

The Use of Opiates in a Tertiary Care Facility in a Developing Country for the Period 2011 To 2015



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Abstract

Objective: The objective of this study was to analyse dispensing records of narcotic analgesics from the pharmacy at the Queen Elizabeth Hospital in Barbados; and to investigate trends between the use of Opiates and pain management for the study period of April 2011 to March 2015.

Settings: The hospital is a 650-bed tertiary care facility, affiliated to the University of West Indies. The Pharmacy dispenses medications in the in-patient and out-patient settings of the hospital in Barbados.

Methods: Dispensing data was abstracted from the Abacus Database in the pharmacy. Descriptive data was used to observe trends of narcotic analgesics dispensed from the pharmacy during the study period.

Results: Opioids were the least prescribed class of analgesics with 26,815 prescriptions over the 4 years. Tramadol 50mg capsules were the most prescribed and dispensed.

Conclusion: There is rationale prescribing of Opiates for pain management by physicians at the Queen Elizabeth Hospital, which conforms towards international best practices.

Keywords: Pain Management; Opiates; Opioids; Analgesics

Introduction

It is recommended by the World Health Organisation (W.H.O) [1] p. 38, that a strong opioid, such as morphine, be used for moderate to severe pain. Some reasons for the use of strong opioids for pain management in a tertiary care facility in a developing country like Barbados, are numerous types of surgeries such as lower extremity amputations due to the high percentage of patients with diabetes [2] various forms of cancer affecting both males and females [3] several manifestations of arthritis especially rheumatoid arthritis [4] and severe pain resulting from contracting mosquito borne diseases such as Zika and Chikungunya.

The International Association for the Study of Pain (IASP) [5] in a 2011 article stated that there are barriers affecting the optimum management of pain in developing countries, or low-to middle-income countries as classified by the World Bank.

These barriers include the unavailability of strong opioids, restrictive laws regarding the procurement of opioids, lack of health care professionals due to migration and the absence of basic equipment. In Africa, tough legal actions towards morphine access has left millions of people suffering from chronic pain due to inadequate acute pain control [6]. Findings in other developing territories suggest minimal inadequate management of pain. A survey conducted in a Jordanian Teaching hospital found that patients were still suffering from postoperative pain and therefore, recommended that treatment protocols, inclusive of various therapeutic measures, be developed to improve and optimize pain management [7].

Legal ramifications and excessive regulations in India, concerning the acquisition of morphine and the concern by the government of the misuse and abuse of the drug has led

to inadequate control of postoperative pain in that country. The IASP recommended that health care professionals in India engage with government authorities to increase awareness of the medical need for opioids, stressing that their unavailability is causing severe distress and suffering [5]. This situation is so dire that the WHO estimates that each year tens of millions of people will continue to suffer untreated moderate to severe pain [8], because many developing countries still fall short of obtaining adequate quotas of analgesic narcotics necessary for relieving such pain.

Barbados, like other territories, has used multimodal approaches toward pain management in the tertiary health care setting. This study will enumerate the prescribing and dispensing of Opiates in the in-patient and out-patient settings of the main public hospital in this developing Caribbean territory. Comparison will be made to other health care facilities in other developing territories.

Methodology

Ethical approval was granted prior to the commencement of this study by the University of the West Indies-Cave Hill / Ministry of Health Institutional Review Board and the Queen Elizabeth Hospital Ethics Committee. The Queen Elizabeth hospital is the only public tertiary care facility in Barbados [9]. The study was conducted by abstracting the prescribing and dispensing data of analgesics at the Queen Elizabeth Hospital over a four [4] years period (2011 to 2015). The data was abstracted from the Abacus Database (Abacus Service Corporation; Michigan, USA) in the pharmacy of Queen Elizabeth Hospital (QEH).

The collected data was cross-checked by double data entry and verified from primary sources. Descriptive data was used to observe trends based on periodic comparison of quantities of analgesic medications prescribed by physicians and dispensed from the pharmacy. Data summarisation was done using STATA (StataCorp LLC, Texas, USA), and reports on prescription

frequency and the quantities of drugs dispensed were generated to assess trends over the study periods. The limitations of this study were based on the quality of data gathered from Abacus systems and the accuracy of data gathered from the Medical Records Section, Queen Elizabeth Hospital.

Results

There were five classes of drugs identified during the period under investigation. These were Paracetamols, Non-steroidal Anti-inflammatory Drugs (NSAIDs), Non-Analgesics (Antibiotics, Cardiovascular Drugs, and Anti-diabetic agents), Opioid agonists/antagonists (Opioids) and Miscellaneous Analgesic Agents such as Carbamazepine, Gabapentin (Neurontin®), Tizanidine (Sirdalud®) and Hyoscine Butylbromide (Buscopan®). The study showed that Opioids were least prescribed at a rate of 26,815 prescriptions presented to the pharmacy for that period (Table 1). This total does not include the number of refills on each prescription. Based on the data extracted, it is reasonable to assume that the non-opioid analgesics were prescribed. (Table 1) also showed a slight difference in the percentage of NSAIDs and Miscellaneous analgesic agents prescribed for the management of pain, at 27% and 25% respectively. Only 19% of the prescriptions dispensed were Paracetamols.

Table 1: Frequency of Prescription of Analgesics and Non-analgesics at the QEH for the Period 2011 – 2015.

Drug Class	Frequency of Prescription	Frequency of Prescription
(Percentage)		
Opiates/Opioids	26,815	14%
Non-steroidal Anti-inflammatory Drugs (NSAIDs)	50,623	27%
Paracetamols (Weak Analgesics/ Anti-pyretic Agents)	35,822	17%
Miscellaneous Analgesic Agents	46,195	25%
Antibiotics, Cardiovascular Drugs, Non-Analgesics	26,228	14%

Table 2: Prescribed Analgesic Dosage forms during the Period 2011 – 2015.

Drug/Dosage Form	Quantity of Medication Dispensed/units	Number of Prescription/Prescription Frequency
OPIATES/OPIOIDS		
Codeine 3mg/ML	57,141	447
Codeine Linctus	108,382	653
Codeine Phosphate 15mg Tab	64,798	986
Codeine Phosphate 30mg Tab	245,119	2,601
Codeine 30mg/ml	1,236	9
Methadone 5mg Tab	61,555	104
Morphine 10mg	34,581	501
Morphine 10mg/ml inj	4,878	18
Morphine 15mg/ml inj	75	1
Morphine 2mg/ml soln	162,323	341
Morphine Hcl 10mg Tab	4,361	104
Morphine Hcl 10mg/5ml Liquid	276,595	291

Morphine Sr 30mg Tab	145,720	1,556
Morphine Sulf 10 Mg/5 ml Soln	244,382	332
Morphine Sulf 10mg Tab	6,702	59
Morphine Sulf Sr 30mg Tab	29,968	363
Naloxone 4mg/ml Inj	5,030	55
Tramadol 100mg Inj	21,470	264
Tramadol 100mg/2ml Inj	518	13
Tramadol Lp 100mg Cap	7,646	124
Tramadol Lp 150mg Cap	3,772	28
Tramadol 50mg Cap	931,675	17,834
Tramadol 50mg Tab	5,920	104
Tramadol 50mg/ml inj	1,002	26
Tramadol Sr 100mg Tab	98	1

According to (Table 2), various dosage forms of Tramadol, Codeine Phosphate and Morphine are available at the Queen Elizabeth Hospital. However, Tramadol 50mg capsules were the most commonly dispensed opiates. Codeine phosphate 30mg tablets and Morphine 30mg SR tablets were also commonly prescribed and dispensed. The annual summaries for the most frequently prescribed and dispensed analgesics for the period 2011 to 2015 (Table 3), showed that in 2011, Codeine Phosphate

30mg tablets were the most frequently prescribed solid dosage form, closely followed by Morphine 30mg SR tablets. But in 2012, prescriptions for Tramadol 50mg tablets were nine [9] times more than Codeine Phosphate 30 mg tablets and thirteen times more than Morphine SR 30mg tablets. This trend continued into 2013, between Tramadol 50mg tablets and Codeine Phosphate 30mg tablets with a marginal increase in prescriptions for Morphine 30mg SR.

Table 3: Annual Summaries for the Most Frequently Prescribed and Dispensed Opiates.

Year	Description	Drug/ Formulations		
		Tramadol 50mg capsule#	Codeine Phosphate. 30mg tablet#	Morphine 30mg SR tablet*#
2011	Quantity of Prescriptions	20	442	307
	Drug Dispensed	1,594	45,059	33,579
2012	Quantity of Prescriptions	5733	619	416
	Drug Dispensed	273,411	53,998	41,023
2013	Quantity of Prescriptions	5,180	575	533
	Drug Dispensed	285,449	60,881	49,574
2014	Quantity of Prescriptions	4,724	610	300
	Drug Dispensed	254,210	54,367	21,544
2015	Quantity of Prescriptions	2,177	355	-
	Drug Dispensed	117,011	30,814	-

There was a 9% decrease in prescriptions for Tramadol 50mg tablets, in 2014, with a 6% increase in prescriptions for Codeine Phosphate 30mg. This was also observed with a significant reduction in prescriptions for Morphine 30mg SR to about 44%, during the same year. The year 2015, saw a 50% fall in prescriptions for both Tramadol 50 mg tablets and Codeine Phosphate 30mg tablets. No data was available for Morphine 30mg SR in this year.

Discussion

The data from (Table 1) shows the prescription frequency for analgesics and non-analgesics prescribed at the Queen Elizabeth Hospital for the period 2011 – 2015. This finding suggests that prescribers in Barbados are willing to prescribe different methods of analgesics. This observation was supported

by the percentage of NSAIDs and miscellaneous analgesic agents prescribed for the management of pain, in tandem with Opioids; thus, showing a multimodal approach towards managing pain and sequelae inflammatory conditions.

Among the reasons suggested for the use of various forms of opioids at the Queen Elizabeth Hospital, sickle cell disease should be included as one of the main reasons. It is well documented that people of African and Caribbean origin are mainly affected by sickle cell disease [10,11]. This disease causes severe painful episodes for patients and is treated with different combinations of opioids in a hospital setting for close monitoring. (Table 2) shows the prescribed dosage forms over the period of 2011 to 2015. The annual summaries for Opiates prescription frequency in (Table 3) revealed that Codeine Phosphate 30mg

tablets were mostly prescribed in 2011. The use of Codeine Phosphate 30 mg tablets increased further in 2012 and 2013. A possible explanation for this observation is that patients seen in the Accident and Emergency; patients with preoperative pain and patients with repeat prescriptions for postoperative pain management may have been prescribed mostly Codeine Phosphate 30 mg tablets in cases where the pain was considered to have exceeded moderate stage.

The outbreak of Chikungunya in the late 2013 [12] and onward influenced the increase in prescriptions for various forms of analgesics. The selection of one analgesic over another would have been determined by the severity and intensity of symptom related pain experienced by the patient. Generally, paracetamol was suggested as the main course of treatment for fever and pain [12]. But patients with more intense pain required more potent form of analgesic, such as an opioid.

Additionally, in 2013, the amount of Tramadol 50 mg capsules prescribed was increased, along with Codeine Phosphate 30mg tablets and Morphine 30 mg SR tablets. Tramadol can be used as a monotherapy or in combination with paracetamol or an NSAID for the various forms of arthritis, according to the American Pain Society [13]. Furthermore; the American College of Rheumatology reported that Tramadol is beneficial in the management of hip and knee osteoarthritis [13]. This is a plausible explanation for dispensing the quantity of Tramadol 50mg capsules as seen over the study period. The upward trend continued in 2013 with Morphine 30 mg SR tablets, Codeine Phosphate 30 mg tablets and Tramadol 50 mg capsules, and then decreased in 2014. No data was available for 2015, which was possibly due to drug stock outs.

The 2014 Barbados cancer mortality profile showed Prostate cancer remained the leading cause of death for males, with less men (3.1%) opting for surgery as a treatment choice [14]. On the other hand, a high percentage (83.9%) of females chose surgery as a first-time treatment choice for breast cancer. Colon cancer surgeries were the highest (96.1%) and the second leading cause of death for both males and females [15,16]; however, Morphine remained the drug of choice for cancer pain management for all forms of cancer [14]. Cancer surgeries and amputations lead to severe post-operative pain which needs strong forms of opioids for pain management.

Diabetic foot care is an integral part of the overall management of diabetes, with the increase of this chronic condition in Barbados [15]. Uncontrolled diabetes in a patient can lead to neuropathic foot ulcers resulting from micro-vascular complications, and ultimately, amputation. Amputation surgeries can either be minor or major. A minor amputation may include toe disarticulation or trans-metatarsal amputation. Below and above the knee's amputations are major surgeries [17]. It can be inferred that in 2015, there were more than 226 lower extremity amputations than was recorded in 2009 [2].

According to the International Association for the Study of Pain (IASP) [18] as mentioned earlier, the unavailability of strong Opioids and restrictive laws regarding the procurement of Opioids are just a few of the barriers affecting the optimum management of moderate to severe pain in developing countries. Our findings suggest optimal prescribing and dispensing of various forms of opiates in the tertiary care setting.

Conclusion

The percentage of NSAIDs and Miscellaneous analgesic agents prescribed for the management of pain at the Queen Elizabeth hospital confirms that physicians have adapted the multi-modal approach to manage various types of pain. Morphine 30 mg SR tablets, Codeine Phosphate 30 mg tablets and Tramadol 50 mg capsules were the main narcotic analgesic agents prescribed. As a developing country, Barbados, like some other developing states, is also faced with barriers to the use of strong opioids and inclusive of restrictive international laws regarding the procurement of Opioids needed for the optimum management of pain. Nevertheless, the prescribing of analgesic medication by physicians at its main public hospital has been compliant with international best practices in terms of the frequency of prescription compared to other analgesic classes.

Limitations

This research was faced with a few limitations. Firstly, the use of the Abacus system was implemented during the study frame. Secondly, data entry for some fields was incomplete and cumbersome, for example, in the case of quantities of Opioids prescribed and dispensed for Morphine in 2015. Additionally, the data source did not include diagnosis, which would better indicate the appropriate use of strong opioids. Finally, the research did not include a patient population; since it was an observational study, inferences could only be made on prescription data and drug dispensing records at the pharmacy during the study period. This also means that no inferences on optimal care and overall management of pain can be made. Prospective cohort studies on this topic will be needed to substantiate the study's findings.

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Conflict of Interest/ Disclosure

This study was not supported through any pharmaceutical company or research grant from any institution.

No conflict of interest has been identified for any persons involved in the study.

Article Summary

The use of Opiates is essential in moderate to severe pain management. For this reason, this study was undertaken at the Queen Elizabeth Hospital, in Barbados, to investigate trends between the use of Opiates and pain management during April 2011 to March 2015. It was found that physicians were prescribing fewer opiates, while taking a multi-modal approach towards pain management.

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