



A CROSS-SECTIONAL ANALYSIS OF SMOKING INCIDENCE AND SMOKING-RELATED MORBIDITY AND MORTALITY IN LAWRENCE COUNTY, OHIO

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MANY FACTORS, SUCH AS quality of care, income, and lifestyle choices influence the health of a population. Although some risk factors are not modifiable, others can be affected by health care or lifestyle changes in individual patients. These individual decisions can be aggregated to produce measureable changes in health care parameters in a geographic area. It follows that if individuals can be influenced to make healthy choices, the health care of an area can be improved.

Smoking is a modifiable risk factor that has been attributed to causing many preventable diseases and health conditions; lung cancer, chronic obstructive pulmonary disorder (COPD), and heart disease are all health conditions that have been directly caused by smoking. Additionally, pregnant women who smoke are more likely to have a miscarriage, a pre-term birth, or a child of low birth weight. A correlation between smoking in pregnant women and an increased incidence of Sudden Infant Death Syndrome (SIDS) also exists. Because smoking contributes to an increased incidence of many diseases/health conditions, many people are looking for ways to quit; nicotine replacement therapy and prescription medications are often used to assist these individuals. Additionally, smoking cessation clinics have been implemented in pharmacies and other healthcare settings to provide additional counseling and support for those who want to quit smoking; these clinics have proven to be very effective at assisting those persons in reaching the goal of not smoking.

In this study we analyze the incidence of smoking, COPD, lung cancer, and pre-term births in one Ohio county with poor health statistics. Ultimately, the goal of this study is to generate data that can be used to illustrate the need for a smoking cessation clinic in this county.

Methods

Data from the Center for Disease Control and other health statistic resources were used to identify Ohio counties that had higher-than-average rates of COPD/lower respiratory tract infections, lung cancer, pre-term births, low birth-weight births, and infant deaths due to SIDS. This was done by comparing the county statistics with statewide averages. Lawrence County was selected because the data showed that it had higher-than-average rates of COPD and lower respiratory tract infections, lung cancer, and low birth-weight babies when compared to statewide averages.

After choosing this county, we documented both the incidence of the smoking-related diseases previously mentioned and the percentage of current smokers in the county, along with the percentage of mothers who reported that they smoked during pregnancy.

Results

Upon examining the data, it was determined that Lawrence County, Ohio, not only had higher-than-average incidences of lung cancer, COPD, and chronic lower respiratory tract diseases, but it also had increased rates of smoking and mothers who smoked during pregnancy. This information is detailed in the following charts.

Table 1: Deaths by Disease, 2005-2007

	Lawrence County Incidence Per 100,000 Population (Age-adjusted)	Ohio Incidence Per 100,000 Population (Age-adjusted)
Chronic Lower Respiratory Tract Disease (COPD)	63.4	50.2
Cancer of Lip, Oral Cavity, and Pharynx	3.2	2.6
Cancer of Trachea/Lung/Bronchus	77.5	59.1

(Ohio Department of Vital Statistics, 2009)

Table 2: Smoking, 2004-2007

	Lawrence County Percent of Population	Ohio Percent of Population
Current Cigarette Smokers (% of population)	29.7%	23.6%
Mothers Who Smoked During Pregnancy	30.2%	18.1%
Current Use of Smokeless Tobacco	2.6%	2.7%

(Ohio Department of Health, 2008)

Table 3: Birth Statistics

Births	Lawrence County	Ohio
Pre-term Births (2008)	19.1%	14.4%
SIDS (as a percent of all infant deaths) (2007)	12.5%	7.6%
Perinatal Miscarriage Rate (2005-2007)	7.1	7.0
Low birth-weight (2004-2006)	11.9%	8.6%
Births to Women Who Smoke	22.2%	18.9%

(Ohio Department of Vital Statistics, 2009; Ohio Department of Health, 2008)



Lawrence County has many health problems, as seen by the information in Tables 1, 2, and 3.

- There is a higher incidence of lung cancer and chronic lower respiratory tract diseases.
- There is a significant difference in the incidence of SIDS-related deaths, pre-term births, and babies born with low birth weight.
- Lawrence county has a higher percentage of smokers as compared to other counties in the state of Ohio
- It was reported that over 30% of women in Lawrence County smoked during their pregnancy.

In summary, compared to residents in other counties of Ohio, Lawrence County residents smoke more and have higher rates of smoking-related diseases and health conditions. Lung cancer is more common in Lawrence County. Newborns are more often born pre-term; they also are likely to have a low birth weight.

Discussion

Many of Lawrence County's health problems can be traced to smoking, and a program that reduces smoking would clearly benefit the citizens of that county. Because pharmacists can offer smoking cessation programs, the ways in which pharmacists could help the health of the citizens of the county was one of the original ideas behind this study. Additionally, it would be useful to consider the reasons behind the high rate of smoking in this county. We could speculate about economic status as a cause, because the residents of the county earn less money than citizens in most other counties in Ohio. Another potential cause might be the culture of the area. The county does border Kentucky, a state that has a rich tradition of tobacco cultivation. Perhaps smoking became embedded in the habits of the citizens of Lawrence County, and modern opinions on the dangers of tobacco use have not penetrated that social structure. Also, tobacco is thought to be an antidepressant. Perhaps the high rate of smoking reflects a need for such therapy in the population. In any case, the connection between smoking and many of the county's health problems is clear. The solution may be less so.

Because the number of physicians in the county is very low, other means to make an impact on health care in the county must be considered. Table 4 shows that more than half of the pharmacies in the county are local independents, a much higher ratio than in the rest of the state. Pharmacies such as these have been much more receptive to providing medication therapy management than are the large chain stores. It has been well documented that pharmacists are underutilized and can make a difference in the health care of Americans when they are fully utilized (Bunting & Cranor, 2006; Bunting, Smith, & Sutherland, 2008). Three health clinics are located in the county. These facilities have often

been receptive to collaborative practices with pharmacists, nurse practitioners, and physician assistants.

Table 4: Pharmacies Located in Lawrence County

Business Name	Address	City	State
Bentley RXpress Pharmacy Inc	505 South Third Street	Ironton	OH
Coal Grove Pharmacy	600 Marion Pike	Ironton	OH
CVS/Pharmacy #3403	219 Third Avenue	Chesapeake	OH
CVS/Pharmacy #3474	518 S. 3Rd Street	Ironton	OH
CVS/Pharmacy #6349	1109 Ironton Hills Drive	Ironton	OH
Fruth Pharmacy #8	259 State Street	Proctorville	OH
Kelley Med Care, Inc.	210 Center Street	Ironton	OH
Kmart Pharmacy #4422	367 County Road 406 Unit 10	South Point	OH
Kroger Pharmacy #781	Main St. & East End Bridge	Proctorville	OH
McMeans Pharmacy, Inc.	708 4Th Street East P.O. Box 416	South Point	OH
Rite Aid Discount Pharmacy #4809	715 Park Avenue	Ironton	OH
Sam's Pharmacy 10-8152	432 Private Drive, 288	South Point	OH
Staley's Pharmacies Inc.	2024 So. 9Th St.	Ironton	OH
Staley's Pharmacies Inc.	217-219 South Third Street	Ironton	OH
Wal-Mart Pharmacy 10-1478	354 Private Drive 288	South Point	OH

The Asheville Project, a five-year study, was conducted to assess the capability of pharmacists to positively affect the health outcomes while reducing health care costs of a population in Asheville, North Carolina. This study proved that pharmacists were not only successful in cutting health care costs, but they also were successful in reducing further events, complications, and hospitalizations via better disease management (Bunting & Cranor, 2006; Bunting, Smith, & Sutherland, 2008). The Asheville project showed conclusively that pharmacists who saw patients with diabetes, high blood pressure, or asthma/ COPD could make a difference in the patient outcomes. They did this by checking blood glucose levels, blood pressure levels, and medication adherence. These pharmacists also made a difference by detecting and correcting drug-related issues. Although the Asheville pharmacists were specially trained to provide diabetes care, current Doctor of Pharmacy curricula include training for this role. Consult agreements may be reached between pharmacists and interested physicians to allow pharmacists to alter specific medication regimens. The specific activities that pharmacists could conduct include the analysis of cholesterol tests, anticoagulation results, and diabetes control. Patient compliance is an important indicator of good outcomes, and pharmacists are especially good at encouraging adherence to medications (Bonfiglio, Lewis, Nesbit, Krinsky, 1997). A pharmacist also may be a valuable asset for the health care of individuals by offering educational classes on specific diseases, such as diabetes, COPD, and asthma. As education increases, many patients become more involved in actively controlling and adhering to medication use. For example, many patients diagnosed with Type 2 diabetes mellitus are urged to track blood



glucose levels throughout the day, but many physicians fail to acknowledge the values and many patients eventually lose interest. Part of the success in Asheville was due to the positive feedback and reinforcement provided at each meeting. Further education can motivate patients to feel as if a difference has been made.

Increased awareness is an important factor in motivating patients toward healthier lifestyles. During medication therapy management, pharmacists have the opportunity to educate patients on important lifestyle modifications, such as smoking cessation. It has been shown that many patients are unaware of the potential health risks of smoking. Wewers et al. (2000) showed that most smokers knew of the relationship between smoking and cancer, but less than one half of them realized the relationship between smoking and heart disease and the risks inflicted by smokers on nonsmokers. In a recent review it has been suggested that smoking cessation is most effective when intensive interventions are initiated (Stead, Bergson, & Lancaster, 2008). Specifically, pharmacists have been shown to be effective in reducing smoking among patients who attend smoking cessation clinics, provided the system included prescription drugs, over-the-counter medications and face-to-face coaching of patients (Stead, Bergson, & Lancaster, 2008).

Pharmacists could very well fill that coaching roll. Reducing smoking rates would reduce lung cancer rates, infant deaths/pre-term births, cardiovascular complications, and it would lower respiratory tract diseases.

Conclusion

After completing the data analysis, an appointment was made with a leading local pharmacist to discuss the possibility of increasing pharmacist involvement in the health care system of Lawrence County. The conclusion of the meeting was that the residents of the county were very receptive to the idea of pharmacist-provided health care. Further, the outpatient care in Lawrence County depends primarily on neighborhood clinics, such as the three in Ironton. This study demonstrates a clear need for pharmacist-provided medication therapy management services in Lawrence County. It seems clear that such care will be well received. The next steps would be to consider whether smokers in Lawrence County are willing to seek out care for this addiction and to examine options for a business plan that could move such services forward.

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