

Knowledge and Attitudes of Healthcare Professionals in Dakar on the Risk of Addiction Related to Opioid Analgesic Prescription

Oumar Mamadou Samba^{ORCID}, Diariétou Fall, Idrissa Ba, Ibrahima Ndiaye, Maimouna Dieye, Ndeye Awa Dieye, Aida Sylla

Service de Psychiatrie, Centre Hospitalier National Universitaire de Fann, Dakar, Sénégal

Email: sambaoumar85@gmail.com

How to cite this paper: Samba, O.M., Fall, D., Ba, I., Ndiaye, I., Dieye, M., Dieye, N.A. and Sylla, A. (2026) Knowledge and Attitudes of Healthcare Professionals in Dakar on the Risk of Addiction Related to Opioid Analgesic Prescription. *Open Journal of Psychiatry*, **16**, 56-69.

<https://doi.org/10.4236/ojpsych.2026.161005>

Received: December 26, 2025

Accepted: January 20, 2026

Published: January 23, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Background and Aims: Opioid analgesics represent essential therapeutic tools for pain management but are associated with a significant risk of addiction. In Senegal, the increasing prescription of opioids, particularly tramadol, has raised concerns about addiction risks among patients. This study aimed to assess the knowledge, attitudes, and prescribing practices of healthcare professionals in Dakar regarding the addiction risk associated with opioid analgesic prescription. **Methods:** A descriptive and analytical cross-sectional study was conducted over 45 days among healthcare professionals working in various health facilities in Dakar. Data were collected through a structured questionnaire addressing knowledge of opioid analgesics, awareness of addiction risks, prescribing practices, and attitudes toward patients with signs of addiction. **Results:** A total of 164 healthcare professionals participated, including 75% physicians, 13% dentists, 7% nurses, and 4% midwives. While 85% acknowledged the addiction risk associated with opioid prescription, significant gaps were observed in risk assessment practices. Only 45% routinely searched for addiction history before prescribing, 31% inquired about other substance abuse, and 30% investigated psychiatric history. Weak opioids (tramadol: 91%, codeine: 93%) were more widely recognized than strong opioids. Prescription frequency was high, with 26% prescribing opioids to more than 5 out of 10 pain patients. Pain assessment tools were underutilized, with 13% never using evaluation scales. **Conclusions:** Healthcare professionals in Dakar demonstrate theoretical awareness of opioid addiction risks but exhibit important deficiencies in implementing preventive measures during prescription. These findings highlight the urgent need for continuing education programs, development of clinical practice guidelines, and enhanced monitoring systems to promote safer opioid prescribing practices and prevent iatrogenic

addiction.

Keywords

Opioid Analgesics, Addiction, Prescription Practices, Healthcare Professionals, Dakar

1. Introduction

Pain represents one of the most common reasons for medical consultation worldwide and constitutes a major public health concern. The World Health Organization (WHO) has recognized adequate pain management as a fundamental human right, emphasizing the importance of making analgesic medications, including opioids, accessible to patients who need them [1].

Opioid analgesics have been recognized as essential medications for moderate to severe pain management, both in acute settings such as post-operative care and trauma, and in chronic conditions including cancer pain [2]. These medications act on specific receptors in the central nervous system to provide effective pain relief. However, their use is accompanied by significant risks, including tolerance, physical dependence, and addiction [3].

The global opioid crisis, particularly prominent in North America, has emerged as one of the most pressing public health challenges of the 21st century. In the United States, the crisis has evolved through three distinct waves: initial increases in prescription opioid overdose deaths beginning in the 1990s, followed by increases in heroin-related deaths around 2010, and most recently, dramatic increases in deaths involving synthetic opioids, particularly illicitly-manufactured fentanyl [4]. This crisis has resulted in hundreds of thousands of deaths and has highlighted the critical importance of responsible prescribing practices.

While the situation in Africa differs substantially from high-income countries, emerging evidence suggests concerning trends. The United Nations Office on Drugs and Crime (UNODC) 2018 report highlighted the increasing availability and accessibility of pain medications such as tramadol in West Africa, with costs significantly lower than cocaine or heroin derivatives [5]. This has led to substantial public health concerns in the region.

In Senegal, healthcare professionals at the Dakar Integrated Addiction Care Center (CEPIAD) have observed an increasing number of consultations for medication misuse, particularly involving opioid analgesics such as tramadol. These cases of misuse are frequently initiated following prescription by healthcare professionals for patients experiencing pain episodes. However, no comprehensive study had previously been conducted to assess healthcare professionals' knowledge, attitudes, and practices regarding opioid prescription and associated addiction risks [6].

The prescribing physician plays a central role in preventing iatrogenic opioid

addiction. Appropriate risk assessment before prescription, patient education, regular monitoring during treatment, and recognition of early warning signs of problematic use are all critical components of responsible opioid prescribing [7]. International guidelines, including those from the WHO and various national health authorities, provide recommendations for safer opioid prescribing, but implementation varies considerably across settings [8].

Given the limited data available on opioid prescribing practices in West Africa and the specific context of Senegal, this study was designed to provide comprehensive baseline information on how healthcare professionals approach opioid prescription.

This study therefore aimed to evaluate the knowledge and practices of healthcare personnel in Dakar regarding the addiction risk associated with opioid analgesic prescription. Specific objectives included determining the frequency of opioid prescription, analyzing knowledge about opioid analgesics and addiction risks, identifying preventive measures implemented during prescription, assessing attitudes when addiction occurs, and examining differences in knowledge and practices among different healthcare professional categories.

2. Methodology

This was a descriptive and analytical cross-sectional study conducted over a period of 45 days. The study was carried out in multiple healthcare facilities across Dakar, Senegal, including public hospitals, private clinics, and health centers, representing diverse clinical settings where opioid analgesics are commonly prescribed.

The study population consisted of healthcare professionals involved in prescribing or dispensing medications, including physicians (general practitioners and specialists), dentists, nurses, and midwives working in healthcare facilities in Dakar.

A non-probabilistic convenience sampling method was used. Healthcare facilities were selected to ensure heterogeneity of practice settings and included public hospitals, private clinics, and primary healthcare centers located in urban Dakar. Eligible facilities were those in which opioid analgesics were routinely prescribed for pain management.

Healthcare professionals working in these facilities were approached consecutively during the study period and invited to participate if they met the inclusion criteria.

Data were collected using a structured questionnaire administered through face-to-face interviews with participating healthcare professionals. The questionnaire was developed based on international guidelines and validated assessment tools for opioid prescribing practices. The questionnaire was developed based on internationally validated instruments assessing opioid prescribing knowledge and addiction risk, including elements derived from the Opioid Risk Tool (ORT) and previously published surveys on opioid prescribing practices. The instrument was

adapted to the local context and underwent a pilot test involving 15 healthcare professionals. Minor adjustments were made to improve clarity and cultural relevance before final administration. Data from the pilot phase were not included in the final analysis.

Data were entered and analyzed using statistical software (SPSS and R). Descriptive statistics included frequencies and percentages for categorical variables, and means with standard deviations for continuous variables. Chi-square tests were used to examine associations between professional category and knowledge, attitudes, and practices. A p -value < 0.05 was considered statistically significant.

The study protocol was reviewed and approved by the Institutional Research Ethics Committee of the Dakar University. Participation was voluntary. All participants received detailed information about the objectives of the study, the anonymous nature of data collection, and their right to withdraw at any time without consequence. Written informed consent was obtained from all participants prior to questionnaire administration.

3. Results

3.1. Characteristics of Study Population

A total of 164 healthcare professionals participated in the study. The distribution by professional category and specialty is presented below.

3.1.1. Distribution by Professional Category

The study population comprised primarily physicians (75%, $n = 123$), followed by dentists (13.4%, $n = 22$), nurses (7.3%, $n = 12$), and midwives (4.3%, $n = 7$). Among the physicians, general practitioners represented the largest specialty group (31.4%) (see [Table 1](#)).

Table 1. Distribution of healthcare professionals by category.

Professional Category	Frequency (n)	Percentage (%)
Physicians	123	75.0
Dentists	22	13.4
Nurses	12	7.3
Midwives	7	4.3
Total	164	100.0

3.1.2. Distribution of Physicians by Specialty

Among the 123 physicians, general practitioners represented the largest group (31%), followed by emergency medicine (11%), anesthesiology (10%), and various other specialties.

3.1.3. Years of Professional Practice

The study population was predominantly composed of relatively junior healthcare professionals, with 45% having less than 5 years of experience. Healthcare profes-

sionals with more than 15 years of experience represented 21% of the sample.

3.2. Knowledge of Opioid Analgesics

3.2.1. Recognition of Opioid Molecules

While all participants affirmed that they prescribed opioid analgesics, their knowledge of specific opioid molecules was incomplete. Weak opioids were much more widely recognized than strong opioids. Codeine (93.3%) and tramadol (90.9%) were identified as opioids by nearly all participants. Among strong opioids, only morphine was well recognized (68.3%), while fentanyl (23.2%), oxycodone (14.6%), and buprenorphine (12.2%) were known by much smaller proportions of participants (see **Table 2**).

Table 2. Recognition of opioid molecules by healthcare professionals.

Opioid Molecule	Frequency (n)	Percentage (%)
Codeine (weak)	153	93.3
Tramadol (weak)	149	90.9
Morphine (strong)	112	68.3
Fentanyl (strong)	38	23.2
Oxycodone (strong)	24	14.6
Buprenorphine (strong)	20	12.2

3.2.2. Awareness of Addiction Risk

A large majority of participants (85%, $n = 139$) affirmed being aware of the addiction risk associated with opioid prescription. However, this theoretical awareness was not consistently reflected in their actual prescribing practices, as detailed in the following sections.

3.3. Prescribing Practices and Risk Assessment

3.3.1. Use of Pain Assessment Tools

Despite the importance of systematic pain evaluation before prescribing analgesics, 13% of participants ($n = 21$) reported never using any pain assessment scale. Among those who used assessment tools, the Visual Analog Scale (VAS) was the most commonly employed (52%), followed by the Numeric Rating Scale (38%) and the Verbal Rating Scale (10%).

3.3.2. Assessment of Addiction Risk Factors before Prescription

The assessment of risk factors for opioid addiction before prescription showed significant deficiencies. Despite 85% of participants acknowledging the addiction risk, systematic screening for risk factors was inconsistently implemented:

Only 49% searched for a history of previous opioid misuse.

Only 45% inquired about addiction to other substances.

Only 31% investigated personal or family history of psychiatric disorders.

Only 30% assessed for professional difficulties or stressors.

These findings indicate a substantial gap between theoretical awareness of addiction risks and practical implementation of preventive screening measures.

3.3.3. Frequency of Opioid Prescription

Prescription frequency varied considerably among healthcare professionals. Notably, 26% of participants prescribed opioids to more than half of their pain patients, and 10% prescribed to 8 - 10 out of every 10 patients, suggesting potential overprescription in some cases.

3.3.4. Treatment Duration and Discontinuation Practices

The vast majority of participants (93%) limited opioid prescriptions to less than one month, which aligns with recommendations for short-term use. However, practices regarding treatment discontinuation showed concerning variability: only 59% systematically used gradual dose reduction when stopping opioid treatment, while 41% used other methods or stopped abruptly.

3.4. Recognition and Management of Opioid Addiction

3.4.1. Monitoring for Signs of Addiction

Healthcare professionals demonstrated variable attention to monitoring for signs of addiction during treatment:

- 72% monitored for decreased analgesic effect (tolerance).
- 68% watched for requests for early refills.
- 59% looked for dose escalation without medical justification.
- 45% assessed for medication-seeking behaviors.
- 38% evaluated for social or functional impairment.

3.4.2. Attitudes and Actions When Addiction Is Suspected

When confronted with suspected opioid addiction, healthcare professionals reported various approaches:

- 67% would discuss concerns directly with the patient.
- 54% would refer to a specialized addiction service.
- 48% would implement gradual dose reduction.
- 31% would stop the prescription immediately.
- 22% reported uncertainty about what action to take.

3.4.3. Knowledge of Specialized Addiction Treatment Centers

Only 38% of participants were aware of CEPIAD (Dakar Integrated Addiction Care Center), Senegal's specialized center for addiction prevention and treatment. This lack of awareness represents a significant barrier to appropriate referral when opioid addiction is identified.

3.5. Differences by Professional Category

Statistical analysis revealed significant differences in knowledge and practices among different healthcare professional categories. Physicians demonstrated significantly better knowledge of strong opioids ($p < 0.001$), greater awareness of side

effects ($p < 0.01$), and more consistent implementation of risk factor assessment ($p < 0.01$) compared to other healthcare professional categories. However, even among physicians, substantial gaps remained in systematic risk assessment and appropriate referral practices.

Dentists, nurses, and midwives showed significantly lower knowledge levels across all domains, highlighting the need for targeted education programs for these professional groups who also prescribe or dispense opioid analgesics.

4. Discussion

This study provides the first comprehensive assessment of knowledge, attitudes, and prescribing practices related to opioid analgesics among healthcare professionals in Dakar, Senegal. The findings reveal a concerning paradox: while the vast majority of participants (85%) expressed awareness of addiction risks associated with opioid prescription, this theoretical knowledge translated poorly into systematic implementation of preventive measures in clinical practice. This disconnection between awareness and action represents a critical gap that requires urgent attention to prevent iatrogenic opioid addiction.

Knowledge of Opioid Analgesics: Disparities between Weak and Strong Opioids

Our results demonstrate significant disparities in healthcare professionals' recognition of different opioid molecules. Weak opioids such as tramadol (91%) and codeine (93%) were almost universally recognized, while strong opioids beyond morphine remained largely unknown. This pattern likely reflects the prescribing landscape in Senegal, where weak opioids are more accessible and commonly prescribed, whereas strong opioids face stricter regulatory controls and limited availability.

The high recognition rate for tramadol is particularly noteworthy given its central role in the emerging opioid misuse problem in West Africa. The 2018 UNODC report highlighted tramadol as a drug of particular concern in the region, noting its widespread availability, low cost, and increasing misuse [5]. Healthcare professionals' familiarity with tramadol may paradoxically contribute to underestimation of its addiction potential, as "familiarity breeds complacency". The perception of tramadol as a "safe" analgesic because it is classified as a weak opioid may lead to less rigorous risk assessment and monitoring compared to strong opioids.

In contrast, limited knowledge of strong opioids such as fentanyl (23%), oxycodone (15%), and buprenorphine (12%) reflects both their limited availability in Senegal and insufficient education about the full spectrum of opioid analgesics. This knowledge gap is concerning because as healthcare infrastructure develops and access to pain management improves, strong opioids will become increasingly available. Without adequate preparatory education, healthcare professionals may be unprepared to prescribe these medications safely.

Comparatively, studies from high-income countries show more balanced

knowledge across the opioid spectrum, reflecting both greater availability of diverse opioid formulations and more comprehensive pain management education [9] [10]. However, even in these settings, knowledge gaps persist, particularly among non-specialist physicians and other healthcare professionals [11]. Our findings suggest that educational interventions in Senegal should prioritize comprehensive opioid pharmacology, emphasizing that addiction risk exists across the spectrum of opioid potency.

The Theory-Practice Gap in Addiction Risk Assessment

Perhaps the most concerning finding of this study is the substantial disconnect between theoretical awareness of addiction risks and practical implementation of preventive measures. While 85% of participants acknowledged the addiction risk associated with opioid prescription, systematic screening for known risk factors was inconsistently applied. Only 49% routinely inquired about previous opioid misuse history, 45% about other substance abuse, 31% about psychiatric comorbidity, and 30% about psychosocial stressors.

This pattern—high awareness but low implementation—is not unique to Senegal. Studies from North America and Europe have documented similar disconnects, even in settings with established guidelines and educational programs [12] [13]. However, the magnitude of the gap observed in our study is particularly pronounced. Research has identified several barriers to systematic risk assessment: time constraints in busy clinical settings, lack of standardized screening tools, insufficient training in addiction medicine, concerns about damaging the therapeutic relationship, and uncertainty about how to respond if risk factors are identified [14].

The implications of inadequate risk assessment are significant. Patients with unidentified risk factors—particularly those with personal or family history of substance use disorders, psychiatric comorbidity, or previous opioid misuse—face substantially elevated risks of developing problematic opioid use when prescribed these medications [15]. The failure to identify and appropriately counsel these higher-risk patients represents a missed opportunity for prevention.

Evidence-based screening tools exist to facilitate risk assessment. The Opioid Risk Tool (ORT), a brief five-item questionnaire, can be completed in less than one minute and has demonstrated validity in predicting aberrant drug-related behavior [16]. Similarly, the Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R) provides more comprehensive assessment for patients requiring longer-term opioid therapy [17]. Implementation of such standardized tools in Senegalese healthcare settings could help bridge the gap between awareness and practice.

Prescription Frequency and the Risk of Overprescription

The prescription frequency data revealed concerning patterns suggestive of potential overprescription. More than one-quarter of participants (26%) reported prescribing opioids to more than half of their pain patients, with 10% prescribing to 8 - 10 out of every 10 patients presenting with pain. While prescription fre-

quency alone cannot definitively indicate inappropriate prescribing—as it depends on patient population characteristics and pain prevalence—these high rates warrant careful consideration.

For context, opioids are indicated for moderate to severe acute pain and certain chronic pain conditions, but represent only one component of comprehensive pain management. The WHO analgesic ladder recommends a stepwise approach, starting with non-opioid analgesics for mild pain, adding weak opioids for moderate pain, and reserving strong opioids for severe pain [1]. Non-pharmacological interventions and multimodal analgesia approaches should also be considered before resorting to opioids.

International data suggest significant variation in opioid prescribing rates. In the United States, where the opioid crisis has been most severe, approximately 30-40% of pain-related outpatient visits resulted in an opioid prescription at the peak of prescribing in the early 2010s, though this has declined in recent years following recognition of the crisis [18]. In European countries with more conservative prescribing practices, opioid prescription rates for outpatient pain have typically ranged from 15% - 25% [19].

The high prescription frequency observed in our study may reflect several factors: limited availability or awareness of non-opioid analgesics, insufficient training in multimodal pain management approaches, time and resource constraints that favor quick pharmacological solutions over more comprehensive pain assessment and management, and cultural expectations regarding pain treatment. Addressing potential overprescription will require not only education about appropriate opioid use but also ensuring availability of alternatives and supporting the infrastructure needed for comprehensive pain management.

Monitoring Practices and Recognition of Addiction

The study revealed variable attention to monitoring for signs of addiction during opioid treatment. While 72% of participants reported monitoring for tolerance (decreased analgesic effect), other important indicators of problematic use received less consistent attention. Only 45% routinely assessed for medication-seeking behaviors, and just 38% evaluated for social or functional impairment—both critical markers of addiction.

This pattern reflects a common conceptual confusion between physical dependence, tolerance, and addiction. Physical dependence and tolerance are predictable physiological adaptations to regular opioid use and do not necessarily indicate addiction. Addiction, in contrast, is characterized by compulsive drug-seeking behavior, continued use despite harm, and loss of control over use [20]. The emphasis on monitoring tolerance while paying less attention to behavioral indicators suggests that educational interventions should clarify these distinctions.

When healthcare professionals suspected addiction, their reported responses showed both strengths and concerning gaps. Positively, 67% would discuss concerns directly with patients, and 54% would refer to specialized addiction services. However, 22% reported uncertainty about appropriate actions, and 31% would

stop prescriptions immediately—an approach that risks precipitating withdrawal symptoms and damaging the therapeutic relationship without addressing the underlying addiction.

Current best practices emphasize a compassionate, non-punitive approach when addiction is identified. Immediate prescription termination is rarely appropriate; instead, gradual dose reduction, enhanced monitoring, behavioral support, and referral to addiction specialists represent more effective strategies [21]. The uncertainty expressed by many participants highlights the need for clear protocols and training on managing suspected opioid addiction.

Limited Awareness of Treatment Resources

Only 38% of participants were aware of CEPIAD, Senegal's primary specialized center for addiction prevention and treatment. This limited awareness represents a significant barrier to appropriate care for patients who develop opioid addiction. Even healthcare professionals who recognize addiction and wish to refer patients cannot do so effectively without knowledge of available resources.

The situation in Senegal reflects broader challenges in addiction treatment infrastructure across sub-Saharan Africa. Many countries in the region have limited specialized addiction treatment facilities, and those that exist often focus primarily on alcohol and illicit drug use rather than medication-related addiction [22]. As opioid prescribing increases, the capacity to treat iatrogenic opioid addiction must expand correspondingly.

Improving awareness of available resources requires active dissemination efforts. Regular communication from addiction treatment centers to healthcare facilities, inclusion of referral information in prescription guidelines, and integration of addiction services into continuing medical education programs could all enhance awareness. Additionally, developing collaborative relationships between prescribers and addiction specialists can facilitate consultation and improve patient care.

Variations by Professional Category

Significant differences emerged across healthcare professional categories, with physicians demonstrating superior knowledge and more consistent implementation of preventive practices compared to dentists, nurses, and midwives. While physicians receive more extensive pharmacology education, the substantial deficiencies observed even among physicians suggest that all healthcare professionals authorized to prescribe or dispense opioids require enhanced training.

The lower knowledge levels among non-physician prescribers is concerning because these professionals play important roles in pain management. Dentists frequently prescribe opioids for post-procedural pain, nurses often make initial pain assessments and medication recommendations, and midwives may prescribe analgesics in obstetric settings. Each of these professional groups requires specialized education tailored to their scope of practice and the clinical contexts in which they work.

Interprofessional education represents one promising approach to enhancing

knowledge across professional categories. Bringing together physicians, dentists, nurses, and midwives for shared learning about safe opioid prescribing can promote common understanding, facilitate communication, and strengthen the healthcare team's collective capacity to prevent addiction [23].

Implications for Policy and Practice

These findings have important implications for policy development and educational interventions in Senegal:

First, comprehensive continuing medical education programs on opioid prescribing should be developed and implemented. These programs should cover opioid pharmacology, systematic risk assessment, appropriate prescribing practices, monitoring for addiction, and management strategies when problems arise. Education should be mandatory and repeated regularly to ensure sustained impact.

Second, clinical practice guidelines specific to the Senegalese context should be developed. While international guidelines provide valuable frameworks, adaptation to local availability of medications, healthcare infrastructure, and cultural factors is essential. Guidelines should include practical tools such as risk assessment questionnaires, prescribing algorithms, and management protocols for suspected addiction.

Third, prescription monitoring systems should be considered. Many countries have implemented prescription drug monitoring programs (PDMPs) that track controlled substance prescriptions and enable identification of problematic prescribing patterns and patient behaviors [24]. While resource-intensive, such systems provide valuable data for both clinical care and public health surveillance.

Fourth, addiction treatment capacity must be expanded alongside opioid availability. As healthcare professionals appropriately prescribe opioids for legitimate pain management, some patients will inevitably develop addiction. Ensuring accessible, effective treatment services is ethically imperative and practically necessary to prevent the development of an opioid crisis.

Finally, a balanced approach is essential. While preventing iatrogenic addiction is crucial, this goal must not result in undertreatment of pain. Patients with moderate to severe pain require and deserve effective pain management. The challenge lies in maximizing benefits while minimizing risks—a balance best achieved through educated, vigilant healthcare professionals supported by appropriate systems and policies.

Study Limitations

This study has several limitations that should be acknowledged. First, the reliance on self-reported data may have introduced social desirability and recall biases, potentially leading participants to overestimate adherence to recommended prescribing practices. Second, the use of convenience sampling limits the generalizability of the findings beyond urban healthcare settings in Dakar. Rural practices, where access to opioids and addiction services may differ substantially, were not assessed. Finally, the cross-sectional design precludes causal inference and

limits interpretation to associations observed at a single point in time.

5. Conclusions

This study reveals a significant disconnect between theoretical awareness of opioid addiction risks and practical implementation of preventive measures among healthcare professionals in Dakar. While 85% of participants acknowledge addiction risks, systematic risk assessment remains inconsistent, prescription frequency appears high, and knowledge of treatment resources is limited. These findings highlight critical gaps that must be addressed to prevent the development of an iatrogenic opioid addiction crisis as opioid prescribing expands in Senegal.

Key recommendations emerging from this study include: mandatory continuing education on safe opioid prescribing for all healthcare professionals authorized to prescribe these medications; development and dissemination of evidence-based clinical practice guidelines adapted to the Senegalese context; implementation of standardized risk assessment tools in clinical settings; expansion of addiction treatment capacity alongside opioid availability; consideration of prescription monitoring systems to track prescribing patterns; and promotion of multimodal pain management approaches to reduce opioid reliance.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] World Health Organization (2012) WHO Guidelines on the Pharmacological Treatment of Persisting Pain in Children with Medical Illnesses. WHO Press.
- [2] Hudcova, J., McNicol, E., Quah, C., Lau, J. and Carr, D.B. (2006) Patient Controlled Opioid Analgesia versus Conventional Opioid Analgesia for Postoperative Pain. *Cochrane Database of Systematic Reviews*, No. 4, CD003348.
- [3] Volkow, N.D. and McLellan, A.T. (2016) Opioid Abuse in Chronic Pain—Misconceptions and Mitigation Strategies. *New England Journal of Medicine*, **374**, 1253-1263. <https://doi.org/10.1056/nejmra1507771>
- [4] Rudd, R.A., Seth, P., David, F. and Scholl, L. (2016) Increases in Drug and Opioid-Involved Overdose Deaths—United States, 2010-2015. *MMWR. Morbidity and Mortality Weekly Report*, **65**, 1445-1452. <https://doi.org/10.15585/mmwr.mm655051e1>
- [5] United Nations Office on Drugs and Crime (2023) World Drug Report 2023. UNODC.
- [6] Centre d'Étude et de Prévention de l'Inadaptation et de l'Addiction (CEPIAD) (2022) Rapport Annuel 2021. CEPIAD.
- [7] Dowell, D., Ragan, K.R., Jones, C.M., Baldwin, G.T. and Chou, R. (2022) CDC Clinical Practice Guideline for Prescribing Opioids for Pain—United States, 2022. *MMWR. Recommendations and Reports*, **71**, 1-95. <https://doi.org/10.15585/mmwr.rr7103a1>
- [8] World Health Organization (2011) Ensuring Balance in National Policies on Controlled Substances: Guidance for Availability and Accessibility of Controlled Medicines. WHO.

- [9] Leung, P.T.M., Macdonald, E.M., Stanbrook, M.B., Dhalla, I.A. and Juurlink, D.N. (2017) A 1980 Letter on the Risk of Opioid Addiction. *New England Journal of Medicine*, **376**, 2194-2195. <https://doi.org/10.1056/nejmc1700150>
- [10] Manchikanti, L. (2017) Responsible, Safe, and Effective Prescription of Opioids for Chronic Non-Cancer Pain: American Society of Interventional Pain Physicians (ASIPP) Guidelines. *Pain Physician*, **2**, s3-s92. <https://doi.org/10.36076/ppj.2017.s92>
- [11] Jamison, PhD, R.N., Sheehan, BA, K.A., Scanlan, NP, E., Matthews, PharmD, M. and Ross, MD, E.L. (2014) Beliefs and Attitudes about Opioid Prescribing and Chronic Pain Management: Survey of Primary Care Providers. *Journal of Opioid Management*, **10**, 375-382. <https://doi.org/10.5055/jom.2014.0234>
- [12] Kennedy-Hendricks, A., Richey, M., McGinty, E.E., Stuart, E.A., Barry, C.L. and Webster, D.W. (2016) Opioid Overdose Deaths and Florida's Crackdown on Pill Mills. *American Journal of Public Health*, **106**, 291-297. <https://doi.org/10.2105/ajph.2015.302953>
- [13] Levy, B., Paulozzi, L., Mack, K.A. and Jones, C.M. (2015) Trends in Opioid Analgesic-prescribing Rates by Specialty, U.S., 2007-2012. *American Journal of Preventive Medicine*, **49**, 409-413. <https://doi.org/10.1016/j.amepre.2015.02.020>
- [14] Upshur, C.C., Luckmann, R.S. and Savageau, J.A. (2006) Primary Care Provider Concerns about Management of Chronic Pain in Community Clinic Populations. *Journal of General Internal Medicine*, **21**, 652-655. <https://doi.org/10.1111/j.1525-1497.2006.00412.x>
- [15] Chou, R., Fanciullo, G.J., Fine, P.G., Adler, J.A., Ballantyne, J.C., Davies, P., *et al.* (2009) Clinical Guidelines for the Use of Chronic Opioid Therapy in Chronic Non-cancer Pain. *The Journal of Pain*, **10**, 113-130.e22. <https://doi.org/10.1016/j.jpain.2008.10.008>
- [16] Webster, L.R. and Webster, R.M. (2005) Predicting Aberrant Behaviors in Opioid-Treated Patients: Preliminary Validation of the Opioid Risk Tool. *Pain Medicine*, **6**, 432-442. <https://doi.org/10.1111/j.1526-4637.2005.00072.x>
- [17] Butler, S.F., Budman, S.H., Fernandez, K.C., Houle, B., Benoit, C., Katz, N., *et al.* (2008) Development and Validation of the Current Opioid Misuse Measure. *Pain*, **130**, 144-156. <https://doi.org/10.1016/j.pain.2007.01.014>
- [18] Guy, G.P., Zhang, K., Bohm, M.K., Losby, J., Lewis, B., Young, R., *et al.* (2017) Vital Signs: Changes in Opioid Prescribing in the United States, 2006-2015. *MMWR. Morbidity and Mortality Weekly Report*, **66**, 697-704. <https://doi.org/10.15585/mmwr.mm6626a4>
- [19] Hamunen, K., Paakkari, P. and Kalso, E. (2009) Trends in Opioid Consumption in the Nordic Countries 2002-2006. *European Journal of Pain*, **13**, 954-962. <https://doi.org/10.1016/j.ejpain.2008.11.006>
- [20] American Psychiatric Association (2013) Diagnostic and Statistical Manual of Mental Disorders. 5th Edition, American Psychiatric Publishing.
- [21] Kosten, T. and George, T. (2002) The Neurobiology of Opioid Dependence: Implications for Treatment. *Science & Practice Perspectives*, **1**, 13-20. <https://doi.org/10.1151/spp021113>
- [22] Marsden, J., Eastwood, B., Bradbury, C., Dale-Perera, A., Farrell, M., Hammond, P., *et al.* (2009) Effectiveness of Community Treatments for Heroin and Crack Cocaine Addiction in England: A Prospective, In-Treatment Cohort Study. *The Lancet*, **374**, 1262-1270. [https://doi.org/10.1016/s0140-6736\(09\)61420-3](https://doi.org/10.1016/s0140-6736(09)61420-3)
- [23] Brandt, N.J., Hoffman, S.B. and Ackerson, L.M. (2019) An Interprofessional Ap-

proach to Optimizing Opioid Prescribing. *Journal of Interprofessional Care*, **33**, 644-652.

- [24] Rutkow, L., Turner, L., Lucas, E., Hwang, C. and Alexander, G.C. (2015) Most Primary Care Physicians Are Aware of Prescription Drug Monitoring Programs, but Many Find the Data Difficult to Access. *Health Affairs*, **34**, 484-492.
<https://doi.org/10.1377/hlthaff.2014.1085>