A Systematic Review: The Opioid Epidemic
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1.0 Introduction

This review examines academic literature addressing the opioid epidemic plaguing the United States and Canada. Opioid abuse is present throughout both nations. It is severely impacting both rural and urban settings. Because these settings are very different, it is important to review the literature addressing the nature of the problem and potential interventions for both. This review looks at the methods used to search for articles, the location and population demographics of the articles, the study design of the articles, the epidemiology of opioid addiction, and the results the authors found. The results section is separated into categories: research parameters, population demographics, study design, epidemiology of opioid addiction, location/distribution, urban and rural differences, overdoses and deaths, educational interventions – physician and public, and outcomes. Lastly, any final conclusions that were made. Because opioid abuse has risen to being an epidemic plaguing many people across the urban and rural areas of the United States and Canada, it is crucial to understand the epidemiology of the problem which means it crucial to acquire accurate information about the problem’s extent and underlying reasons as well as the effectiveness of educational and intervention alternatives.

2.0 Methods

2.1 Literature Search

The database PubMed was utilized as an electronic search engine for the systematic review. The search terms included were: “opioid” AND “abuse” AND “rural” AND “America” OR “opioid” AND “abuse” AND “Rural” OR “analgesics” or “opioid” AND “analgesics” OR “opioid” AND “misuse” AND “rural” AND “communities” OR “analgesics” AND “misuse” OR “urban” AND “rural” AND “opioid” AND “misuse” OR “analgesics” AND “abuse” AND “rural” AND “America”.

2.2 Exclusion Criteria

Studies were excluded if they were in a language other than English, if a full text of articles were unavailable, if they did not address opioid abuse/misuse, if they were
conducted in a location outside of the United States or Canada, or if they addressed locations which did not include some mention of rural locations or a comparison with rural locations. Studies which were not yet completed were also excluded.

### 2.3 Data Extraction

The author extracted and utilized data covering a number of factors. This included identifying the magnitude of the opioid abuse problem, generating demographic profiles of which individuals, or groups of individuals, were most vulnerable to falling into abuse, locations having the most severe problems, educational approaches, physician practice training, and treatment approaches.

### 3.0 Results

Of the 127 papers initially identified, 16 studies were included in this literature review. Of these, three examined the relationship of drug use and a person’s environment and social capital, three looked at intervention effectiveness, two looked at overdoses and deaths from opioids, and the remainder looked at a multitude of factors related to opioid use. All studies touched on rural versus urban settings and prescription opioid abuse versus non-prescription opioid abuse.

### 3.1 Research Parameters

This review’s major focus is the causes and extent of the opioid abuse and addiction problem as well as the identification and evaluation of actual and potential alternatives for eliminating or reducing the problem and its impacts. Further, the review is focused upon the United States and Canada as well as factors entwined in the urban and rural configuration of the opioid abuse and addiction problem. To that end, research honed in on American and Canadian studies. So as to generate information and analysis from a diversity of sources, studies considered were not limited to any particular region of either country. In order to assure the relevance of the material, all included studies have been published within the last 10 years and only one was published prior to the commencement of this decade.
3.1.1 Population Demographics

All studies examined locations that were in either urban or rural settings. Study areas included: rural Virginia\(^1\), rural and urban Kentucky locations\(^3,4\), rural Ontario, Canada\(^5,6\) including examined northern (mostly rural) and urban Ontario\(^7\). Additional study settings were rural Pennsylvania, rural Iowa\(^8\) and urban San Francisco\(^9\), both urban and rural New Mexico\(^10\), Washington\(^11\), an emergency department in Maine\(^12\), and a reservation for Native Americans located in the Midwestern United States\(^13\).

Of the 16 studies, most directed their examination at white males between 30 and 40 years of age. Two studies, Cochran et al. and Srivastava et al., included more females than males\(^5,12\). In all of the studies in which race was mentioned, whites were the overwhelming majority of subjects, but D’Onofrio et al. generated 16\% Hispanic participation in their study which was very close to the Hispanic population being 17\% of Americans\(^14\). Young et al., Jonas et al., and Nordstrom et al. did not mention age, sex, or race as a measurement in their studies\(^3,4,15\).

3.1.2 Study Design

This literature review is designed to provide an overview of particular important topics in the arena of opioid abuse and addiction. It begins by addressing the epidemiology of the opioid abuse and addiction problem. Information and analysis is provided about the distribution of the problem geographically as well as in particular communities and settings. The differences between urban and rural areas in terms of the extent and nature of abuse as well as the challenges to solving the problem are discussed. The section covering overdoses and deaths resulting from the opioid abuse epidemic provides insight as to its extent and its human toll. Efforts and alternatives for fighting and treating opioid abuse and addiction is covered in the section describing educational interventions. The effectiveness of treatment and continuing programs are discussed in the section covering outcomes. The conclusion represents key observations and insights developed through the studies examined as a part of this review.
The design of this review, particularly the selection of professional journal articles, reflects the complexity of the opioid abuse issue. This goes beyond its nature as an epidemic that continues to grow and take an enormous toll on individuals and society as a whole.

The illicit nature of opioid abuse as well as related behaviors makes methodology especially crucial. Opioid abuse entails illegal activities frowned upon by many, not only the community, but also by family members and others upon whom the abuser hopes to leave a positive impression, such as employers, friends and those with whom an abuser might interact in the criminal justice system, such as judges, probation, and parole officers. That is why the methods used by the authors of these articles must be taken into consideration.

Researchers utilizing traditional sampling methods are prone to generating unreliable results. This is because the activities being examined are illegal, largely condemned and outside the norms of the community overall. The desire of people to avoid these behaviors being exposed generates an incentive to lie or to refuse to participate altogether. This acerbates the risks of bias and error. This leaves researchers with the choices of utilizing new methods, or reconfiguring existing ones, to minimize this problem. Of course, utilizing new methods or reconfiguring existing ones can expose results to new distortions.

The authors of the articles undertake a variety of approaches. Several utilize the widely used retrospective study methods. This entails taking existing data and subjecting all, or a particular portion, of that data to examination and analysis geared to the hypotheses or issues of interest to the authors. A population-based retroactive study is utilized by Wunsch et al. in studying opioid related fatalities\(^1\). Weimer utilizes the retrospective case method to explore methadone overdoses\(^2\). In studying the effectiveness of methadone maintenance treatment (MMT) programs, Eibl et al. utilizes
the retrospective cohort method\textsuperscript{7}. Meanwhile, Rigg et al. utilized national survey data in a retrospective analysis of new opioid users over the course of several years\textsuperscript{16}.

On the other hand, many researchers have utilized prospective methodologies to provide fresh results, receive input from abusers and treatment professionals, and to be able to customize their research and questions to the results they have just uncovered\textsuperscript{3}. Young et al. utilized snowball sampling to explore opioid abuse in rural and metropolitan counties in eastern Kentucky\textsuperscript{3}. This entailed existing participants identifying and recruiting prospective new study participants\textsuperscript{3}. “Snowball” refers to expanding the pool as one participant asking two prospects who become participants and, in turn, each of the two asks two more prospects until the pool is full\textsuperscript{3}.

Momper et al. utilizes logistic regression analysis to achieve the benefits of snowball sampling while reducing the potential bias existing in homogenous populations through extensive questioning not only about abuse, but also personal details\textsuperscript{13}. Respondent driven sampling was utilized to address the same problem by Jonas et al\textsuperscript{4}. The authors worked to make the initial participant population as diverse as possible. This is intended to reduced bias risks tied to enlarging the pool through participants recruiting their peers\textsuperscript{4}.

Prospective methods rely heavily on interviews and questionnaires. This provides information from the field that can help distinguish symptoms from causes as well as identify what, approaches are and are not working\textsuperscript{5}. This can be seen in Srivastava’s study where techniques to educate physicians were studied and then changed to improve results\textsuperscript{5}. The studies completed respectively by Crowley et al., Kiepek et al., and Cochran et al. utilize the prospective method and rely upon results generated through interviews and questionnaires\textsuperscript{6,8,12}.

One study used the qualitative study method\textsuperscript{9}. Mars et al. tested hypotheses about heroin users’ backgrounds, behavior, beliefs, attitudes and drug use through participant observation as well as semi-structured and open ended interviews\textsuperscript{9}. This
enabled checking responses against actual behavior. At the same time, the more flexible interview approach enabled obtaining additional and more in-depth insights\(^9\).

To evaluate the effectiveness of certain types of education programs in combatting abuse, Crowley et al. utilized experimental and control groups in a prospective cohort study\(^8\). This method was also used by D’Onofrio et al. in the study of emergency treatment of overdoses\(^14\). Nordstrom et al. utilized logistic regression in studying alternatives to improve office based opioid abuse treatment\(^15\). Nordstrom et al., like Momper et al., utilized this technique both to reduce the bias risk and to generate more and deeper insights by giving interviewers more flexibility in asking follow-up questions and exploring issues that get raised as a result of the responses\(^13,15\). In this case the possibility that the similar education, training and medical practice culture could create a homogeneity biasing the responses\(^15\).

### 3.1.3 Epidemiology of Opioid Addiction

Opioid abuse and addiction represent a significant public health crisis. It is estimated that nearly 2% of the adult population of the United States have abused opioids within the preceding 12 months\(^11\). When taking into account that heroin is an opioid, additional abusers must be added to that total\(^11\). This represents a near doubling of abuse within the past decade\(^11\). This trend of increasing abuse and addiction is reflected in estimated emergency room admissions more than doubling in just the seven years between 2004 and 2011\(^11\). Similarly, deaths from abuse totaled at least 125,000 in the first decade of this century\(^11,16\).

### 3.1.4 Location/Distribution

Opioid abuse is endemic throughout the United States and Canada\(^16\). It exists in urban settings such as San Francisco and Philadelphia\(^9\). It exists in urban and rural populations of locations as diverse as Kentucky and Ontario, Canada\(^1,7\). It exists in mid-sized communities, deeply distressed areas such as Appalachia and even on Native American reservations\(^1,13,16\). As discussed below, most, but not all experts, believe there is greater use in urban rather than rural settings\(^3,7,13,16\).
Within communities, it appears abuse and addiction is distributed toward populations more likely, but by no means exclusively, vulnerable to abuse and addiction\textsuperscript{16}. While there is a significant abuser population that is older, those under 25 years old are the most vulnerable\textsuperscript{16}. Males are more likely to be abusers than females\textsuperscript{16}. People having had no college education are more likely to be abusers than holders of college and post-graduate degrees\textsuperscript{16}. Unemployed and underemployed individuals tend to turn up more often as abusers\textsuperscript{16}. Particularly as to abuse of prescribed opiates, those who have suffered workplace injuries are more prone to abuse and addiction than others\textsuperscript{16}.

The concentration of these characteristics tends to correlate to locations where there is greater likelihood of abuse\textsuperscript{1,16}. Information regarding populations most likely to be vulnerable can be spatially processed\textsuperscript{1,16}. This enables identifying geographies where there is a greater likelihood of abuse and addiction\textsuperscript{10}. Identification of these geographies, also known as clusters, is valuable because it enables educational, law enforcement and treatment resources to be deployed where the needs are the greatest\textsuperscript{10}.

Another element that can prove to be of similar value in identifying where abuse problems exists and where resources need to be deployed is that of social networks. Regardless of whether in an urban or rural setting, social networks have proven to be a key element in the choices and behaviors of abusers\textsuperscript{4}. In some social networks, particularly those that correlate with a tendency to opioid abuse and addiction, members generate more income from illicit activity than from traditional employment\textsuperscript{4}. Dramatically higher instances of abuse have been found when people who are part of those social networks are currently within rather than outside of them\textsuperscript{4}.

\textbf{3.1.5 Urban and Rural Differences}

Opioid addiction impacts both urban and rural populations\textsuperscript{1,3,13,16}. Adults living in urban areas were more likely to engage in prescription opioid misuse compared to
adults living in rural settings\textsuperscript{16}. Rigg et al.’s nationwide study of 47,440 respondents found 5.7\% overall reported misusing prescription opioids within the prior year\textsuperscript{16}. Results generated after applying an unadjusted binary logistic regression showed that respondents living in rural settings had an 18\% lower level of prescription opioid misuse than those living in urban settings\textsuperscript{16}. Similar findings were made in studies conducted in eastern Kentucky\textsuperscript{3} and in Canada\textsuperscript{7}. This clearly demonstrates the problem is a significant one in both populations.

There not only is some difference in the magnitude of abuse in the different settings, but also there are important differences in the age abuse begins, the manner of taking opioids as well as in the mix of substances abused\textsuperscript{3}. Those living in urban settings generally start substance abuse at an earlier age than rural residents. It also has been found that an earlier start in abuse correlates with a greater likelihood of adult abuse\textsuperscript{16}. Rural users were more likely to ingest opioids by snorting or injection while urban abusers were more likely to doing so by swallowing\textsuperscript{2}. In particular, the greater usage of injection was viewed as making rural users more vulnerable to overdose as well as to blood borne ailments such as HIV\textsuperscript{3}. Urban participants were using prescribed medication significantly more than the rural participants\textsuperscript{3,16}. In contrast, a majority of rural participants reporting abusing opioids such as buprenorphine or fentanyl while no such use reported by urban participants\textsuperscript{3}. Nonetheless, abusers opting to drop out of treatment programs as well as relapses are key problems in both populations\textsuperscript{3,7,16}.

Greater use of prescription opioids in urban settings indicate a key cause may be the greater access to medical practices, clinics, and pharmacies\textsuperscript{16}. This not only equates to more resources for abusers to supply their opioid demand, but also equates to more avenues for an individual to be introduced to opioids\textsuperscript{16}. It should be noted that access also exists in rural settings\textsuperscript{13}. At a Native American reservation located in the rural Midwestern United States, 30\% of respondents reported using prescription opioid OxyContin for nonmedical reasons at some point during their lives\textsuperscript{13}. Two-thirds of those, 19\% of the respondents, reporting having used OxyContin within the prior year\textsuperscript{13}. However, in seeming contradiction to the results generated in both the Rigg et al. and
Young et al.’s studies\textsuperscript{3,16}. Momper et al.’s results indicate subjects who moved away from the reservation were less likely to abuse OxyContin\textsuperscript{13}.

Urban and rural differences extend to treatment and results as well\textsuperscript{3,7,16}. This is important because, in contrast to many urban areas, rural areas are underserved by social support services and health services\textsuperscript{7}. Many rural areas are resource poor in terms of physical facilities and trained professionals\textsuperscript{7,12}. This equates to less mitigation of abuse and its consequences than seen in urban settings\textsuperscript{12}. An example can be seen in Ontario, Canada where first-time methadone participation and retention correlated with accessibility of treatment resources\textsuperscript{7}. Having accessible treatment resources equated to more abusers seeking therapy\textsuperscript{7}. The consequence is less abusers seek assistance\textsuperscript{7}. An abuser not seeking treatment equates to being more prone to continue abuse and more likely to introduce others to abuse as well.

3.1.6 Overdoses and Deaths

Opioid overdoses and deaths have been rising for an extended period\textsuperscript{1}. SAMHSA statistics identify 125,000 deaths from overdoses within the first decade of the 21st century\textsuperscript{11}. This is a continuing trend. A compelling example can be seen in the 300% increase in fatal overdoses that occurred in in rural western Virginia in the six years between 1997 and 2003\textsuperscript{1}. Prescription opioids were identified as the cause of death in 74% of the overdose cases\textsuperscript{1}.

Significant stumbling blocks exist in reducing, much less eliminating, opioid abuse and addiction\textsuperscript{2}. In many parts of both the United States and Canada, there is a shortage of treatment resources and professionals\textsuperscript{7,12}. Another problem is certain treatment protocols present problems of their own. Methadone is a prime example\textsuperscript{2}. Many abusers utilize it to fight their addiction to heroin. However, many of them become addicted to methadone, which is also an opioid\textsuperscript{2}. Deaths from overdoses of methadone increased a stunning 468% nationwide between 1999 and 2005\textsuperscript{2}. In a Virginia study, 34% of all overdose deaths were those of methadone users\textsuperscript{2}. Many of the decedents originally utilized it in an effort to fight their addiction to heroin\textsuperscript{2}. 
This is a prime indication of the challenges entailed in reducing the problem. While the use of opioid receptors, such as methadone, have generated some successes, it also is an opioid. Even if the particular opioid is not heroin, users of this therapy can become addicted to the substitute and die as a result of that addiction. Additionally, the fact that 67% of the methadone decedents had obtained the opioid illicitly, shows that even opiates prescribed to reduce addictions are often the source of new addictions.

3.1.7 Educational Interventions—Physician and Public

Public health’s response to the opioid abuse epidemic is multi-faceted. A major element is educational intervention. One element of this is increasing the knowledge of medical professionals, especially physicians. Multifaceted educational intervention has proven effective. Physicians, as well as other medical staff personnel, have been taught to be more observant of their patients. For instance, they have been sensitized to be cognizant of walk-in patients who ask for opioids as well as patients who run out of opioids earlier than if the drugs had been taken in accord with the prescribed dosage schedule. Also, education interventions have resulted in physicians becoming more active in utilizing identification and treatment tools such as urine screening and establishing treatment regimens. An important part of this increased willingness to engage in identification and treatment has been the willingness to prescribe newer evidence-based medical treatments such as buprenorphine.

There is still a great deal to be done. Many physicians report strong concern regarding the lack of addiction treatment resources and many physicians, particularly in rural and distressed geographies, perceive a lack of institutional support for major screening and treatment initiatives.

Educating physicians and medical professionals is just one part of the intervention equation. There is wide recognition that minimizing the risk that adolescents and teenagers becoming involved in drugs is a crucial part of undercutting the increase
in the abuse of opioids as well as other drugs\textsuperscript{8,16}. Achieving this entails educational intervention being undertaken to educate young people as to the dangers of opioid abuse as well as to influence them to resist its temptations\textsuperscript{8}.

The leading school age intervention being undertaken entails evidence based preventive intervention programs done in school, community and family settings\textsuperscript{8}. To date, there has not been significant initiatives to customize the programs to audience characteristics and risk factors\textsuperscript{8}. There are a number of different programs being utilized\textsuperscript{8}. The most effective are those embodied in PROSPER (school, community and university youth education partnerships) programs\textsuperscript{8}. These programs include life skills training, role playing addressing responding to pressures to try drugs and generating a peer mentality that is averse to abusing drugs\textsuperscript{8}. Leading programs include Life Skills, All Stars, and Project Alert\textsuperscript{8}. While generating some positive results, when these programs are provided in combination over a sustained period of time, the reduction of participants improperly using prescription opioids as well as other illicit substances has been proven\textsuperscript{8}. Nonetheless, additional research and study are required to determine whether customization and other innovations can expand the success which has been achieved\textsuperscript{8}.

### 3.1.8 Outcomes

Because of the high stakes involved in successfully addressing opioid abuse and addiction, identifying the most effective treatments and interventions is crucial. Interventions and treatments are key elements of public health’s role in generating successful outcomes in assisting abusers in their attempts to rid themselves of opioid addiction\textsuperscript{2,6,14}.

The most successful outcomes in fighting opioid abuse have been generated by programs providing evidence-based medical therapies along with education and counseling\textsuperscript{6,14}. The medical therapy portion of treatment primarily involves using opioid analgesics. These include opioids such as methadone and either of the opioids naloxone and buprenorphine alone or in combination\textsuperscript{14}.
Because methadone is the original opioid analgesic and because it is less expensive to utilize than naloxone and buprenorphine, it remains widely used despite patients being vulnerable to becoming addicted to the substance which is supposed to help them\textsuperscript{1,14}.

Regardless of which medical therapy is utilized, the approaches most likely to generate the best outcomes are those which add ongoing treatment, counseling and support\textsuperscript{6,14}. This entails first responders and physicians going beyond merely initiating one or more opioid antagonist injections\textsuperscript{6}. It also requires maintenance which involves connecting the abuser with ongoing intervention in the terms of one-on-one counselling, group therapy opportunities and other actions to help assure a support system is in place\textsuperscript{6,14}.

4.0 Conclusions

This review examined academic literature addressing the opioid abuse and addition problem from a number of perspectives. This included looking at the problem’s extent and underlying reasons, as well as the effectiveness of educational and intervention alternatives. Here, the literature on opioid abuse and treatment was scrutinized with an eye toward what the academic literature is providing, in both rural as well as urban contexts.

As well as addressing both contexts, this review focused on identifying the magnitude and geography of the problem as well as the dynamics which embodies users, likely users, clinical interventions, and educational interventions. The reviewed literature indicates the opioid abuse problem spans urban and rural communities across the United States and Canada. It further indicates abusers are most likely to have started substance abuse at relatively young ages, and that abuse of prescription opioids is often an intermediate step along the way to abuse of the heroin.
This reviewed literature demonstrates programs educating physicians and other medical professionals have increased their willingness to take action in addressing opioid abuse problems among patients. It also demonstrates both post-usage clinical and social interventions have some positive impact in mitigating the problem. However, the impact of interventions is not always effective.

The reviewed literature reveals efforts to minimize and stop opioid abuse have achieved mixed results. Certain programs engendered positive results. Others did not. While there is consensus early anti-abuse training is important and that providing a sustained combination of multi-faceted programs can be effective, there still appears to be consensus as to what interventions are most likely to be effective in stopping abuse before it starts.

Matrix

Table 1. Summary of studies discussing urban and rural opioid addiction.

<table>
<thead>
<tr>
<th>Year, Author</th>
<th>Journal</th>
<th>Purpose/Research Question</th>
<th>Location of Study</th>
<th>Study Design/Type/Methods</th>
<th>Population Demographics, Sample</th>
<th>Results</th>
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<tbody>
<tr>
<td>2009, Martha J. Wunsch, Kent Nakamoto, George Behonick, &amp; William Massello</td>
<td>American Journal of Addiction</td>
<td>To examine prescription opioid deaths in Rural Western Virginia</td>
<td>Rural Western Virginia</td>
<td>Retrospective Study, population-based</td>
<td>893 cases, 889 total deaths. Rural Western Virginia residents from 1997-2003</td>
<td>300% increase reported at the Medical Examiner's office in rural Western Virginia from 1997-2003</td>
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<tr>
<td>2010, April M. Young, Jennifer R. Havens, &amp; Carl G. Leukefeld</td>
<td>Harm Reduction Journal</td>
<td>To determine route of administration differences in rural vs. urban communities in nonmedical prescription opioid use</td>
<td>Kentucky: 1 rural Appalachian county and 1 urban-non-Appalachia n county</td>
<td>Snowball Sampling. Data collected between October 2008 to August 2009. Neuropsychiatric interview was then given.</td>
<td>Prescription drug users from a Kentucky Appalachian county and a Kentucky urban county. 101 participants from Appalachian county, 111 from Urban. 212 Total participants</td>
<td>Not one of the urban participants reported lifetime use of two opioids, buprenorphin e and fentanyl patch. 51% of rural participants reported lifetime use of those opioids.</td>
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<tr>
<td>2010, John S. Brownstein, Traci C. Green, Theresa A. Cassidy, &amp; Stephen F. Butler</td>
<td>Pharacoepidemiological Drug Safety</td>
<td>To look at and understand spatial distribution of Opioid Abuse in New Mexico</td>
<td>New Mexico</td>
<td>Applied Geographic Information System (GIS) with spatial scan statistics to produce a map of risk for prescription opioid abuse.</td>
<td>Patients residing in New Mexico. 24,452 patients</td>
<td>7.3% of this population self-reported abusing prescription opioids in the last 30 days. The GIS system</td>
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<tr>
<td>Year</td>
<td>Author(s)</td>
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<td>Study Objective</td>
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<td>Findings/Conclusions</td>
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<td>2012</td>
<td>Adam B. Jonas, April M. Young, Carrie B. Oser, Carl G. Leukefeld, &amp; Jennifer R. Havens</td>
<td>Social Science Medicine</td>
<td>To examine the relationship between drug use and an individuals' social capital within their social network of friends.</td>
<td>Rural Appalachian, Kentucky</td>
<td>Respondent driven sampling (RDS)</td>
<td>Factors such as educational status, monthly income status, gender, and marijuana and OxyContin use were significantly associated with opioid use.</td>
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<td>2012</td>
<td>Anita Srivastava, Meldon Kahan, &amp; Ashifa Jiwa</td>
<td>Canadian Family Physician</td>
<td>Evaluate effectiveness of educational interventions of prescription opioid practices in rural/remote communities</td>
<td>Sioux Lookout, Ontario, Canada</td>
<td>Questionnaire and telephone interviews throughout, Workshop with video conference at the first and third month. Data analyzed by PASW Statistics</td>
<td>Family physicians, 18 family physicians. Most found educational workshop to be helpful, but would have liked more case-studies. Most physicians reported using or increasing use of treatment agreement forms after the interventions.</td>
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<td>2013</td>
<td>Sandra L. Momper, Jorge Delva, Debbie Tauliiili, Amelia Cromwell Meuller-Williams, &amp; Patricia Goral</td>
<td>American Journal of Public Health</td>
<td>To assess OxyContin usage on Indian reservations in the Midwest.</td>
<td>Indian reservation, Midwestern America</td>
<td>Self-reported questionnaires, Logistic Regression analysis</td>
<td>Midwestern Indian reservation, America, 18-25 years old, 400 Tribal members. 39% responded to using nonmedical OxyContin in their lifetime, 19% of them had used it in the last year.</td>
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<td>Year</td>
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<td>2014, Sarah G. Mars, Philippe Bourgois, George Karandinos, Fernando Montero, &amp; Daniel Ciccarone</td>
<td>International Journal of Drug Policy</td>
<td>International Journal of Drug Policy</td>
<td>To understand rural vs. urban differences in why Heroin injectors initiated heroin use.</td>
<td>Nairobi, San Francisco Qualitative Study. Interviews 18 years or older, self-reporter of current heroin injection user living in Philadelphia or San Francisco. 22 Participants. 8 Female, 14 Male</td>
<td>While there was a staggering number of young heroin users in poor-white communities and declining suburbs, there was also a huge number of heroin users in affluent communities.</td>
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<td>2014, Eliza Hutchinson, Mary Catlin, C. Holly A., Andrilla, &amp; Laura-Mae Baldwin</td>
<td>Annals of Family Medicine</td>
<td>To determine what proportion of trained physicians prescribe buprenorphine-naloxone.</td>
<td>Washington Interviews Trained physicians from Washington State. 92 Physicians</td>
<td>64% of these physicians were trained to prescribe buprenorphine-naloxone.</td>
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<td>2015, Joseph K. Eibl, Tara Gomes, Diana Martins, Ximena Camacho, David N. Juurlink, Muhammad M. Mamdani, Irfan A. Qahalta, &amp; David C. Marsh</td>
<td>Journal of Addictive Medicine</td>
<td>Determine impact of patients' geographic location on the efficacy of first-time MMT retention.</td>
<td>Rural and urban South and North, United States. 17,211 eligible patients. 14,052 Urban South, 1011 Rural South, 1,620 Urban North, and 528 Rural North.</td>
<td>Characteristics of patients using methadone maintenance therapy (MMT) did not differ by age, sex, or location of residence. Northern residence was more likely to have had received prescription antidepressants and stimulants compared to southern residence.</td>
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<tr>
<td>2015, Niki Kiepek, Bobbi Groom, Kara Kawakagumi, Jill Muleeboom, &amp; Len Kelly</td>
<td>Canadian Journal of Rural Medicine</td>
<td>To evaluate Medical Withdrawal Support Service (MWSS) in Sioux Lookout, Ontario.</td>
<td>Sioux Lookout, Ontario, Canada Interviews- pre-admission, during discharge, and 2 weeks, 3 months, and 6 months after discharge.</td>
<td>109 participants, 72 women, 37 men. 18-70 years old. Participants would recommend program to others. Clients described &quot;keeping busy&quot; as a key factor in opioid withdrawal.</td>
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<tr>
<td>2015, Khary K. Rigg &amp; International Journal of Drug Policy</td>
<td>To examine differences in rural vs. urban</td>
<td>United States Data from National Survey of Drug</td>
<td>United States of America, 18 years and</td>
<td>5.7% of respondents reported</td>
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<td>Shannon M. Monnat</td>
<td>differences associated with adult prescription opioid misuse</td>
<td>Use and Health (NSDUH) older. Non-Hispanic whites, non-Hispanic blacks, and Hispanics. 47,440 respondents</td>
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<td>using prescription opioids for nonmedical reasons in the last year. Rural areas were most likely to be white, older, married, and have lower income than those of urban residence. Rural residents were also less likely to have children under 18 years old in the home.</td>
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<td>2016, Gerald Cochran, Jennifer L. Bacci, Thomas Ylioja, Valerie Hruchak, Sharon Miller, Amy L. Seybert, &amp; Ralph Tarter</td>
<td>To describe the extent of opioid misuse/abuse among patients.</td>
<td>Survey, Prescription Opioid Misuse Index.</td>
<td>Rural and Urban Southwestern Pennsylvania. 18 years and older. No previous completion of survey, and must not be receiving treatment for cancer. 333 participants. September 2014 - June 2015.</td>
<td>Results show that community pharmacists have limited information about their patients.</td>
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To evaluate long term outcomes of emergency department initiated buprenorphine/naltrexone interventions.

Emergency Department Cohort Study, randomized trial.

290 patients. 18 years and older.

Results show no statistical differences among 2-6- or 12-month assessments.

References


