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Epidemiology of Opioid and Amphetamine Related Morbidity in Kansas, 2012-2016

Background

The Kansas Data-Driven Prevention Initiative Program (DDPI) is funded through a co-operative agreement with the Center for Disease Control and Prevention (CDC) to collect, analyze, and disseminate opioid-related surveillance data. The purpose of the program is to reduce the morbidity and mortality associated with prescription opioid use. This includes providing data to identify state hot-spots for targeted prevention strategies and characterizing emerging trends. More information about the program can be found at http://www.preventoverdoseks.org.

The purpose of this report was to describe the gender and birth cohort association of drug poisoning morbidity for the leading causes of drug poisoning deaths (e.g., non-heroin opioids, amphetamine, and heroin) for Kansas public health professionals. The goal was to define targeted populations at risk of drug poisonings for implementing prevention and intervention strategies. A special request de-identified emergency department (ED) admissions data from the Kansas Hospital Association and de-identified data from the Kansas Board of Pharmacy's Kansas Tracking and Reporting of Controlled Substance (KTRACS) was used for this report.

Methods

Morbidity data was stratified by the presence of an ICD-10-CM drug poisoning diagnosis codes (excluding adverse effects from therapeutic use) defined by the Agency for Healthcare Research and Quality (for more information, please see the Data Notes and Methods at https://www.hcup-us.ahrq.gov/faststats/OpioidUseServlet) and nationally consensus standards for ICD-9-CM diagnosis codes [1]. For this analysis, a conservative case definition for acute drug poisoning was used for easier comparability between ICD-9-CM and ICD-10-CM based on preliminary case definitions. Drug poisoning emergency department admissions involving all drug poisonings, non-heroin opioid, heroin opioid, and amphetamine substances were analyzed for medical encounters occurring from January 1, 2012 to December 31, 2016. Since ICD-9-CM and ICD-10-CM diagnosis codes do not distinguish between illicit amphetamine products and prescription amphetamine, all

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amphetamine drug poisoning ED admissions presented potentially include all substance or drugs with amphetamine.

Measures of prescription drug use was also collected from the Kansas Board of Pharmacy's K-TRACS program for prescription drugs dispensed from January 1, 2011 to December 31, 2016. The 2011 to 2016 KTRACS data was used to allow for at least a one year lag period before assessing health outcomes present in the emergency department admission analysis. High risk prescription opioid drug use was defined as the percentage of patients with more than 90 daily morphine milligram equivalent (MME) per day. Buprenorphine products were excluded since most of these drugs were indicated for medication assisted treatment and does not share the same risk of overdose and abuse as other opioids. Another separate indicator for the rate of patients with any stimulant prescriptions rate of patients with any stimulant prescriptions was also used to compare the risk associated with amphetamine prescriptions. Stimulant prescriptions used here include drugs with amphetamine substances (e.g., Adderall), methylphenidate (e.g., Ritalin), weight loss (e.g, phentermine substances), or wakefulness-promoting agents (e.g., modafinil or armodafinil substances).

Table 1. Kansas Emergency Department (ED) Admissions from 2011 to 2016 involving Non-Heroin Opioid Heroin, or Amphetamine Drug per 100,000 Population Estimate by Gender and Birth Year

Birth Year	ED Admissions Involving All Drug Poisonings (95% Poisson CL)		ED Admissions Involving Non-Heroin Opioid (95% Poisson CL)		ED Admissions Involving Heroin (95% Poisson CL)		ED Admissions Involving Amphetamine (95% Poisson CL)	
	Female	Male	Female	Male	Female	Male	Female	Male
1935-1939	74.8 (63.1-87.9)	64.5 (52.5-78.3)	15.4 (10.4 - 21.9)	9.6 (5.4 - 15.8)	0.0 (. - .)	0.0 (. - .)	0.0 (. - .)	0.0 (. - .)
1940-1944	70.5 (60.5-81.7)	56.8 (47.2-67.7)	14.7 (10.3 - 20.2)	9.6 (6.0 - 14.7)	0.0 (. - .)	0.0 (. - .)	0.0 (. - .)	0.0 (. - .)
1945-1949	81.2 (71.9-91.4)	53.7 (45.9-62.3)	19.8 (15.3 - 25.1)	11.0 (7.6 - 15.3)	0.0 (. - .)	0.3 (0.0 - 1.7)	0.0 (. - .)	0.0 (. - .)
1950-1954	72.7 (64.9-81.3)	48.2 (41.7-55.4)	17.7 (14.0 - 22.2)	10.0 (7.2 - 13.5)	0.2 (0.0 - 1.3)	1.0 (0.3 - 2.5)	0.2 (0.0 - 1.3)	0.0 (. - .)
1955-1959	87.9 (79.9-96.6)	65.6 (58.5-73.3)	19.4 (15.7 - 23.7)	12.1 (9.2 - 15.7)	0.4 (0.0 - 1.5)	0.8 (0.2 - 2.1)	0.6 (0.1 - 1.8)	1.3 (0.5 - 2.7)
1960-1964	120.3 (110.9-130.3)	75.9 (68.4-84.0)	25.2 (21.0 - 30.0)	9.6 (7.0 - 12.8)	0.6 (0.1 - 1.7)	0.8 (0.2 - 2.1)	2.2 (1.1 - 3.9)	2.7 (1.4 - 4.5)
1965-1969	128.5 (118.0-139.8)	92.8 (83.9-102.4)	22.8 (18.5 - 27.8)	14.0 (10.7 -18.0)	0.5 (0.1 - 1.7)	0.5 (0.1 - 1.7)	4.0 (2.3 - 6.4)	7.0 (4.7 - 10.0)
1970-1974	139.1 (128.1-150.8)	89.5 (80.7-98.9)	19.0 (15.0 - 23.6)	11.9 (8.8 - 15.6)	0.2 (0.0 - 1.3)	1.2 (0.4 - 2.7)	4.7 (2.9 - 7.3)	5.6 (3.6 - 8.3)
1975-1979	156.8 (145.2-169.1)	94.0 (85.1-103.4)	19.3 (15.4 - 24.0)	14.0 (10.8 -18.0)	0.9 (0.3 - 2.4)	1.4 (0.5 - 3.0)	4.2 (2.5 - 6.6)	13.4 (10.2 - 17.2)
1980-1984	157.5 (146.5-169.2)	120.5 (111.1-130.6)	23.9 (19.7 - 28.7)	17.1 (13.6 -21.1)	1.2 (0.5 - 2.7)	2.8 (1.5 - 4.7)	9.1 (6.6 - 12.3)	13.5 (10.4 - 17.1)
1985-1989	174.0 (162.2-186.4)	148.2 (137.6-159.4)	19.7 (15.8 - 24.1)	21.4 (17.5 -25.9)	3.7 (2.1 - 5.9)	7.3 (5.1 - 10.2)	10.6 (7.8 - 14.0)	16.7 (13.3 - 20.7)
1990-1994	187.2 (175.6-199.4)	148.5 (138.7-158.9)	19.8 (16.1 - 24.0)	16.1 (13.0 -19.8)	3.5 (2.1 - 5.5)	8.5 (6.3 - 11.3)	8.1 (5.9 - 11.0)	14.5 (11.5 - 18.0)

Note: *Rates are suppressed if there are less than 20 ED admissions across a six year time span.

All analysis was stratified by reported sex or gender (e.g., male and female) and completed by comparing the birth cohort association of morbidity and drug use patterns for Kansans with a year of birth from 1935 to 1994. The National Center for Health Statistics (NCHS) single year of age 2016 vintage estimates was used for year specific population estimates and confidence intervals. Population estimates birth year was computed as the difference in the population year estimate and single year of age. Comparisons of drug specific burden was completed by comparing 95% Poisson Confidence Limits for annual average birth year crude rate estimates [2] and Gamma Confidence Limits for rate ratios [3]. Rate ratios were computed as the birth year gender-specific 2011-2016 ED admissions involving non-heroin opioid, heroin, or amphetamine as a proportion (e.g., percentage) of the total birth year gender-specific 2011-2016 ED admissions involving all drugs.

Results

Table 1 shows the birth year gender-specific 2011-2016 ED admissions crude rate per 100,000 population estimate and 95% Poisson Confidence Limit. Table 2 shows the rate ratio and 95% Gamma Confidence Limit results expressed as the percentage of all drug poisoning related ED admissions. Confidence Limits that do not overlap are considered statistically significant and rate ratios closer to one indicates a birth year cohort had a higher percent-

Table 2. Percentage of Drug Poisoning-Related Kansas Emergency Department (ED) Admissions from 2011 to 2016 involving Non-Heroin Opioid, Heroin, or Amphetamine Drug by Gender and Birth Year

Birth Year	Percentage of Drug Poisoning-related ED Admissions Involving a Non-Heroin Opioid (95% Gamma CL)		Percentage of Drug Poisoning-related ED Admissions Involving Heroin (95% Gamma CL)		Percentage of Drug Poisoning-related ED Admissions Involving Amphetamine (95% Gamma CL)	
	Female	Male	Female	Male	Female	Male
1935-1939	0.21 (0.14 - 0.30)	0.15 (0.09 - 0.26)	0.00 (. - .)	0.00 (. - .)	0.00 (. - .)	0.00 (. - .)
1940-1944	0.21 (0.15 - 0.30)	0.17 (0.11 - 0.27)	0.00 (. - .)	0.00 (. - .)	0.00 (. - .)	0.00 (. - .)
1945-1949	0.24 (0.19 - 0.32)	0.20 (0.14 - 0.29)	0.00 (. - .)	0.01 (0.00 - 0.04)	0.00 (. - .)	0.00 (. - .)
1950-1954	0.24 (0.19 - 0.31)	0.21 (0.15 - 0.29)	0.00 (0.00 - 0.02)	0.02 (0.01 - 0.05)	0.00 (0.00 -0.02)	0.00 (. - .)
1955-1959	0.22 (0.18 - 0.27)	0.18 (0.14 - 0.24)	0.00 (0.00 - 0.02)	0.01 (0.00 - 0.03)	0.01 (0.00 -0.02)	0.02 (0.01 - 0.04)
1960-1964	0.21 (0.17 - 0.25)	0.13 (0.09 - 0.17)	0.00 (0.00 - 0.02)	0.01 (0.00 - 0.03)	0.02 (0.01 -0.03)	0.03 (0.02 - 0.06)
1965-1969	0.18 (0.14 - 0.22)	0.15 (0.11 - 0.20)	0.00 (0.00 - 0.01)	0.01 (0.00 - 0.02)	0.03 (0.02 -0.05)	0.08 (0.05 - 0.11)
1970-1974	0.14 (0.11 - 0.17)	0.13 (0.10 - 0.18)	0.00 (0.00 - 0.01)	0.01 (0.01 - 0.03)	0.03 (0.02 -0.05)	0.06 (0.04 - 0.09)
1975-1979	0.12 (0.10 - 0.15)	0.15 (0.11 - 0.20)	0.01 (0.00 - 0.02)	0.01 (0.01 - 0.03)	0.03 (0.02 -0.04)	0.14 (0.11 - 0.19)
1980-1984	0.15 (0.12 - 0.18)	0.14 (0.11 - 0.18)	0.01 (0.00 - 0.02)	0.02 (0.01 - 0.04)	0.06 (0.04 -0.08)	0.11 (0.09 - 0.14)
1985-1989	0.11 (0.09 - 0.14)	0.14 (0.12 - 0.18)	0.02 (0.01 - 0.03)	0.05 (0.04 - 0.07)	0.06 (0.05 -0.08)	0.11 (0.09 - 0.14)
1990-1994	0.11 (0.09 - 0.13)	0.11 (0.09 - 0.13)	0.02 (0.01 - 0.03)	0.06 (0.04 - 0.08)	0.04 (0.03 -0.06)	0.10 (0.08 - 0.12)

Note: *Rates are suppressed if there are less than 20 ED admissions across a six year time span.
**Reference rate was All Drug Poisoning ED Admission rate.

age of drug poisoning ED admissions contributed by either a non-heroin opioid, heroin, or amphetamine drug. For ease of comparison, see the associated figures.

Opioid Poisoning and High Dose Opioid Prescriptions

Figure 1 compares the percentage of patients with 90+ Daily MME with the percentage of drug poisoning emergency department (ED) admissions involving a non-heroin opioid by gender and birth year. Birth cohorts with a high percentage of patients with 90+ Daily MME were also similarly correlated with percentage of emergency department (ED) admissions involving a non-heroin opioid for both female and male. However, this association was strongest for birth cohorts born between 1950 and 1969. Cohorts after 1970 were less related and may indicate these non-heroin opioid poisonings may be the result of controlled substance opioid diversion or an increase in illicit opioid usage, such as heroin (Figure 2).

Figure 1. Non-Heroin Opioid Poisoning Emergency Department Admissions and Patients with > 90 Daily MME by Gender and Birth Year, KTRACS 2012-2016 and Kansas Emergency Department Admissions 2011-2016

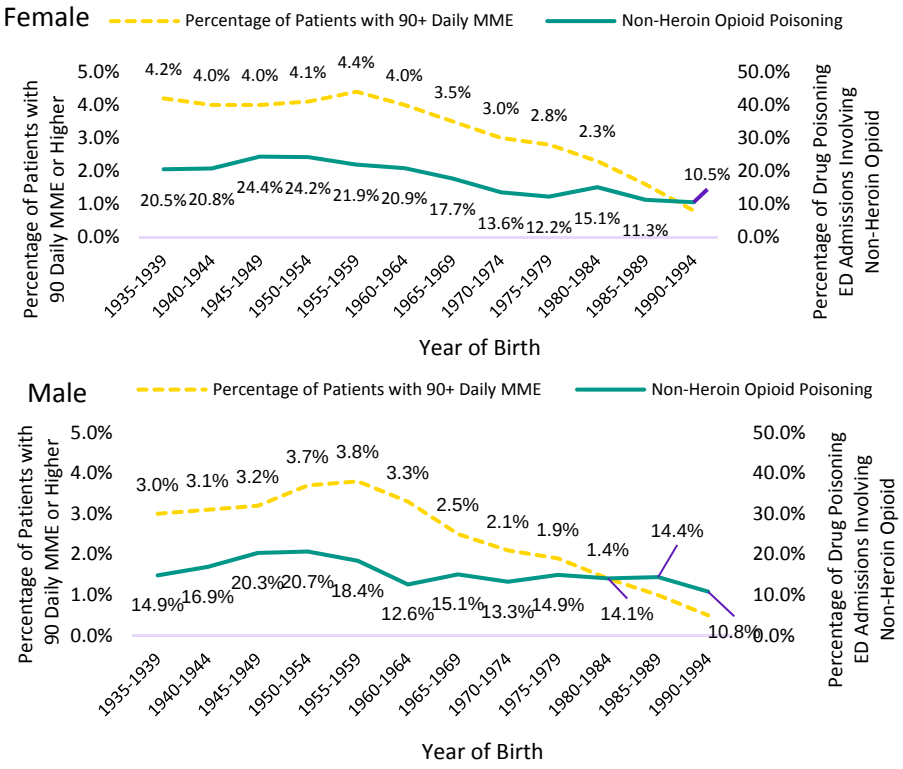
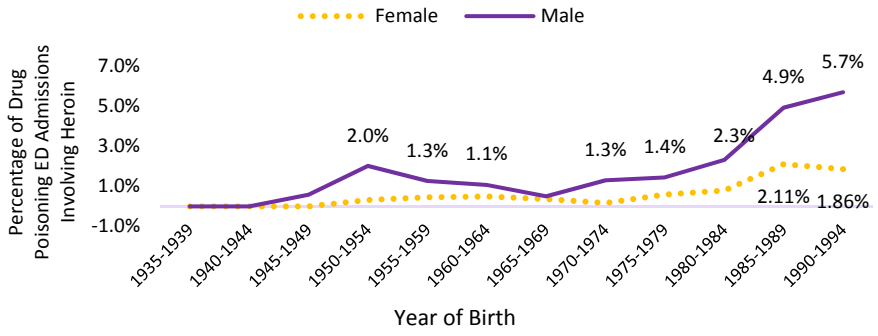


Figure 2 shows the percentage of drug poisoning ED admissions with a heroin poisoning diagnosis codes by gender and birth year. Kansas males were far more likely to have a heroin poisoning ED admission than females across for cohorts after 1985 (see Table 2 for male vs female confidence limit comparison). Additionally, Kansas males born between 1950 and 1954 had a similar proportion of heroin-related ED drug poisoning admissions (see Table 2 for male confidence limit comparison of 1985-1994 cohort vs 1950-1954 cohort). It is probable that the Kansas male cohort born between 1950 and 1954 may be related to those patients switching from prescription opioids to heroin after the OxyContin reformulation in 2010 and the low price and higher potency of heroin [4]. However, this cohort also

Figure 2. Heroin Opioid Poisoning ED Admissions by Gender and Birth Year
Kansas Emergency Department Admissions 2011-2016



Some values are not shown due to having less than 10 counts.

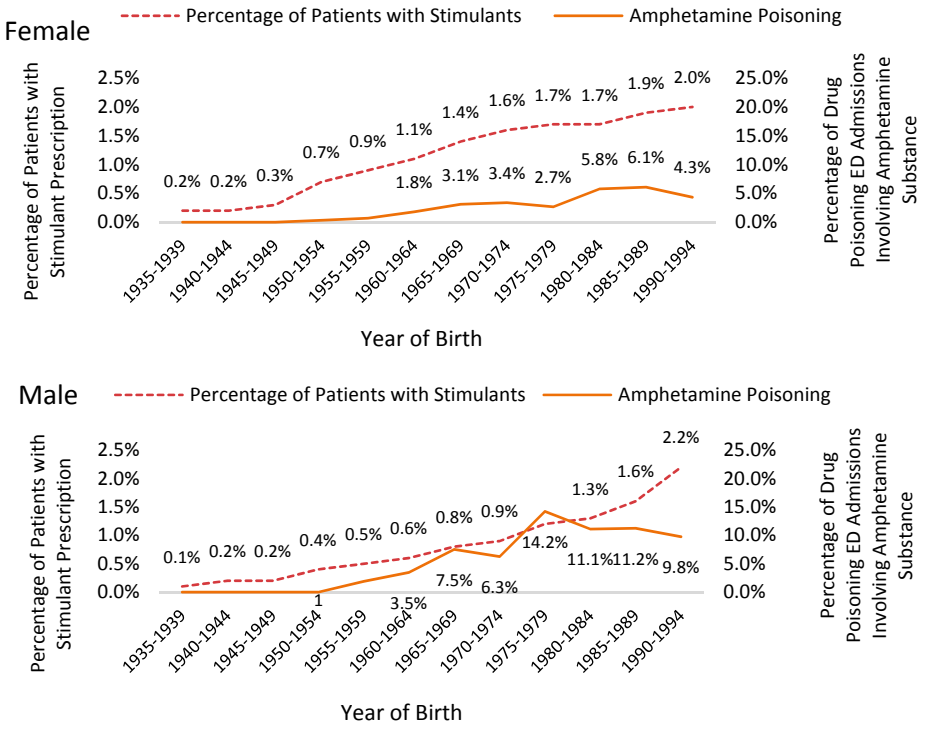
had a high percentage of patients with opioid prescriptions, which suggests they could be using both prescription opioids and heroin.

Figure 3 compares the percentage of patients with stimulant prescriptions with the percentage of drug poisoning emergency department (ED) admissions with an amphetamine poisoning diagnosis code by gender and birth year. Birth cohorts with stimulant prescriptions increases after those born in 1950 for both female and male. The drop in the percentage of ED drug poisoning admissions with an amphetamine poisoning for cohorts after 1985 despite an increase in prescription stimulant suggests these prescriptions may be associated with an increase diagnosis of attention hyper-deficit disorder [5].

Discussion

High dose prescription opioid utilization was higher among Kansas females than males regardless of birth year. However, all Kansans with a year of birth from 1950 to 1964 had the highest percentage of patients with 90+ MME per day than all other birth cohorts. This middle cohort is also the same groups with the highest percentage of drug poisoning ED admissions involv-

Figure 3. Stimulant Patients and Amphetamine Poisoning Emergency Department Admission by Gender and Birth Year, KTRACS 2012-2016 and Kansas Emergency Department Admissions 2011-2016



ing non-heroin opioid and similar to the often cited 'middle-aged' populations with an opioid poisoning death [6]. Typically, older adults may have higher quantities of prescription opioids to cope with their rising number of complex comorbidities. However, the higher than expected prescribed quantity of opioids among the middle cohorts suggests there are wide variations in opioid prescribing practices from 2011 to 2016. Reducing the morphine dosage and duration of prescription opioids [7] for the initial opioid prescription could be a promising practice to prevent further harms among these cohorts and younger Kansans – some younger Kansas cohort also have a high daily dosage of opioids too, which further suggest more variability in access to prescription opioids.

The emergence of heroin-related poisoning emergency department admissions from 2012 to 2016 does not seem to suggest that a reduction of opioid prescriptions is correlated with a rise in heroin usage. To be clear, opioid prescriptions have decreased nationwide over this period [8] mainly due to a reduction in Oxycodone prescriptions after the introduction of its abuse deterrent formulary [9] and through an increasing awareness of the risk associated with prescription opioid. Another key factor explaining why the increase in heroin poisoning remains connected to a supply change in heroin: Kansas females were far more likely to be prescribed higher quantities of opioids than Kansas males, but far less likely to have a heroin poisoning emergency department admission. Most notably, most heroin-related poisonings were among younger male cohorts with a year of birth after 1980. Thus, the rise in heroin-related poisoning emergency department admissions may be correlated with the change in heroin supply [10].

Amphetamine poses a significant problem and remains separate from the prescription opioid epidemic. In Kansas, there are more amphetamine drug poisoning ED admissions than heroin. However, similar to heroin, these drug poisonings are occurring more frequently among those with a year of birth after 1975 for both males and females. These increases may be fueled in part by a reduction in the price of methamphetamine and an increasing usage of stimulant-related substances for a variety of purposes (e.g., cognitive performance enhancement, weight loss, shift-work disorder, and wakefulness promotion) cited by the National Survey of Drug Use and Health (NSDUH) for why prescription stimulant drugs are misused [11].

Nevertheless, the risk of dependence associated with stimulant prescriptions is too low to explain the increase in amphetamine poisonings. According to modeled prevalence estimates from NSDUH, less than 0.1% of American adults 18+ years of age who misused prescription amphetamine were 'hooked' on it compared to the 2.5% of American adults who misused prescription opioids and were 'hooked' [11]. This provides evidence that prescription amphetamine carries a risk for dependence far too low to explain the rise in amphetamine drug poisoning ED admissions. More work is needed to identify the potential source of illicit methamphetamine contributing to the increase in amphetamine drug poisoning ED admissions.

Conclusion

Prescription opioid remains a serious public health issue in Kansas [12]. In this analysis, there were on average each year eight non-heroin opioid ED admissions per 1,000 patients who are prescribed more than 90 daily MME. Research has shown that 1 in 550 patients who start using prescription opioids long term died from an opioid-related poisoning death with a median of 2.6 years. However, the risk of death at a high dose of opioids (e.g., greater than 100 MME per day) was 1 in 32 [13]. Reducing the risk of death or harm associated with prescription opioid usage requires public health to take steps towards a more frugal usage of high-dosage prescription opioids. This report shows that populations receiving more than 90 daily MME of prescription opioids were associated with the highest rates of non-heroin opioid ED admissions in Kansas from 2012 to 2016 among Kansas females and males with a year of birth from 1945 to 1969.

In Kansas, methamphetamine is a serious public health issue that outpaces heroin for most populations – heroin remains a serious problem for only a small subset of Kansans. Future public health should aim to address the rise in amphetamine-related poisoning and stimulant use disorder. However, there are a lack of promising and evidence-based public health strategies to manage an amphetamine drug problem and this will complicate the management of this threat.

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Status of Hypertension, Use of Antihypertension Medication and its Nonadherence in Kansas, 2016 KS Behavioral Risk Factor Surveillance System

Background

Hypertensive medication nonadherence leads to poor blood pressure control among hypertensive individuals and often contributes to the development of adverse cardiovascular disease outcomes such as coronary heart disease, heart attack, stroke and renal failure [1]. Some of the methods to improve medication adherence is providing communication and trust, simplifying the regimen, and imparting knowledge to the patients by health care professionals [2]. The Kansas Department of Health and Environment (KDHE) identified the need to assess the status of hypertension medication adherence among Kansans. Following this need, Kansas Behavioral Risk Factor Surveillance System (BRFSS) included hypertension medication adherence module comprised of six questions in 2016, survey.

Objective

To examine the status of hypertension medication adherence in Kansas.

Methods

The 2016 Kansas BRFSS data were used for this report. BRFSS is an ongoing, annual, population-based, random, digit-dial survey of non-institutionalized adults ages 18 years and older living in a private residence and college housing with landline and/or cell phone service in Kansas. The Kansas BRFSS uses a split questionnaire design. The core section is asked of all respondents, and the survey then splits into two “branches” (version A or version B) consisting of state-selected optional modules/state-added modules. Approximately half of the respondents that are asked core questions are randomly assigned to either questionnaire version A or questionnaire version B of the survey. Hypertension medication adherence module was part of questionnaire version A of the survey. The question to determine hypertension status was, “Have you EVER been told by a doctor, nurse, or other health professional that you have high blood pressure?" Those who responded “yes” were considered as a person with diagnosed hypertension. They were then asked medication ad-

herence related questions, “Are you currently taking medicine for your high blood pressure?; “Has a doctor, nurse, or other health professional EVER talked with you about the advantages of taking your high blood pressure medication as prescribed?”; and “Has a doctor, nurse, or other health professional EVER talked with you about the disadvantages of not taking your high blood pressure medication as prescribed?” Additionally, they were asked, “Have you EVER received instructions from a doctor, nurse, or other health professional about how to correctly take your high blood pressure medication?”; those who responded yes to this question were asked, “Were these instructions written down or printed on paper for you?” BRFSS 2016 data were analyzed to assess the burden of hypertension and use of antihypertensive medication in various population subgroups. Also, the percentage of Kansans with knowledge about their blood pressure medication; like advantages of taking the medication, disadvantage of not taking the medication, and instructions about dosage and materials received. Prevalence estimates and 95% confidence intervals (CI) were calculated. Weighted analysis procedures were applied using SAS 9.4 software.

Table 1. Prevalence of Adults Aged 18 Years and Older with Diagnosed Hypertension Taking Hypertensive Medication by Sociodemographic Characteristics in Kansas, 2016 BRFSS

Sociodemographic characteristics	Prevalence of adults aged 18 years and older with diagnosed hypertension taking hypertensive medication			
	Unweighted Frequency	Weighted Percentage	Lower 95% Confidence Interval	Upper 95% Confidence Interval
Total	1787	77.6%	75.0%	80.1%
Gender				
Male	793	73.6%	69.8%	77.4%
Female	994	82.0%	78.8%	85.2%
Age groups				
18-54 years	272	56.3%	50.7%	61.8%
55-64 years	442	84.8%	81.1%	88.6%
65 years and	1073	92.1%	90.4%	93.8%
Health Insurance				
Insured	1727	80.7%	78.3%	83.1%
Uninsured	58	42.5%	30.9%	54.0%
Diabetes Status				
Yes	464	92.0%	88.6%	95.3%
No	1317	73.5%	70.5%	76.5%
Arthritis Status				
Yes	938	87.1%	84.5%	89.8%
No	841	70.2%	66.4%	74.1%

Results

An estimated 688,318 (31.4%) adults reported ever diagnosed with hypertension. Among those with diagnosed hypertension, 77.6% are currently taking medicine for their blood pressure. This means, about 22.4% of adults with diagnosed hypertension are not currently taking medicine for their high blood pressure. The proportion who are taking hypertensive medication was significantly higher among adults aged 65 years and older, women, those who have health insurance, those who have diabetes, and arthritis (Table 1). About 82% of adults with diagnosed hypertension were given information about advantages of taking their blood pressure medication. 70% were given information about disadvantages of not taking their medication and 76% received instruction on correctly taking their medication, out of them only 85% adults were given instructions written down or printed on paper.

Conclusions

Hypertension medication nonadherence is a prevalent health issue in Kansas. Disparities are among those that are on antihypertensive medications with respect to various socio-demographic sub groups. Increasing awareness and encouraging adherence are needed. This population-based information indicated the need for public health strategies to address issues related to hypertension medication adherence among Kansas adults.

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Infant Mortality Report Released

Introduction

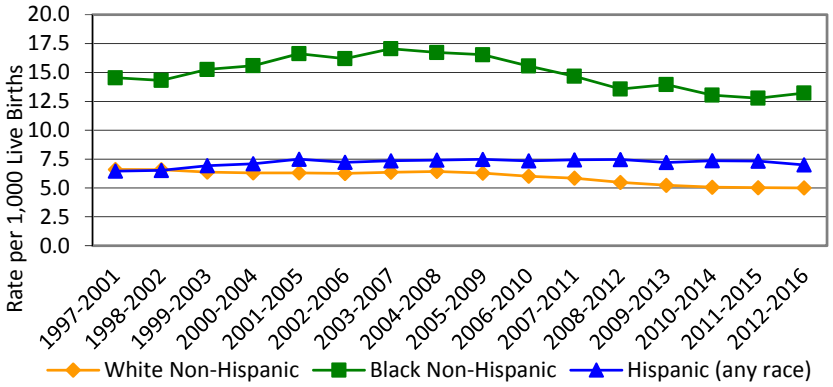
The Kansas Department of Health and Environment's Bureau of Epidemiology and Public Health Informatics has released *Selected Special Statistics, Stillbirths and Infant Deaths, 2016*, which summarizes vital records data on stillbirths and infant mortality. Infant mortality is an important indicator of community health. It is associated with a variety of factors such as economic development, general living conditions, social well-being where basic needs are met, rates of illness such as diabetes and hypertension, and quality of the environment [1]. The purpose of this report is to move beyond single-year statistics reported in the Annual Summary of Vital Statistics and provide a more long-term view of stillbirth and infant mortality data and statistics. In an attempt to increase data reliability, years are combined. Trends are evaluated using 20 years.

Selected Findings

- In the last century, the Kansas single year infant mortality rate (IMR) has decreased dramatically from 73.5 deaths per 1,000 live births in 1912 (2,795 infant deaths) to 5.9 in 2016 (223 infant deaths).
- In the last 20 years (1997-2016), the IMR fluctuated from 6.7 in 2003, then reaching a high of 7.9 in 2007, and an overall low of 5.9 in 2015 and 2016. The IMR has been significantly decreasing since 2007.
- The Kansas single-year IMR remained the same from 2015 (5.9 deaths per 1,000 live births) to 2016. The Kansas rate met the Healthy People 2020 (HP2020) objective of 6.0 deaths per 1,000 live births. The white non-Hispanic population IMR (5.2) and the Hispanic IMR (5.1) met the HP 2020 target while the black non-Hispanic rate (15.2) did not.

- A population group comparison over 20 years based on five year moving averages shows the black non-Hispanic IMR has remained over twice that of the white non-Hispanic population, with an average disparity ratio of 2.5 (Figure 1).

Figure 1. Five Year Average Infant Mortality Rates by Population Group of Mother, Kansas 1997-2016



Cause of Death

The leading underlying cause of infant mortality (2012-2016) was congenital anomalies (22.4%), followed by prematurity or low birth weight (19.7%), SUID or sudden unexplained infant death (18.1%), and maternal factors and complications (8.9%).

County Rates

The counties with the highest number of infant deaths in the 2012-2016 cohort included Sedgwick (267), Johnson (160), Wyandotte (105), and Shawnee (76). These four counties accounted for half (50.6 percent) of all infant deaths.

The counties with the highest reliable (RSE ≤ 30%) infant mortality rates, included Labette (8.7 infant deaths per 1,000 live births), Reno (8.6), Ford (8.5), Franklin (8.2), and Harvey (8.0); while the counties with the lowest (reliable) non-zero rates were Johnson (4.3), Saline (4.3), Leavenworth (4.7), Crawford (4.8), and Douglas (5.2). Infant death rates were not significantly different among Frontier, Rural, Densely-Settled Rural, Semi-Urban, or Urban peer groups.

Risk Factors-Linked Birth and Death Files (Death Cohort)

Analysis of the linked file revealed that low birthweight or prematurity were important risk factors for infant death even when the primary cause of death was not prematurity or low birthweight.

The 2012-2016 premature infant mortality rate of 43.0 deaths per 1,000 live births was over 17 times higher than the rate for infants born at term (2.5 deaths per 1,000 live births). The infant mortality rate for very premature infants was 198.9 deaths per 1,000 live births, approximately 80 times higher than infants born at term.

Additional notable risk factors for infant mortality were no prenatal care (5.7% of linked deaths) or starting prenatal care in the second trimester (18.7%), multiple births (13.7%), mothers who smoked during pregnancy (21.1%), out-of-wedlock births (49.9%), and Medicaid pay source (44.5%) or self-pay source (7.8%).

The full report can be found at: http://www.kdheks.gov/phi/index.htm

View LiveStories on Infant Mortality: http://www.kdheks.gov/phi/live_stories.htm.

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Reference

[1] Reidpath D, Allotey P. Infant mortality rate as an indicator of population health. J. Epidemiol Community Health. 2003; 57:344-346.

Prevalence, Disparities, Health Outcomes Associated with Unmet Oral Health Care Need Because of Cost Among Kansans 2015-2016 Kansas Behavioral Risk Factor Surveillance System

Background:

Oral health is an essential and integral component of overall health throughout life. Oral health and general health status are interrelated. Financial barriers are a crucial reason for not accessing dental care [1]. Data on the health status of people with unmet oral health care needs will help public health officials incorporate strategies to reduce barriers to dental care.

Objective:

The objective of the study was to examine the relationship between lack of dental care and health disparities.

Methods:

The 2015 and 2016 Kansas Behavioral Risk Factor Surveillance System (BRFSS) data were used for this analysis. BRFSS is an ongoing, annual, population-based, random, digit-dial survey of non-institutionalized adults aged 18 years and older living in a private residence and college housings with landline and/or cell phone service in Kansas. Data were analyzed to assess the burden of unmet oral health care need because of cost among Kansas adults aged 18 years and older in various population subgroups. Respondents were classified as having unmet oral health care if they answered "yes" to the question, "During the past 12 months, was there any time when you needed dental care but did not get it?" Among adults with unmet oral health care need, respondents were asked to answer, "What was the main reason you did not receive the dental care you needed?" Respondents who reported could not afford/cost/too expensive as the reason were categorized as having unmet oral health care need because of cost. Prevalence estimates and 95% confidence intervals (CI) were calculated. Weighted analysis procedures were applied using SAS 9.4 software.

Results:

An estimated 206,057 (9.4%) Kansas adults had an unmet oral health care need because of cost during the preceding 12 months. The estimated prevalence of unmet oral health care need because of cost was significantly higher for adults aged 25–54 years (11.7%), women (10.0%), Hispanics (16.5%), African-Americans (13.7%), adults with less than high school education (19.6%), those who were divorced/separated (18.0%),

Table 1. Prevalence of Unmet Oral Health Care Need Because of Cost Among Adults Aged 18 Years and Older by Sociodemographic Characteristics in Kansas, 2015-2016 BRFSS

Sociodemographic Characteristics	Prevalence of unmet oral health care need among adults aged 18 years and older			
	Unweighted Frequency	Weighted Percentage	Lower 95% Confidence Interval	Upper 95% Confidence Interval
Total	1288	9.4%	8.7%	10.0%
Gender				
Male	133	6.7%	5.3%	8.1%
Female	239	10.0%	8.4%	11.6%
Age groups				
18-24 years	59	6.7%	4.8%	8.7%
25-34 years	191	12.2%	10.3%	14.1%
35-44 years	177	11.2%	9.3%	13.0%
45-54 years	274	11.6%	10.0%	13.1%
55-64 years	308	9.7%	8.4%	11.0%
65 years and older	279	5.4%	4.6%	6.1%
Race*				
White, Non-Hispanic	981	8.6%	7.9%	9.4%
African American, Non-Hispanic	84	13.7%	10.0%	17.4%
Other†/Multi-Race, , Non-Hispanic	63	11.3%	8.3%	14.3%
Hispanic	135	16.4%	13.2%	19.8%
Annual Household Income				
Less than $15,000	260	29.9%	25.9%	33.8%
$15,000 - $24,999	355	18.6%	16.4%	20.9%
$25,000 - $34,999	168	13.4%	11.0%	15.8%
$35,000 - $49,999	145	8.0%	6.4%	9.5%
$50,000 or higher	185	3.5%	2.9%	4.1%
Education				
Less Than High School	154	19.6%	16.1%	23.0%
High School Graduate or G.E.D	393	10.1%	9.0%	11.3%
Some College	468	10.0%	8.9%	11.0%
College Graduate	271	4.2%	3.5%	4.8%
Marital Status				
Married/Member of an Unmarried Couple	565	7.3%	6.6%	8.0%
Divorced/Separated	366	18.0%	15.9%	20.1%
Widowed	136	8.5%	6.8%	10.1%
Never Married	221	10.2%	8.5%	11.9%
Employment Status				
Employed for Wages or Self-employed	576	8.3%	7.5%	9.1%
Out of Work	111	20.8%	16.0%	25.7%
Homemaker or Student	116	9.2%	7.1%	11.2%
Retired	237	5.4%	4.5%	6.2%
Unable to Work	243	26.9%	23.3%	30.5%
Disability Status				
Living With a Disability	668	19.8%	18.0%	21.6%
Living Without a Disability	177	5.7%	4.7%	6.8%
Health Insurance Status				
Insured	930	6.9%	6.3%	7.4%
Uninsured	351	27.3%	24.1%	30.4%

* Prevalence estimates for race and ethnicity were age-adjusted to the U.S. 2000 standard population.

† Other non-Hispanic group includes non-Hispanic American Indian or Alaskan Native, non-Hispanic Asian, non-Hispanic Native Hawaiian or other Pacific Islander.

Source: 2015-2016 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE.

unemployed adults (20.8%), adults who were unable to work (26.9%), less than $25,000 of annual household income (22.1%), adults living with a disability (19.8%) and uninsured adults (27.3%)(Table 1). Among those who had unmet oral health care need because of cost during the preceding 12 months, there was a significantly higher prevalence of arthritis, current asthma, diabetes, poor mental health than those who were able to access oral health care (Table 2).

Table 2. Selected Health Characteristics Among Adults Aged 18 Years and Older Who Had Unmet Oral Health Care Need Because of Cost in Kansas, 2015-2016 BRFSS

	Prevalence of Selected Health Characteristics							
	Arthritis Status		Current Asthma Status		Diabetes Status		Mental Health Indicator	
	Yes	No	Yes	No	Yes	No	14+ Days Mental Health NOT Good	<14 Days Mental Health NOT Good
	Unweighted F* Weighted % (95% CI)	Unweighted F Weighted % (95% CI)	Unweighted F Weighted % (95% CI)	Unweighted F Weighted % (95% CI)	Unweighted F Weighted % (95% CI)	Unweighted F Weighted % (95% CI)	Unweighted F Weighted % (95% CI)	Unweighted F Weighted % (95% CI)
Adults Who Had Unmet Oral Health Care Needs Because of Cost	541 32.1% (29.1%-35.1%)	743 67.9% (64.9%-70.9%)	188 14.3% (11.9%-16.7%)	1079 85.7% (83.3%-88.1%)	228 13.1% (11.1%-15.2%)	1057 86.9% (84.8%-88.9%)	331 28.0% (24.7%-31.2%)	932 72.0% (68.8%-75.3%)
Adults Who Were Able to Access Oral Health Care	4294 24.3% (23.5%-25.1%)	9295 75.7% (74.9%-76.5%)	1074 7.9% (7.3%-8.5%)	12460 92.1% (91.5%-92.7%)	1631 9.4% (8.9%-10.0%)	11969 90.6% (90.0%-91.1%)	951 8.0% (7.4%-8.6%)	12470 92.0% (91.4%-92.6%)

*Unweighted F= Unweighted Frequency
Weighted %= Weighted Percentage
95% CI= 95% Confidence Interval
Source: 2015-2016 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, KDHE.

Conclusion:

Unmet oral health care need due to the cost is high in Kansas. Disease conditions are higher among those with unmet oral health care need due to cost. These population-based results indicated the need for public health strategies to address issues related to unmet oral health care need due to cost among Kansas adults.

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Announcements

Kansas Health Matters Updated and Newly Added Indicators

During the last quarter of CY2017, Kansas Health Matters (KHM) had an abundance of activity happening behind the scenes to update and add new indicators. The Natality indicators were all updated with the most current information (period: 2014-2016) available, these indicators are;

- Infant Mortality Rate

- Number of Births per 1,000 Population
- Percent of all Births Occurring to Teens (15-19)
- Percent of Births Occurring to Unmarried Women
- Percent of births Where Mother Smoked During Pregnancy
- Percent of Births Where Prenatal Care began in First Trimester
- Percent of Births with Inadequate Birth Spacing
- Percent of Births with Low Birth Weight
- Percentage of Premature Births

The Hospital Admissions/Discharge indicators also were updated with the 5 original indicators having their data source changed to reflect the implemented ICD-10 CM coding system and 5 new indicators were added using the new data sourcing. The 5 original indicators are;

- Injury Hospital Admission Rate
- Heart Disease Hospital Admission Rate
- Congestive Heart Failure Hospital Admission Rate
- Pneumonia (Bacterial) Hospital Admission Rate
- Chronic Obstructive Pulmonary Disease (COPD) Hospital Admission Rate

Note: Any previous studies, prior to December 2017, conducted on the above indicators should not be compared to the newly sourced data.

Newly added indicators are;

- Acute Cerebrovascular (Stroke) Disease Hospital Admission Rate
- Asthma Hospital Admission Rate
- Diabetes Hospital Admission Rate
- Mental Behavior Hospital Admissions Rate
- Poisoning (Drugs) Hospital Admission Rate

For more information on the above, please email KDHE.HealthStatistics@ks.gov .

Kansas County Profile Reports Updated

University of Kansas – Institute for Policy & Social Research has announced that the "Kansas County Profile Reports", have been updated with the most recent population, socio-economic, and employment data. Profiles are available for all 105 Kansas counties, each containing twelve categories of information: population, vital statistics and health, housing, education, social environment, business, employment, income, banking, government, crime, and agriculture.

The county reports can be generated for any county in Kansas by simply clicking on the county from the website: http://ipsr.ku.edu/ksdata/kcced/profiles/. This website is also available at the websites of "Kansas Information for Communities (KIC), Fast Stats" and "Kansas Health Matters, Resource Library".

For more information regarding the KU Kansas County Profile Reports email ipsr@ku.edu.

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