Rising Trends of Prescription Opioid Sales in Contemporary Brazil, 2009–2015

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Objectives. To present and discuss recent patterns of prescription opioid sales throughout Brazil.

Methods. We graphed linear trends of opioid prescriptions sold from registered pharmacies across Brazil from 2009 to 2015. We then calculated the change in rate of prescriptions sold per 1000 persons in 2015 compared with 2009.

Results. Opioid sales increased across Brazil from 1 601 043 prescriptions in 2009 to 9 045 945 prescriptions in 2015, corresponding to a 465% increase in 6 years. The largest absolute increase was for codeine products (rate ratio (RR) = 5.30; 95% confidence interval [CI] = 5.29, 5.31), accounting for more than 98% of prescriptions in both years. Oxycodone had the largest relative increase (RR = 11.39; 95% CI = 11.19, 11.59), and fentanyl products had the smallest absolute and relative increase (RR = 2.91; 95% CI = 2.78, 3.03).

Conclusions. Given rapid increases in opioid sales across Brazil, it is critical to introduce effective prescribing and monitoring methods that allow patients to access necessary medications without escalating risk of opioid misuse and related consequences. Careful surveillance of supply and subsequent outcomes are needed to prevent the development of another devastating opioid epidemic in the Americas. (*Am J Public Health.* Published online ahead of print March 22, 2018: e1–e3. doi:10.2105/AJPH.2018.304341)

Discussions over prescription opioids in recent years have focused almost exclusively on the North American context. Overdose deaths, primarily from opioids, have tripled over the past 2 decades[1] and have become the leading cause of accidental death in the country, with similar patterns emerging in Canada.[2] Much of the North American opioid epidemic has been instigated by sharp increases in opioid prescribing that led to alarming rates of misuse, addiction, and overdose.[3] However, this phenomenon has not yet replicated itself globally or necessarily followed this pattern in the short term. Instead, most regions, especially low- and middle-income countries, still suffer from limited to nearly nonexistent access to prescription opioids.[4] An imbalance in opioid regulation and accessibility has led to mixed recommendations between advocates for increased availability and those cautious about potential consequences of increased supply.[5]

With more than 207 million residents, Brazil has historically suffered from limited access to prescription opioids, as evidenced by lower consumption relative to high-income countries,[4] along with that of many other medication classes. This is likely attributable to a combination of several factors including the structural bottlenecks and low budgets of most public health care services, the lack of integration of clinical practice and different aspects of behavioral health care,[6] and the uneven incorporation of palliative care into mainstream services.[7]

However, in recent years, the landscape of opioid utilization has been changing in Brazil and other regions of Latin America, with the formation of advisory panels such as Change Pain Latin America and growing advocacy around the need to enhance the treatment of patients with cancer and noncancer chronic pain.[8] Despite these discussions, to date, there have been no studies that measure changes in prescription opioid utilization in Brazil. Given a growing national interest in improving pain management and understanding the benefits and risks of using prescription opioids, it is essential to pay attention to trends in medical opioid utilization and how these may be changing in response to shifts in medical culture and global pharmaceutical markets. To fill this gap, we aimed to present and discuss recent patterns of prescription opioid sales in Brazil.

METHODS

We gathered data on number and type of opioid prescriptions sold legally (after presentation of a medical prescription) from 2009 to 2015 from the National System for the Management of Controlled Substances (*Sistema Nacional de Gerenciamento de Produtos Controlados*) run by ANVISA, the Brazilian National Health Surveillance Agency, which is responsible for regulating health-related products. Data included all prescriptions sold at registered pharmacies and drugstores across Brazil. Specifically, we collected data on codeine products (codeine, codeine phosphate), fentanyl products (fentanyl citrate, remifentanil hydrochloride, alfentanil hydrochloride monohydrate, fentanyl), and oxycodone. Data were limited to records from officially registered pharmacies and did not account for other opioids (e.g., tramadol) or opioids obtained through other sources (e.g., Internet, black market).[9]

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To evaluate trends in registered opioid sales, we graphed linear trends in the number of prescription opioids by type of opioid (i.e., codeine products, fentanyl products, oxycodone) over the years 2009 to 2015. To account for changes in population size across years, we calculated the rate of opioid prescriptions sold per 1000 persons by using annual estimates of population size as the denominator and calculated the change in rate of opioid prescriptions sold in 2015 compared with in 2009.

RESULTS

Opioid sales from registered pharmacies in Brazil increased from 1 601 043 prescriptions in 2009 to 9 045 945 prescriptions in 2015 (from 8.28 to 44.25 prescriptions per 1000 persons), corresponding to a 465% increase within a 6-year period (Figure 1). Codeine products, which are commonly sold for outpatient use, were the most prevalent type of prescriptions, accounting for 98.9% and 98.1% of the investigated opioid prescriptions in 2009 and 2015, respectively. The largest absolute increase was observed for codeine, which increased 5-fold (rate ratio [RR] = 5.30; 95% confidence interval [CI] = 5.29, 5.31) from 1 584 372 prescriptions in 2009 to 8 872 501 prescriptions in 2015. This corresponded to an increase from 8.19 to 43.40 prescriptions per 1000 population. In 2009, oxycodone and fentanyl products, which are more highly regulated, respectively accounted for 0.85% and 0.19% of the investigated opioid prescriptions. In 2015, the proportion of oxycodone prescriptions increased to 1.81% and fentanyl decreased to 0.10%. The largest relative increase was for oxycodone, which corresponded to a population-adjusted increase from 0.07 to 0.80 prescriptions per 1000 persons (RR = 11.39; 95% CI = 11.18, 11.59). Fentanyl, which increased from 0.02 to 0.05 prescriptions per 1000 persons, displayed the smallest absolute and relative increase from 2009 to 2015 (RR = 2.91; 95% CI = 2.79; 3.03).

DISCUSSION

There has been a substantial and perhaps alarming increase in the number of opioid prescriptions sold in Brazil between 2009 and 2015. This increase was primarily driven by codeine. Although it is less frequently prescribed, oxycodone had the largest relative increase during this 6-year period. Whereas codeine is included in Brazil's essential medicine list and is often used for treating mild or moderate pain, the increases in fentanyl and oxycodone, which are not recommended as first-line treatments, reflect a noteworthy change in use of more powerful opioids.

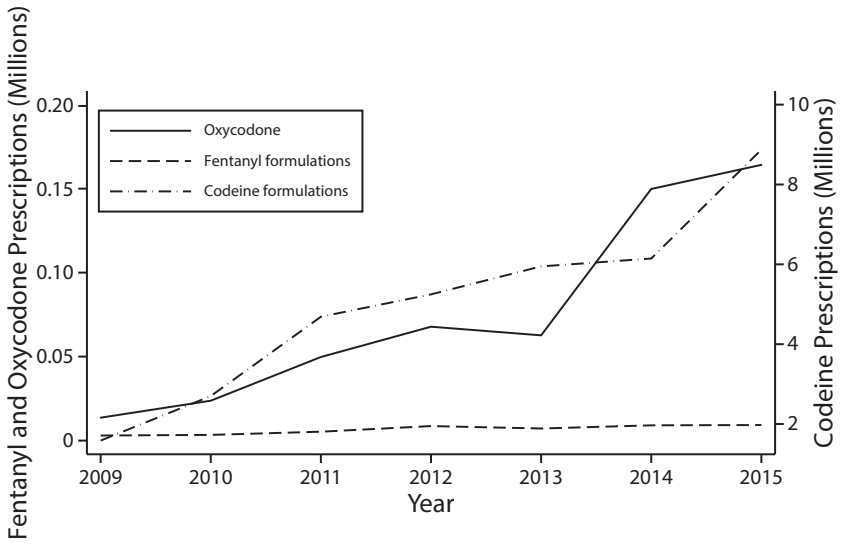

FIGURE 1—Number of Opioid Prescriptions Sold: Brazil, 2009–2015

Although our data do not contain information to explain drivers of this increase in opioid sales, we may speculate that increases in prescription drug marketing to Brazil[10] may have coalesced with advocacy and demand for better treatment of pain in this region.[11] It is also possible that potential changes in monitoring and indicated medical use of these medications partially explain the observed increases. Although contributors to the observed increase require further investigation, there are important public health implications that should be taken into account immediately. In the case of North America, the increase in opioid marketing and sales was directly associated with a vast increase in both prescription and illicit opioid misuse, treatment admissions, and overdose.[12] By the time resources were allocated to improve regulation and monitoring of prescribing patterns and educate prescribers about appropriate medication use and abuse-deterrent formulations, diversion of opioids was commonplace and many persons had developed opioid, including heroin, use disorders, and many had overdosed.

To avoid a similar epidemic in Brazil, it is critical that the health system introduce effective prescribing and monitoring methods that allow patients to access medications and services they need without escalating risk of opioid misuse and related consequences. This is especially relevant to outpatient opioid prescribing, as seen by the large increase in codeine sales. Furthermore, efforts to monitor opioid misuse through national surveillance, track adverse consequences (e.g., hospitalizations and deaths), and develop a health care workforce that is prepared to prevent and treat substance use disorders is essential. The international community may assist in preventing excessive increases in opioid use by advocating tighter regulations surrounding global marketing of opioids, developing guidelines for appropriate prescribing, and educating providers in evidence-based substance use disorder prevention and treatment.

PUBLIC HEALTH IMPLICATIONS

The epidemiology of opioid use and disorder in Brazil is not well documented, and we are unable to infer from findings how the observed increases in opioid prescription

supply will affect the health and well-being of people in Brazil. Indeed, rates of prescription opioid use in Brazil remain well below those observed in North America. However, actions that ensure adequate use of prescription opioids, careful monitoring of supply and other opioid outcomes (e.g., diversion, misuse, overdose), and the introduction of policy- and system-level precautions is critical to protect public health and prevent the development of yet another devastating opioid epidemic in the Americas. AJPH

CONTRIBUTORS

N. Krawczyk and M. C. Greene are co–first authors and conceptualized the article, conducted the data analysis, and drafted the article. R. Zorzanelli collected and analyzed the data and revised the article. F. I. Bastos conceptualized the article and significantly revised the article.

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HUMAN PARTICIPANT PROTECTION

Human participant protection was not required because the study did not involve human participant data.

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