Prescription of opioids, and non-steroidal anti-inflammatory drugs at a U. S. Dental School.

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Introduction

Pain management is a continuously challenging aspect for health care providers because pain is subjective, which makes difficult to assess its degree of severity (Adelzadeh, 2017). Anesthetic medication like opioids and non-steroidal anti-inflammatory drugs (NSAIDs) are considered effective solutions in pain management but also have many adverse effects. Opioids are powerful pain killer but highly addictive (Windle, 2016). Opioid pain medications use presents serious risks, including overdose and opioid use disorder (Dowell, 2016). With more than 100 opioid-related overdose deaths occurring daily and over 11 million people misusing opioids prescription, the opioid epidemic is estimated to cost the US $606 billion annually (Obadan, 2019). Opioid risk is greater for patients with sleep apnea or other causes of sleeping disorders, renal or hepatic insufficiency, older adults, pregnant women, patients with depression or other mental health conditions, and patients with alcohol or other substance disorders (Dowell D, 2016).

In October 2017, the United States (US) Department of Health and Human Services (DHHS) declared the opioid crisis a public health emergency (Obadan, 2019).

NSAIDs are alternative effective analgesics, with anti-inflammatory and antipyretic properties (Nack, 2017). The undesirable side effects of NSAIDs include ulcers, internal bleeding, kidney failure, and increased risk of heart attack and stroke; millions of people suffer from pain resulting in the prolonged use of NSAIDs being common (Ghosh, 2015).

Dentists are responsible for 12% of all immediate-release opioid prescriptions making them one of the top five prescribers of opioid analgesics among healthcare professionals in the US and significant contributors to the prevailing opioid epidemic (Obadan, 2019). In addition, NSAIDs are among the most widely prescribed analgesics for management of post-operative pain in dental patients (Pozzi, 2017).

Therefore, recognizing the role of dentist in analgesic medication prescription is crucial in combating the crisis. The goals of this study are to identify the opioid and NSAIDs prescribing patterns in a cohort of patients following dental visits at nine networked dental school clinics located in rural North Carolina (NC) communities over almost a 9 years period.

Hypothesis

We hypothesize the data will show a high frequency of analgesic medication prescription for patients across ECU dental networked clinics. We also expected that the prescription of opioids has decreased after 2017.

Methods

In this observational retrospective study, data will be obtained from patients who were prescribed either opioids or NSAIDs at ECU Ross Hall or at one of the networked rural dental clinics. The data will include patient’s demographic, self-reported medical history, dental procedures related to the prescription, and reasons for prescription.

Data will then be analyzed through descriptive statistics.

Results

Aim 1: Prescription trends of opioids and NSAIDs

Aim 2: Patient’s demographic and self-report medical history

Aim 3: Code of dental treatment (CDT) and reasons for prescribed

Aim 4: The medications prescription frequencies from 2011 to 2020

Discussion

Aim 1: From 2011 through 2020, the nine networked dental school clinics sited in rural North Carolina (NC) communities prescribed a total of 9941 patients with either opioids or NSAIDs.

About 4 out of 5 prescribed medications were opioids; and 1 out of 5 were NSAIDs (Figure 1.a). Codeine (91%) is the most prescribed NSAIDs (Figure 1.b) and Hydrocodone and Acetaminophen –Vicodin (52%) is the most prescribed opioid medication (Figure 1.c).

Aim 2: Female patients have a higher prescribing rate (54%) than male patients (43%) (Table 1). While patients (over 60%) for both opioids and NSAIDs, and non-Hispanic patients (approximately 69%) for both opioids and NSAIDs have the highest rate of prescription of both groups of medications.

From figure 2.a and 2.d, ~20-30% of patients who reported pulmonary system diseases, snoring/ sleep apnea and/or behavioral/ psychiatric disorders were prescribed a medication from either the opioid or NSAID group. Smokers have lower prescription rate of NSAIDs (45%) than non-smokers, whereas from the opioid group, smokers and non-smokers have a comparable rate of prescription. Patients who reported diabetes (approximately 70%) for both medications had higher prescription rate for both groups of medications.

Aim 3: The trend for the dental procedures and reasons for prescription were closely associated with each other. The most common (over 60%) CDT codes associated with prescription were in the D7000s oral surgery group (Table 2). Dental extractions were the most common procedures for both groups.

These medications were commonly prescribed immediately post-treatment. We also have seen a high frequency of post-operatives prescriptions (19%) for the opioid group, but emergency and routine checks (19%) were the second reason for prescriptions for NSAIDs.

Opioids appeared to be more prescribed for operative treatments; whereas NSAIDs were more common for temporary/emergency pain relief.

Aim 4: As we hypothesized, the frequency of prescription of these medications decreased after 2017 (Figure 4).

This suggests that the dental clinics have responded to the opioid crisis timely and effectively.

Conclusion

Relatively high frequency of prescription of both medications groups, especially opioids, were noted. Since 2017 we could notice some adaptation efforts in combating the opioid crisis.

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References