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Research Article

Knowledge and Attitudes of Medical and Pharmacy Graduates about Opioids Prescription and Dispensation in 2022 in Bamako, Mali

Karim Traoré ^{1*}, Bourama Keita ¹, Abdouramane Traoré ¹, Ibrahim Sanogo ², Fatoumata Diarra ¹, Drissa S Konaté ¹, Modibo Sangaré ¹, Seidina AS Diakité ¹, Sekou Bah ¹, Mahamadou Diakité ^{1,2}

¹International Center for Excellence in Research (ICER), Faculty of Medicine and Odonto-stomatology (FMOS), Faculty of Pharmacy (FAPH), University at the University of Sciences, Techniques and Technologies of Bamako (USTTB), Mali

²University Clinical Research Center (UCRC) at the University of Sciences, Techniques and Technologies of Bamako (USTTB), Mali

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Abstract



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*Address for Correspondence:

Karim TRAORE, lecturer in Pharmacology at the Faculty of Pharmacy, Point G, Bamako, Mali. BP 1805,

Opioids are medications with analgesic properties used primarily as painkillers. Nowadays, off-label uses (non-medical use, prolonged use, misuse and use without a medical supervision) are common inducing drug dependence with harmful consequences including substance-induced psychosis or pharmacopsychosis. In a cross-sectional study from February to June 2021, we used a questionnaire to collect information on the knowledge of interns and doctors trained in the Faculty of Medicine and Dental Medicine and the Faculty of Pharmacy at the University of Sciences, Bamako Techniques and Technologies (USTTB) on opioids in eight (8) public health facilities (5 university hospitals and 3 district hospitals) in Bamako. We analyzed the data with SPSS software version 25.0.

A total of 400 health workers participated in the study with 62.5% of medical students (250/400), 31.0% of pharmacy students (124/400) and 6.5% of general practitioners (26/400). More than 70.0% of our respondents were aware that there is a regulatory framework for prescribing and dispensing opioids in Mali. Level 2 opioids were dispensed in 29.0% of cases at the patient's verbal request and 30.6% by telephone. However, level 3 opioids were dispensed in 0.8% of cases at the patient's verbal request and in 3.2% of cases by telephone call. Medical students in 60.0%, pharmacy students in 64.5% and general practitioners in 50.0% had very good knowledge about the risks of opioid use. For 23.0%, general practitioners had at least a good knowledge of opioid indications. Participants had a good understanding of the risks and benefits of opioids.

Keywords: Attitudes, Knowledge, Opioids, Mali

INTRODUCTION

Opioids are molecules that act on opium receptors. Their main therapeutic uses are as analgesics and antitussives. However, prolonged use, misuse or use without medical supervision can lead to drug dependence ¹, and even chronic neurological, and cardiovascular disorders as well as substance-induced psychosis ². Worldwide, drug use accounts for about half a million deaths, of which over 70% are related to opioid use, including 30% due to overdose ¹. The World Health Organization (WHO) has estimated that more than 15 million people worldwide or 0.4 percent of the population aged 15 to 64, used and/or were dependent on illicit opioids in 2022 ³.

In the United States of America, the risk of misuse of opioids and, in particular, addiction has been the subject of several alarming publications, and has revived the controversy surrounding their use in Chronic Non-Cancer Pain (CNCP) including neuropathic pain ⁴⁻⁷. In

Africa, the United Nations Office on Drugs and Crime (UNODC) has reported an increasing number of opioid users from 2.2 million in 2016 to 6 million in 2017, particularly in West and Central Africa, where 1.9% of the adult population were opioid consumers ³. Programs to combat opioid misuse in particular and drug use in general are few and far between in Africa ⁸, as are mental health and addiction professionals ⁹ as compared with high-income countries ¹⁰. The role of opioids has also been defined in recommendations for the management of neuropathic pain ¹¹.

Opioid use has increased disproportionately in high-income countries, but remains low in low-income countries, which account for 6% of global opioid use ¹². The use of opioids exposes patients to the risk of abuse and dependence, whether they are weak or strong, naïve to opioids or not, with/out a history of substance abuse disorders, and regardless of the duration of treatment. Therefore, any prescription of opioid analgesics should

be subject to not only regulation, but also increased monitoring to facilitate the management of specific risks¹³. In fact, many countries strictly regulate the prescription of opioids to minimize the risk of addiction. Opioids can be legally prescribed by health professionals to treat pain. However, their illicit use in non-professional settings contributes significantly to the emergence of opioid use disorder (OUD).

In Mali, the number of people treated for addiction to opioids such as tramadol has increased in West Africa in recent years, particularly in Mali.¹⁴ Studies on opioids have focused on their prescription and dispensation^{15,16}, but very few studies have been conducted on health professionals' knowledge of opioids. Healthcare professionals' knowledge and attitudes towards opioids are crucial for understanding their prescription by qualified health professionals and medical use by patients. The aim of our study was to assess the knowledge and attitudes towards opioids of medical and Pharmacy graduates of the Faculty of Medicine and Odontostomatology (FMOS) and the Faculty of Pharmacy (FAPH), University of Science, Techniques and Technologies of Bamako (USTTB), Bamako, Mali.

METHODS

The study was carried out in Bamako. The city had a population of around 2,488,641 in 2022¹⁷.

We conducted a cross-sectional survey in Bamako, the capital of Mali from February to June 2021. Using our face-to-face interview guide, we collected information on the knowledge of opioids (risks, indications, dispensing guidelines, contraindications, adverse effects and prescribing guidelines for opioids) among final year medical and pharmacy students and general physicians educated at the FMOS/FAPH at the USTTB in Bamako, Mali. Our study sites were the University Hospitals (Gabriel TOURE, Point-G, the Mother and Child Hospital "The Luxembourg", the Dermatology Hospital of Bamako, the National Centre of Odontostomatology and the District Hospitals in Communes IV, V and VI in Bamako.

An administrative letter explaining the aim of the study was sent to the responsible of the different health structures before the start of the study. Individual informed consent was obtained from each participant before the interview. Participants were then asked a series of semi-structured questions in a face-to-face interview.

We scored the responses of participants to the questions related to the Risks of indications and delivery guidelines (out of 3), Contra-indications and adverse effects (out of 6) and Guidelines prescription (out of 4). Each correct answer was worth 1 point and incorrect worth 0 points.

The level of knowledge was categorized as:

- **Risks of indications and delivery guidelines:** very poor = 0 points, poor= 1 point, good = 2 points and very good = 3 points (Table 1).
- **Contra-indications and adverse effects:** very poor = 0 points, poor= 1-2 points, good = 3-4 points and very good = 5-6 points (Table 1).

- **Guidelines prescription:** very poor = 0 points, poor= 1-2 points, good = 3 points and very good = 4 points (Table 1).

Statistical analysis

Data were collected on a report form, entered into Excel and analysed using SPSS software version 25.0.

Table 1. Response score for risks, indications, dispensing guidelines, contraindications, adverse effects and prescribing guidelines for opioids

Risks of indications and delivery guidelines	
Levels of knowledge	Score out of 3
Very good	3
Good	2
Poor	1
Very Poor	0
Contra-indications and adverse effects	
Levels of knowledge	Score out of 6
Very good	5-6
Good	3-4
Poor	1-2
Very Poor	0
Guidelines prescription	
Levels of knowledge	Score out of 4
Very good	4
Good	3
Poor	1-2
Very Poor	0

RESULTS

In total, we enrolled 400 health professionals, including 250 medical students (62.5%), 124 pharmacy students (31.0%) and 26 general practitioners (6.5%). More than 70% of our participants, regardless of their training, were aware of the regulations governing the prescription and dispensing of opioids in Mali. Codeine containing medications and tramadol were the opioids most commonly recommended by our respondents, whether they were general practitioners or internists. Level 2 opioids were dispensed at the patient's verbal request in 29.0% of cases and by telephone in 30.6% of cases. However, level 3 opioids were dispensed at the verbal request of the patient in 0.8% of cases and by telephone in 3.2% of cases. Overall, 60.0% of medical students, 64.5% of pharmacy students and 50.0% of general practitioners had a very good knowledge of the risks of opioid use. Only 24.0% of medical students, 10.5% of pharmacy students and 3.8% of general practitioners had a very good knowledge of the real indications for opioids.

Table 2: Distribution of participants according to their professional status

Professional status	Number	Percentage
Medical students	250	62.5
Pharmacy students	124	31.0
General practice physicians	26	06.5
Total	400	100.0

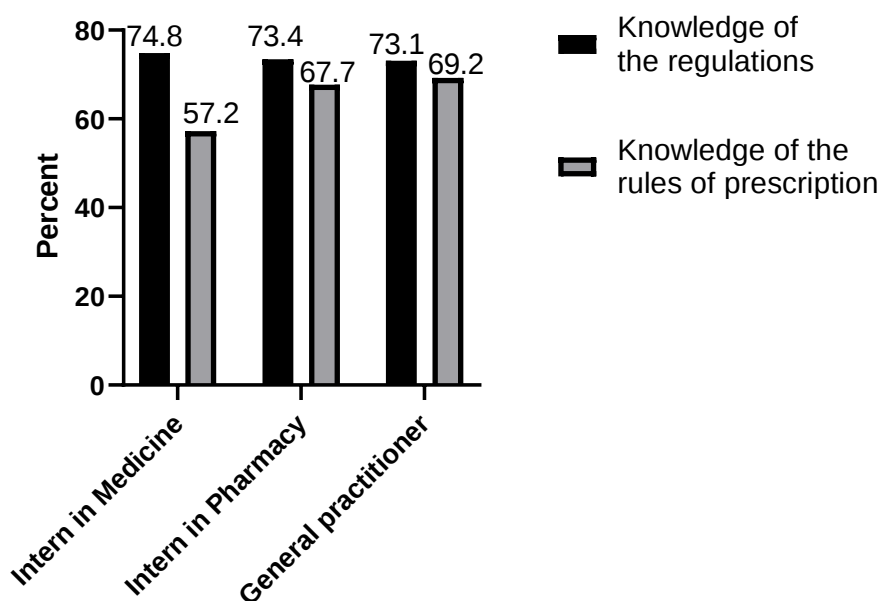
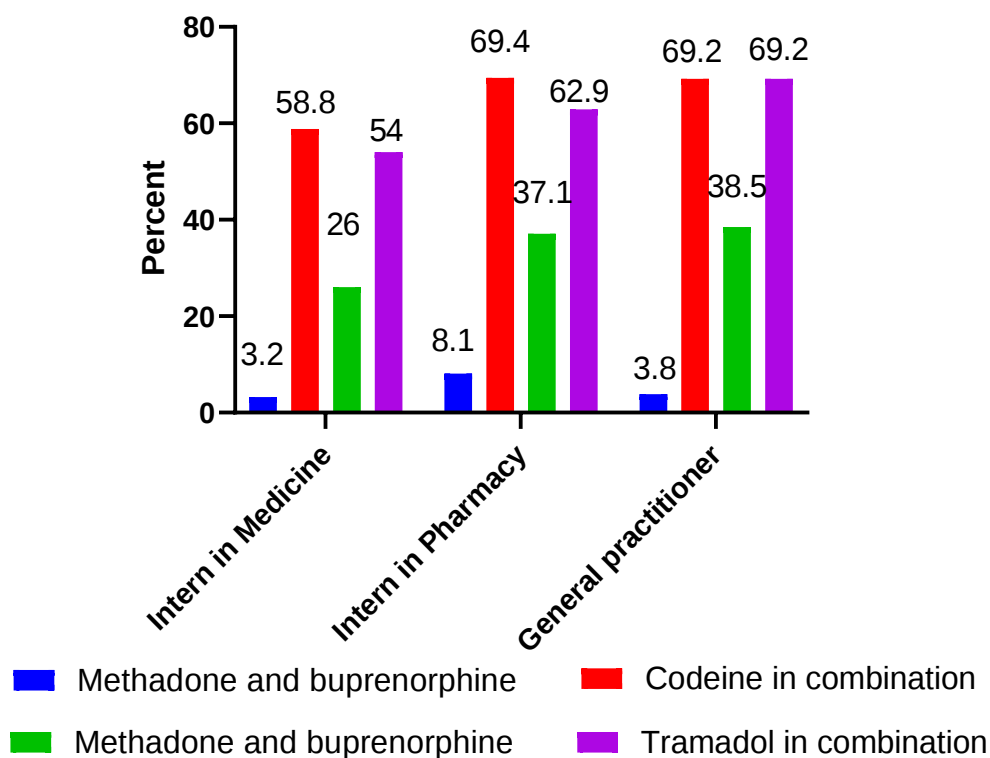
**Figure 1. Distribution of our participants according to their knowledge of opioid regulations and prescriptions****Figure 2. Types of opioids recommended or prescribed by our participants**

Table 3. Procedures for dispensing opioids by pharmacy students

Opioids	Opioid Level 2 N = 124(100 %)		Opioid Level 3 N = 124 (100 %)	
	Yes n(%)	No n(%)	Yes n(%)	No n(%)
Prescription with stamp	97(78.22)	27 (21.78)	88 (82.8)	36 (17.2)
Prescription without stamp	33 (22.6)	91 (77.4)	3 (2.4)	121 (97.6)
Prescription by telephone Call	38 (30.6)	86 (69.4)	4 (3.2)	120 (96.8)
Prescription on the patient's request	36 (29.0)	88 (70.9)	1 (0.8)	123 (99.2)

Table 4. Distribution of participants according to their indication for level 2 and 3 analgesics by type of pain

Nature of the pain	Opioid Level 2		Opioid Level 3		Total N= 400 (100%)
	Yes n (%)	No n (%)	Yes n (%)	No n (%)	
Pain associated with care	251 (62.7)	149(37.3)	35 (8.8)	365(91.2)	
Osteoarthritis of the hips and knees	279 (69.8)	121(30.2)	133 (33.3)	267(66.7)	
Sciatica due to herniated disc	203 (50.7)	197(49.3)	194 (48.5)	206(51.5)	
Rachialgia	214 (53.5)	186(46.5)	155 (38.8)	245(61.2)	
Migraine	282 (70.5)	118(29.5)	41 (10.3)	359(89.7)	
Trigemino-vascular headache	198 (49.5)	202(50.5)	129 (32.3)	271(67.7)	
Pain associated with arteritis	137 (34.3)	263(65.7)	219 (54.8)	181(45.2)	
Post zoster pain	163 (40.8)	237(59.2)	114 (28.5)	286(71.5)	
Phantom limb pain	158 (39.5)	242(60.5)	107 (26.8)	293(73.2)	
Pelvic pain	265 (66.3)	135(33.7)	39 (9.8)	361(90.2)	
Fibromyalgia	213 (53.3)	187(46.7)	92 (23.0)	308(77)	
Irritable bowel syndrome	174 (43.5)	226(56.5)	72 (18.0)	328(82)	
Pure psychogenic	109 (27.3)	291(72.7)	90 (28.5)	310(71.5)	

Tableau 5. Participants level of knowledge about the risks, indications, contraindications, side effects and rules for prescribing opioids

Professional status	Levels of knowledge			
	zero n (%)	Low n (%)	Good n (%)	Very good n (%)
	Risks of using opioids			
Medical students n= 250	5 (2.0)	35 (14.0)	60 (24.0)	150 (60.0)
Pharmacy students n= 124	2 (1.6)	10 (8.1)	32 (25.8)	80 (64.5)
General practice physicians n= 26	0 (0.0)	5 (19.2)	8 (30.8)	13 (50.0)
	Opioids indications			
	zero n (%)	Low n (%)	Good n (%)	Very good n (%)
	Contraindication			
Medical students n= 250	11 (4.4)	172 (68.8)	61 (24.4)	6 (24.0)
Pharmacy students n= 124	4 (3.2)	56 (45.2)	51 (41.1)	13 (10.5)
General practice physicians n= 26	0 (0.0)	20 (76.9)	5 (19.2)	1 (3.8)
	side effects			
	zero n (%)	Low n (%)	Good n (%)	Very good n (%)
	rules for prescribing opioids			
Medical students n= 250	11 (4.4)	55 (22.0)	115 (46,0)	69 (27.6)
Pharmacy students n= 124	5 (4.1)	22 (17.7)	61 (49,2)	36 (29.0)
General practice physicians n= 26	1 (3.8)	5 (19.3)	16 (61,5)	4 (15.4)
Medical students n= 250	10 (4.0)	26 (10.4)	131 (52.4)	83 (33.2)
Pharmacy students n= 124	10 (8.1)	13 (10.5)	48 (38.7)	53 (42.7)
General practice physicians n= 26	1 (3.8)	4 (15.4)	12 (46.2)	9 (34.6)

DISCUSSION

Among the 400 persons interviewed, 62.5% were medical students, 31.0% pharmacy students and 6.5% general practice physicians. Most respondents knew that there are regulations governing the prescription and dispensing of opioids in Mali. More than half of general physicians (69.2%) used to prescribe opioids. In Mali, opioids are included in Table B of the drug list, and as such, their prescription and dispensing are subject to strict guidelines. The French agency for the safety of medicines and health products (ANSM) reported in 2017 that 86.3% of weak opioids and 88.7% of strong opioids were prescribed by general physicians in France ¹⁸.

More than 50.0% of the opioids recommended or prescribed by the interviewees were codeine in combination or tramadol in combination. A similar observation was made by Diop et al. in Bamako in 2019 ¹⁹. These observations show that codeine and tramadol are the two most commonly used opioids, either alone or in combination with other molecules, to treat cough or pain of varying intensity. Their effects on opioid receptors make them the preferred substitution molecules for people who have developed an addiction to opioids such as morphine. This requires greater vigilance on the part of healthcare professionals to thwart the increasingly sophisticated tricks used by these individuals to prescribe or recommend these molecules. Level 2 opioids were dispensed in response to a verbal request in 29.0% of cases, whereas level 3 opioids were dispensed in response to a verbal request in 0.8% of cases. This finding highlights the involvement of healthcare professionals in opioid misuse. Most level 2 analgesics were prescribed for migraine (70.5%) and level 3 analgesics (54.8%) for arteritis. Amandine et al found that in 2014, 82.0% of level 2 opioids were prescribed to treat migraine and 24.0% of level 3 were prescribed to treat arteritis ²⁰. This suggests inappropriate use of these substances. In fact, international and national recommendations indicate that opiates should only be used for pain for which they have been shown to be beneficial. On the other hand, the prescription of level 2 or 3 analgesics is contraindicated in the treatment of migraine ²⁰.

Overall, 60.0% of medical students, 64.5% of pharmacy students and 50.0% of general practitioners had a very good knowledge of the risks of opioid use. Only 24.0% of medical students, 31.5% of pharmacy students and 7.7% of general practitioners had a very good knowledge of the real indications for opioids. This could be explained by the lack of a detailed program in medical school on opioids, their indications and prescribing guidelines. The vast majority of doctors acquire knowledge about opioid use during training in specialist departments such as emergency medicine, psychiatry, traumatology, rheumatology and oncology.

Globally, the interviewees had a good knowledge of contraindications, adverse effects and guidelines prescription. The good level of knowledge of the interviewees about the risks of opioid use and the existence of regulatory guidelines for their prescription is in contradiction with their inappropriate prescribing

and counseling behavior. This observation highlights the need for health care professionals to be more aware of the use of these substances. Inappropriate prescribing of opioids can have a negative impact on the control of drug use. In fact, it provides drug addicts with a legalized source of supply of narcotic substances, making it more difficult to combat this scourge.

CONCLUSION

Participants had a good understanding of the risks and benefits of opioids. The majority of our participants knew that there are regulations governing the prescription and dispensing of opioids in Mali. However, overall, participants had little knowledge of the indications for opioids.

Ethics Approval

Our study protocol was approved by the Ethics Committee of the Faculty of Medicine and Pharmacy of the University of Sciences, Techniques and Technologies of Bamako (USTTB), Mali

Consent for Publications

All authors read and approved the final manuscript.

Conflict of Interest

Karim Traoré, Bourama Keita, Drissa Konaté, Seidina AS Diakité, Sory I. Diawara, Abdouramane Traoré, Khatry Mohamedou and Mahamadou Diakité have no conflict of interest that are directly relevant to the content of this article.

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