≥ 30 were more likely to use at least 5 medications compared to participants who were not overweight (BMI < 25). This is consistent with previous studies, including cross-sectional analysis among 9787 adults in NHANES that also found that obese adults had greater use of all common medication classes, except sex hormones,<sup>9</sup> and may be explained by the high prevalence of comorbid conditions among obese subjects. A high percentage of adverse drug events has already been reported among obese patients due to inappropriate medication dosing.<sup>16,17</sup> Thus, obese adults in Wisconsin on multiple medications are likely subject to an even greater risk of adverse drug events. The high prevalence of medication use in former smokers also is likely associated with a high level of comorbidities (eg, chronic obstructive pulmonary disease) in this group.

According to the NSHAP, medication use was more likely among those with greater formal education.<sup>8</sup> However, in this survey, college education was inversely related to medication use.

The possible explanation is that NSHAP included only adults aged 57-84, while SHOW participants varied in age from 21 to 74. Older adults may have less education. Sixty-seven percent of the SHOW participants aged 60-74 have at least some college education compared to 71% among those aged 40-59 and 78% among those aged 21-39. On the other hand, age is a strong predictor of medication use. Age differences in the sample population may have led to different findings.

Similar to the most recent NHANES data,<sup>1</sup> SHOW determined that people without health insurance, prescription drug coverage, and a regular source of care were less likely to use prescription medications. Consequently, lack of access to health care may lead to suboptimal treatment of diseases among these adults.

One of the strengths of this study is that it is based on a probability sample of the population of the entire state of Wisconsin, regardless of access and patterns of health care use. A recent 2013 study using electronic medical record (EMR) data from the University of Wisconsin Department

of Family Medicine (UW-DFM) primary care clinics reported that in patients aged 18-24 years, 25-34 years, 35-44 years, and 45-54 years, the percentage using at least 5 medications was 20%, 29%, 40%, and 55%, respectively.<sup>18</sup> These numbers are much higher than those found in our study. This difference is likely due to the EMR and clinical-based nature of the UW-DFM study, which will tend to result in an over-representation of heavy health care users and sicker individuals when compared to the strictly population-based nature of our SHOW sample. In any event, it is important to note that the UW-DFM study also found that, consistent with our findings, increasing age, female gender, and overweight, were associated with higher prevalence of medication use in this EMR-based study.<sup>18</sup> Furthermore, as was seen in our study, the UW-DFM study also found Medicaid beneficiaries were significantly more likely to use medications than patients with employer-based insurance.

Another strength of our study compared to telephone surveys and other surveys relying on self-report, is the accuracy of the prescription drug-use data since the interviewers recorded the medication names directly from the medication containers. Telephone surveys also have declining response rates, and our response rates relative to these studies are greater.

One limitation of this study is that it is unknown if the partic-

ipants showed all medications to the interviewers. However, there is little way of knowing how much this affects results. It is likely that this would pose little bias to this particular study because under-reporting for certain conditions would likely be uniform across the entire population. Therefore, relative comparisons across subpopulations regarding prescription drug use should be accurate. It is important to note that the prescription medications inventoried for SHOW included some over-the-counter medications (eg, aspirin, NSAIDs), but only if they had been prescribed by a health care provider.<sup>5</sup> Finally, sample sizes are relatively small for some subgroups, which have led to limited power to detect significant differences in some cases.

## CONCLUSION

Similar to national trends, there was a high prevalence of prescription medication use in a general population sample in Wisconsin. A number of factors, including increasing age, female gender, obesity, and lower family incomes were associated with higher levels of multiple medication use ( $\geq 5$  medications). Polypharmacy has been linked to numerous adverse outcomes and is an area of growing public health concern, particularly among the elderly. Concurrent use of multiple medications, and efforts to support appropriate prescription and medication use should be carefully monitored for vulnerable populations such as the elderly and the obese.

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# Quiz: Overall Prescription Medication Use Among Wisconsin Adults: Findings from the Survey of the Health of Wisconsin

## EDUCATIONAL OBJECTIVES

Upon completion of this activity, participants will be able to:

1. Describe the patterns of prescription medication use among Wisconsin adults.
2. Identify the types of patients where prescription misuse or drug-related adverse events may be more probable.

**PUBLICATION DATE:** December 15, 2014

**EXPIRATION DATE:** December 15, 2015

## QUESTIONS

In this survey of overall prescription medication use among a representative statewide sample of Wisconsin adults age 21-74 years:

1. Nearly 55% of the participants took at least 1 prescription medication in the past month, and 30% took at least 5 prescription medications.  
 True  
 False
2. Hydrochlorothiazide (HCTZ), levothyroxine, lisinopril, metoprolol, and simvastatin were the top 5 prescription medications used by sample participants.  
 True  
 False

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3. When age, gender, and race were controlled for, prescription medication use increased consistently with age in both categories ( $\geq 1$  medication and  $\geq 5$  medications).  
 True  
 False
4. Female gender, a greater BMI ( $\geq 30$  vs  $< 25$ ), a higher educational level, a higher family income, and former smokers (as compared to those who never smoked) were correlated with prescription medication use of  $\geq 5$  medications.  
 True  
 False
5. When age, gender, and race were controlled for, the prevalence of using  $\geq 5$  medications for those with health insurance doubled compared to those without health insurance for the previous 12 months.  
 True  
 False
6. Type of insurance and usual source of care appeared to affect medication use. Less than 10% of people on private insurance or Medicare coverage used  $\geq 5$  medications in the last month. In comparison, almost 28% of Medicaid beneficiaries used  $\geq 5$  medications.  
 True  
 False
7. More than a quarter of all participants ages 60-74 used 5 or more medications in the previous month. It is common for older adults to use prescription medications along with over-the-counter medications or dietary supplements; these factors pose an increased risk of inappropriate prescribing, misuse, drug-related adverse events, and drug-drug interactions among older adults.  
 True  
 False

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