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Letter to the Editor

Special issues in forensic toxicology in the Middle East and North Africa (MENA) region: The importance of toxicology amid MENA drug challenges

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Dear Editor

I am writing to express my sincere appreciation for the Saudi Pharmaceutical Journal's unwavering commitment to addressing critical issues related to forensic toxicology in the Middle East and North Africa (MENA) region. Considering the escalating challenges posed by drug abuse, the special issue titled "**Forensic Toxicology Scientific contribution in preventing drug-related fatalities in MENA region**" is both timely and essential.

Forensic toxicology, a specialized field, plays a crucial role in detecting harmful substances for legal purposes (Chung and Choe, 2018; Al-Asmari, 2009; Moffat et al., 2020). Using analytical methods, forensic toxicologists identify toxins in biological samples and as seized materials. This multifaceted field encompasses many branches, including postmortem forensic toxicology, which aims to investigate toxic substances in deceased individuals to determine cause of death. Another branch, human performance toxicology, assesses the impact of substances on human performance (e.g., impaired driving and workplace drug testing). The third branch of forensic toxicological application is forensic drug testing, which is applied to detect the presence of drugs in legal contexts. The goal is to safeguard public health and ensure justice by accurately identifying dangerous substances and their effects. It is important to understand that therapeutic dosages for addicts and users may differ from treatment doses, necessitating further investigations, especially in cases of overdoses and fatalities.

It is imperative to address the urgent need for research on new psychoactive substances (NPS) in the MENA region. Despite global awareness of NPS, there is a conspicuous lack of reporting on, and detection of, these drugs within our region (Aldubayyan et al., 2022). This issue presents a unique opportunity for discussion and understanding. Are these drugs genuinely absent in MENA countries, or is their scarcity a consequence of inadequate equipment and practices? Let us delve deeper into this matter and advocate for comprehensive research to bridge this gap. Forensic toxicologists can contribute significantly to addressing this matter by testing suspected powders, liquids, and even herbal samples for NPS. Utilizing advanced technology

with universal and in-house library search capabilities, forensic experts can overcome the challenge presented by a lack of appropriate reference standards (Al-Asmari, 2024; Maurer, 2021; Davidsen et al., 2020; Fu et al., 2019). Doing so would enable them to educate society and healthcare professionals. In the emergency room, a second of experience and a piece of critical information can potentially save lives in cases of overdose or drug-related fatalities.

The annual report by the United Nations Office on Drugs and Crime (UNODC) is a vital tool for assessing global drug abuse trends over decades (Heikkilä et al., 2021). This comprehensive report not only measures the scale of the drug problem but also provides critical insights into drug distribution across diverse communities worldwide. Notably, the report highlights the fentanyl pandemic in the United States of America over the past decade, during which hundreds of thousands have tragically succumbed to fentanyl overdoses. Additionally, stimulants, particularly methamphetamine, pose a significant concern globally, with Asia being particularly affected.

However, when focusing on MENA region, a persistent data gap emerges. Despite sporadic information from media sources, UNODC lacks comprehensive data on drug-related issues in this region. For instance, among the 13 MENA countries reporting drug seizures to UNODC, methamphetamine (commonly known as "Shabu" (United Nation Office on Drugs and Crime, 2022) or "Al-Shaboo" (Al-Asmari, 2021)) remains a significant concern. The UAE alone reported nearly 50 % of all methamphetamine seizures between 2016 and 2020, with Bahrain, Saudi Arabia, and Kuwait also affected (United Nation Office on Drugs and Crime, 2022).

Recently studies revealed the casualties and fatalities attributed to Shabu (United Nation Office on Drugs and Crime, 2022). In Iraq, methamphetamine-related deaths have surged from 4.6 % to 37 % (Al-Hemiary et al., 2014). Similarly, in Kuwait, methamphetamine accounted for 23 % of drug-related fatalities from 2014 to 2018 (Al-Waheeb et al., 2021). Urgent research is needed to address this critical issue and to inform preventive measures. The alarming escalation of methamphetamine-related deaths in Saudi Arabia, which has witnessed a staggering surge of over 500 % within a mere three-year period

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(2016–2018) (Al-Asmari, 2021), underscores the pressing need for comprehensive research and preventive interventions. Unfortunately, data from postmortem cases are rarely reported in the MENA region (Al-Matrouk et al., 2021; Osman and Shawoosh, 2003), especially those from Saudi Arabia (Al-Asmari et al., 2023). Addressing this gap is crucial. Presenting new information gleaned from postmortem cases can help us to prevent widespread drug use.

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In May 2023, Kingdom of Saudi Arabia launched a nationwide campaign to combat drug abuse on an extensive scale. The primary objective of the campaign is to aggressively prosecute drug traffickers and dealers within the kingdom. The impetus for this initiative stems from an upsurge in drug seizures at border crossings and during security operations. Notably, the campaign focuses on countering the highly dangerous drug known as “Shabu”, which is characterized by its odorlessness and which poses significant physical and psychological health risks. Raising awareness about the dangers associated with “Shabu” and other hazardous substances is paramount. Education is our most potent weapon against these imperceptible adversaries.

Despite being a major global concern, the scientific literature emerging from Saudi Arabia rarely sheds light on drug-related deaths (United Nation Office on Drugs and Crime, 2022). Furthermore, epidemiological studies in the MENA region are presented infrequently, leaving us with limited insights into drug-related fatalities (Al-Matrouk et al., 2021; Elfawal, 1999; Osman and Shawoosh, 2003). Even drug seizures at customs checkpoints do not consistently align with global trends. Traditional drug seizures occur in these countries, yet information about NPS remains scarce. While epidemiological studies in our region are scant, the available data reveal alarming trends. Notably, the highest number of deaths occurs within the 21–30 age group, a fact that is both shocking and deeply concerning (Al-Asmari, 2021; Al-Asmari et al., 2022, 2023). These young lives could potentially be saved with better preventive measures or by addressing any missing baselines in our understanding.

In recent years, Saudi Arabia has experienced a notable increase in the number of master’s and doctoral programs in forensic science and forensic toxicology across various faculties, including medicine, medical technology, pharmacy, and science. These specialized programs equip professionals with the necessary knowledge to address emerging drug challenges. As the demand for research in forensic-related subjects grows, a highly respected publication such as the Saudi Pharmaceutical Journal becomes a valuable conduit for presenting these studies to the international community and to highlight their commendable work.

To address this critical issue, we propose three key considerations:

1. Enhanced Poison Control Centers : Continuing to invest in poison control centers is crucial, as they play a vital role in managing drug-related emergencies and providing timely interventions. However, given the emergence of NPS, specialized centers within universities or independent research units are better equipped to identify potential threats. By following international and national reports, they can conduct necessary studies on the chemical composition, drug metabolism, and toxicity of such NPS.
2. Establishment of a National Database System for Recording and Monitoring Drug Abuse Maps and Fatalities: Creating an early warning system that allows hospitals to register and send requests and reports would be invaluable. This database could serve as a reference for scientists and clinicians, helping them to understand cases that are appearing in emergency departments.
3. Promoting Master’s and Doctoral Programs in Forensic Science and Forensic Toxicology: Encouraging an increase in these programs can bridge the gap between national and international efforts related to drug distribution and abuse. Additionally, providing scholarships for Saudi experts to gain knowledge from international institutes would

facilitate the transfer of expertise and updates on techniques and methods used for drug detection.

Thank you for your dedication to advancing scientific knowledge and promoting public welfare.

CRedit authorship contribution statement

Ahmed Al-Asmari: Formal analysis, Project administration, Writing – original draft, Writing – review & editing. **Fawaz Alasmari:** Writing – original draft, Writing – review & editing. **Sary Alsanee:** Project administration, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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