

# Unsettling trend: The alarming rise of human abuse of veterinary drugs and its consequences

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## ABSTRACT

Veterinary practitioners often prescribe many controlled drugs to animals that may include sedatives, tranquilizers, and painkillers. Unfortunately, many of these drugs are drugs that can be abused by humans, especially among the pet owners. Adequate measures are required to prevent or detect the misuse of veterinary drugs. In this article, the phenomenon of the rising misuse of veterinary medications by humans and their potential health hazards which can accompany the unsettling trends in society has been highlighted. This article aims to shed light on the extent of issues, exploring reasons behind human abuse and its consequences.

**Keywords:** Awareness, consequences, human abuse, prescription drug monitoring program, veterinary drugs

## Misuse of Veterinary Drug

It is a crucial matter of concern, about people using animal medicines in the wrong way, especially when they are meant for animals but are being used by humans. This is a big problem and something we are concerned about. Intentional use of these drugs by humans has proven to be fatal.<sup>[1]</sup> Controlled prescription drugs have the ability to inflict addiction and dependence. Animal owners particularly the pet owner's "vet shop" where they try to go to different veterinarians to prescribe controlled substances to their pets, and then use these drugs for themselves instead of giving them to the animal is the major health concern.<sup>[2]</sup> As the accessibility and availability of veterinary medications grow, so does the risk of their misuse. Some of the owners falsely cite the behavioural problems with their pets to get these controlled drugs.

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The World Health Organization defines drug misuse as "the use of a substance not consistent with legal or medical guidelines."<sup>[3]</sup> Most of these drugs belong to the group of Schedule H, H1, and X, which can be only sold by the retailer on the prescription of a Registered Medical Practitioner (A person who is engaged in the practice of veterinary medicine and who possesses qualifications approved by the State Government) under subsection (v) of section (ee) of rule 2 the Drugs and Cosmetics Rules, 1945, India. Veterinarians play a crucial role in addressing the ongoing public health epidemic of opioid abuse.<sup>[4]</sup> Accordingly, based on the abuse potential of drugs, *Drug Scheduling, USDEA* (United States Drug Enforcement Administration) has classified five distinct categories; Schedule I to Schedule V. Schedule I is the highest in the hierarchy to produce severe psychological and physical dependence.<sup>[5]</sup> In some regions of the North-eastern United States, researchers have discovered a marked rise in the presence of veterinary drugs like Xylazine in toxicology screening reports and post-mortem examination.<sup>[6]</sup> Risk factors that are associated with veterinary drug abuse among pet owners could

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be; peers using substances, emotional distress or aggressiveness, substance misuse in the family, lower socioeconomic status, and easy availability of drugs.<sup>[7]</sup> Signs, where it can be said that a pet owner may be consuming their animal's medication include: (i) Request for additional or higher doses of the drug where the owner keeps on saying: No benefit is being elicited by the animal, (ii) Suggestions for prescribing a controlled drug, (iii) Visiting multiple veterinarians (vet-shopping).<sup>[8]</sup> Contrary to this, we wish to discuss the alarming rise of veterinary drugs being consumed by humans, leading to fatal consequences, and the need for Prescription Drug Monitoring Regulations.

Major classes of drugs used in veterinary medicine that have implications for human abuse are; Opioids like fentanyl, tramadol, buprenorphine, and other drugs like ketamine, xylazine, and trazodone. Drugs like fentanyl, tramadol, and buprenorphine are opiates used to control pain post-operatively given in continuous infusion or transdermally.<sup>[9]</sup>

Opioids like tramadol, buprenorphine, and fentanyl are the most widely used analgesia during surgical procedures belonging to Schedule II narcotic opioids. Opioids are the most addictive and most powerful analgesics that are used both in animals and humans in the management of pain. The use of opioids for their rewarding effects reflects their ability to increase dopamine release in the nucleus accumbens.<sup>[10]</sup> Veterinarians prescribe such drugs to animals needing sedation or treatment of moderate to severe pain in small animals. Misuse of these drugs can produce effects like relaxation, euphoria, pain relief, sedation, nausea and vomiting, urinary retention, and respiratory depression.<sup>[11]</sup> Tramadol being an opioid agonist, is a Schedule IV controlled substance.<sup>[12]</sup> As tramadol can only be availed as a prescription drug, some pet owners abuse their pets to get more of its desired quantity and consume themselves. This drug carries the risk of narcosis, addiction, and dependence. Prolonged use of tramadol is linked with several neurological disorders such as seizures, serotonin syndrome, Alzheimer's disease, and Parkinson's disease.<sup>[13]</sup> Buprenorphine has the advantage of having a prolonged duration of action in many species. In the United States, there has been a substantial increase in opioid analgesic and heroin-related deaths.<sup>[14]</sup> An increase in opioid abuse among pet owners can be detrimental and lead to opioid-associated fatalities. Opioid use majorly affects the brain which can be manifested by combinations of three signs and symptoms; pinpoint pupils, unconsciousness, and difficulty in breathing.

Ketamine is a non-competitive antagonist at the *N*-methyl-*D*-aspartate (NMDA) receptor used as a dissociative anaesthetic and a Schedule III drug, used mainly for induction and maintenance of anaesthesia, anxiety, and pain management in animals. Due to its anaesthetic and reinforcing properties, ketamine has become a commonly abused drug in the world.<sup>[15]</sup> Ketamine is used by multiple routes for abuse including snorting, smoking, intravenously, and predominantly it is consumed intranasally.<sup>[16]</sup> The pharmacological pathway involved in

ketamine is an increase in dopamine levels at the synapse and inhibiting dopamine uptake.<sup>[17]</sup> For more than half a century veterinarians have been using ketamine in monkeys, rats, and dogs in various experiments. The major cause of ketamine abuse is the antidepressant effect of the drug.<sup>[18]</sup> Chronic ketamine misuse has been linked to long-term cognitive impairment, mood disorders, and psychotic and dissociative symptoms, implying that chronic ketamine use may have a deleterious impact on brain structure and function.<sup>[19]</sup>

Xylazine (Zombie drug) is a non-opioid centrally acting  $\alpha$ -2 adrenergic agonist, a non-opioid veterinary tranquilizer and is used for sedation, anaesthesia, muscle relaxation, and analgesia in animals.<sup>[20]</sup> This drug was exclusively approved for use in dogs, cats, horses, fallow deer, mule deer, and elk. This is not a controlled drug. Humans overdosing themselves with the veterinary tranquilizer Xylazine will affect their central nervous system similar to the drug clonidine which is also a  $\alpha$  adrenergic agonist. This drug has also evolved as an abused drug, and most of the time being used along with fentanyl as an adulterant. People misuse xylazine as a recreational drug alongside fentanyl to prolong the effect of opioids.<sup>[21]</sup> Xylazine is considered the most abused animal medication.<sup>[22]</sup>

Trazodone is a serotonin antagonist and reuptake inhibitor (SARI) that is used in treating anxiety and behavioural problems in dogs and is a Schedule H drug. In human psychiatry, trazodone is used as a hypnotic for insomnia and depression. This drug can enhance the risk of serotonin syndrome causing tachycardia, hypertension (particularly in cats), altered mental state, shivering, tremors, and seizures.

Veterinary medications are easily accessible to individuals like veterinarian assistants, farmers, horse trainers, pet owners, or related fields. A possible measure to control and monitor the misuse of veterinary medicines can be achieved through a Veterinarian's Prescription Drug Monitoring Program (PDMP). Regulations that should be accepted nationally where veterinarians should be directed to report narcotic dispensing to animal owners.<sup>[23]</sup> Participation in a PDMP should be made a core tenet of good veterinary practices. Under this veterinarians are required to register for the state's PDMP where they can check an animal owner's prescription history in a situation where they doubt that the drugs prescribed are being diverted for human use.<sup>[23]</sup> The hazards associated with the human use of veterinary medicines must be controlled by implementing such tailored PDMP Regulations. However, the key components of PDMP Regulations must include, mandatory registrations for veterinarians, a database and reporting system, regulatory oversight to ensure compliance with established guidelines and regulations, access to data, proper education and training for safeguarding the public health, and privacy considerations. Most of the veterinary controlled substances are accurately the same as the human ones, but their strength is likely to differ. Regulatory bodies must take swift action to monitor and control the distribution of veterinary drugs, ensuring that they

are used for their intended purposes and developing universally acceptable and mandatory provisions regarding veterinary PDMP regulations. Additionally, by addressing such issues, we can safeguard both animal and human health preventing the potential of new health crises. Urgent attention and action are required to curb this growing issue, emphasizing the importance of stringent regulations, public awareness campaigns, and collaborative efforts to mitigate the potential fallout.

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## Conflicts of interest

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