



Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep



Trends in abuse and misuse of prescription opioids among older adults

Nancy A. West^{a,*}, Stevan G. Severtson^a, Jody L. Green^a, Richard C. Dart^{a,b}

^a Research Department, Rocky Mountain Poison and Drug Center, 990 Bannock Street, M/C 0180, Denver Health and Hospital Authority, Denver, CO 80204, USA

^b Department of Emergency Medicine, University of Colorado School of Medicine, Aurora, CO 80045, USA

ARTICLE INFO

Article history:

Received 15 October 2014
Received in revised form 21 January 2015
Accepted 22 January 2015
Available online xxx

Keywords:

Prescription opioid
Abuse
Aging
Suicide
Surveillance

ABSTRACT

Background: Dramatic increases in the prescriptive use of opioid analgesics during the past two decades have been paralleled by alarming increases in rates of the abuse and intentional misuse of these drugs. We examined recent trends in the abuse and misuse and associated fatal outcomes among older adults (60+ years) and compared these to trends among younger adults (20–59 years).

Methods: Trend analysis using linear regression models was used to analyze 184,136 cases and 1149 deaths associated with abuse and misuse of the prescription opioids oxycodone, fentanyl, hydrocodone, morphine, oxymorphone, hydromorphone, methadone, buprenorphine, tramadol, and tapentadol that were reported to participating U.S. Poison Centers of the Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS[®]) System between 2006–Q1 and 2013–Q4.

Results: Rates of abuse and misuse of prescription opioids were lower for older adults than for younger adults; however, mortality rates among the older ages followed an increasing linear trend ($P < 0.0001$) and surpassed rates for younger adults in 2012 and 2013. In contrast, mortality rates among younger adults rose and fell during the period, with recent rates trending downward ($P = 0.0003$ for quadratic trend). Sub-analysis revealed an increasing linear trend among older adults specifically for suicidal intent ($P < 0.0001$), whereas these rates increased and then decreased among younger adults ($P < 0.0001$ for quadratic trend).

Conclusion: Recent linear increases in rates of death and use of prescription opioids with suicidal intent among older adults have important implications as the U.S. undergoes a rapid expansion of its elderly population.

© 2015 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Dramatic increases in the prescriptive use of opioid analgesics during the past two decades have been paralleled by alarming increases in rates of abuse, misuse, and use with suicidal intent of these drugs (Institute of Medicine, 2011; Volkow et al., 2014). Further, prescription opioid analgesics have played a key role in driving increases in drug-related deaths over the last decade (Jones et al., 2013; Warner et al., 2011). Overdose deaths involving opioid analgesics now exceed deaths involving heroin and cocaine combined (Center for Disease Control and Prevention, 2011).

Abuse of prescription opioids in older adults occurs when the medication is taken specifically for a psychotropic effect, rather

than for treatment of a medical condition. Individuals born between 1946 and 1964 (the baby-boomer generation) are more likely to report use of psychoactive drugs compared to earlier cohorts (Johnson and Gerstein, 1998). Substance abuse is expected to continue as that generation ages into older adulthood (Gfroerer et al., 2003; Han et al., 2009).

The increasing prevalence of chronic pain in the U.S. has been accompanied by an upsurge of therapeutic opioid utilization (Franklin, 2014). Chronic pain has an extremely high prevalence, affecting 100 million adult Americans, and is among the most common reasons for taking medications (Institute of Medicine, 2011). Chronic pain is one of the most prevalent symptoms among older adults and affects this population more than any other age group (Weiner, 2007). A nearly 9-fold increase in opioid prescriptions from office-based medical visits by older adults occurred between 1995 and 2010, suggesting that physicians have pursued greater pain control in this population (Olfson et al., 2013). Due to the greater prevalence of chronic pain, older adults potentially may be more vulnerable to misuse of prescription opioids, such as taking higher than prescribed doses or taking for a longer duration

* Corresponding author at: RADARS[®] System, Rocky Mountain Poison & Drug Center, A Division of Denver Health, 990 Bannock Street M/C 0180, Denver, CO 80204, USA. Tel.: +1 303 389 1820.

E-mail address: nancy.west@rmpdc.org (N.A. West).

Table 1
Characteristics of abuse, misuse, and use with suicidal intent of prescription opioids by age group, among participating poison centers in the RADARS System Poison Center Program, 2006–2013.

Characteristics of calls	Age 20–59 years	Age 60+ years
Total cases, <i>n</i> (%)	170,508 (92.6%)	13,628 (7.4%)
Average annual rate of calls per 100,000 population	14.9	3.4
Exposure reason, <i>n</i> (%)		
Abuse	29,210 (17.1%)	1021 (7.5%)
Misuse	30,370 (17.8%)	3568 (26.2%)
Suicidal intent	110,928 (65.1%)	9039 (66.3%)
Females, %	55.7%	59.1%
Age in years, median (IQR)	36 (27–46)	65 (62–71)

than prescribed for management of chronic pain or other diagnosed medical conditions.

Another important hazard of prescription opioid misuse is suicide by self-poisoning. Suicide rates are particularly high among the elderly (Parks et al., 2014). Aging is associated with an increased prevalence of many common illnesses, which, in turn, is associated with an increased risk of suicide (Juurlink et al., 2004). In addition, the coexistence of multiple illnesses confers a marked increased risk of suicide in the older age group. During 2000–2009 in the U.S. there was a 15% increase in suicide mortality rates with the highest rate observed among individuals 75 years and older (Rockett et al., 2012). Self-poisoning has been reported to be a frequent mechanism of suicide among elderly patients (Juurlink et al., 2004).

The size and current age of the baby-boom generation, coupled with the continued rise in life expectancy, are rapidly increasing the percentage of older adults in the U.S. population. Greater rates of drug abuse among the baby-boom generation, the increasing prevalence of chronic pain associated with an aging population, and increasing suicide rates among older adults portends increasing rates of prescription opioid abuse and misuse among the older adult population. In this study we analyzed recent trends (during 2006–2013) in abuse, misuse, and use with suicidal intent of prescription opioids and associated fatal outcomes among older aged adults and compared these patterns to trends among younger aged adults.

2. Methods

2.1. Data source

This study is based on data from the Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS®) System Poison Centers Program. Poison centers in the U.S. receive spontaneous calls from the general population, caregivers, and healthcare providers regarding potentially toxic exposures, including exposures to prescription opioids. Poison center specialists are nurses and pharmacists trained in toxicology who assist in the care of the individual and document clinical and demographic characteristics of each case. All case data are reported to regional poison centers and are systematically collected using a nationally standardized electronic record. The data are summarized quarterly. The RADARS System Poison Center Program collects the full de-identified case medical record from participating regional poison centers, including urban, suburban, and rural regions. During the time period of the analysis, the RADARS System Poison Center program collected data from 40 to 49 centers that covered from 69% to 92% of the US population. Thorough review was conducted on each case by the RADARS System to validate the reason code. A statistical measure of the inter-rater agreement between the poison centers' coding of exposure reason and the RADARS System coding was derived from a subset of the data (data from calendar year 2012), demonstrating kappa coefficient = 0.89, which indicated substantial agreement between the two coding sources. Any case coded as abuse, intentional misuse, or use with suicidal intent was regarded as abuse and misuse. In addition to the institutional review board approvals from each participating regional poison center, this protocol was granted exempt status by the Colorado Multiple Institutional Review Board.

2.2. Study sample

We analyzed case counts relating to the abuse and misuse of the prescription opioids oxycodone, fentanyl, hydrocodone, morphine, oxycodone, hydromorphone, methadone, buprenorphine, tramadol, and tapentadol that were reported to participating poison centers of the RADARS System between January 1, 2006 and December 31, 2013. Cases that were identified with intentional exposure reasons

of abuse, misuse, or use with suicidal intent among adults aged 20 years or older were included in the analyses. The following standard definitions were used by the poison center specialists to categorize the intentional exposure reasons: (i) abuse was defined as an exposure resulting from the intentional improper or incorrect use of a substance where the case was likely attempting to gain a high, euphoric effect, or some other psychotropic effect, (ii) misuse was defined as an exposure resulting from the intentional improper or incorrect use of a substance for reasons other than the pursuit of a psychotropic effect or suicidal intent, and (iii) suspected suicidal intent was defined as an exposure resulting from the inappropriate use of a substance for self-destructive or manipulative reasons (AAPCC, 2007). Calls to poison centers that were determined by the toxicology specialists to be unintentional or accidental exposures to prescription opioids were excluded from this analysis.

Deaths were coded by the poison center when the case 'probably or undoubtedly' died as a result of the exposure or as a direct complication of the exposure to a prescription opioid where the complication was unlikely to have occurred had the exposure not preceded the complication (AAPCC, 2007).

2.3. Measures

Older adult cases were categorized as 60+ years and the remaining adults (ages 20–59 years) comprised the comparison group. We categorized the lowest age of adulthood as 20 years to correspond to the age-specific population data provided by the U.S. Census.

Population rates of exposure to prescription opioids were calculated using quarterly counts of exposures reported to the RADARS System and using age-specific population data for the coverage area from the US Census. Rates were calculated by dividing the total number of intentional exposure calls by the estimated population residing within ZIP codes covered by participating poison centers. The coverage population was estimated using changes in the 2000 and 2010 US Census population estimates at the ZIP Code tabulation area level.

Population estimates used to calculate rates were adjusted for differential growth by age group during the time period. To calculate these estimates, the population within the coverage area of the Poison Center Program was multiplied by the proportion of the 2000 US population that was between 20 and 59 (0.551) and 60 or older (0.163). The population between ages 20 and 59 grew by 8.5% between 2000 and 2010 whereas the population 60 and older grew by 24.6%. This change was interpolated from 2006 to 2010 and extrapolated beyond 2010 for each age group. This approach assumes a linear change in the population at the national level by age group between 2000 and 2010. It also assumes that the change in population beyond 2010 will be equal to the change observed between 2000 and 2010.

2.4. Statistical analysis

Trend analysis was performed using separate ordinary least squares regression models with a second degree polynomial term in adults between the ages of 20–59 and ages 60+. Eight separate regression models were fit. Population rates for each outcome (abuse, misuse, use with suicidal intent, and death) were regressed on a linear term and a second degree polynomial term for year/quarter by age group. If the second order polynomial term was not statistically significant ($p < 0.05$), it was removed from the model. As these data are time-series data, we assessed the presence of autocorrelation using the Durbin–Watson statistic. Findings suggested that residual correlation was minimal with the inclusion of the linear and/or quadratic terms. Residuals from Poisson regression models and linear regression models were assessed. Both were determined to approximate a Gaussian distribution. Therefore, we elected to proceed with the linear regression.

3. Results

We identified 184,136 calls reporting abuse, misuse, or use with suicidal intent relating to prescription opioids among adults during the 8-year time period. Table 1 shows the intentional exposure calls by age group. There was a similar proportion of calls made by females among both the age groups. Compared to younger adults,

Download English Version:

<https://daneshyari.com/en/article/7505169>

Download Persian Version:

<https://daneshyari.com/article/7505169>

[Daneshyari.com](https://daneshyari.com)