Banze *et al. Harm Reduction Journal* (2025) 22:61
https://doi.org/10.1186/s12954-025-01204-0

Harm Reduction Journal

RESEARCH Open Access

Understanding HIV vulnerability among women who inject drugs in Mozambique, 2023

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Abstract

Background Women who inject drugs (WWIDs) belong to a group of people with high-risk behaviors for contracting HIV. In Mozambique there is still limited coverage of combined HIV prevention strategies among WWIDs. These actions, however, are hampered by the scarcity of data. This study offers a better opportunity to inform the wide range of social, contextual, and individual factors that play a role in the HIV epidemic. At the same time, it will provide crucial explanations about how these diverse factors affect the vulnerability of WWID to HIV in Mozambique.

Methods A qualitative study was carried out, based on interviews with 18 key informants and 30 others participants in discussions in focus groups totalizing 48 women in representation of five cities in Mozambique in 2023. The study utilized semi-structured interviews, to collect data on the demographic characteristics of the WWID and open-ended questions that explored information regarding stigma, discrimination, challenges in accessing health services, and gender-based violence. Data was analyzed thematically using NVivo.

Results WWIDs engage in common practices of sharing and renting syringes for injecting drugs. Sex work combined with unprotected sex was identified as a frequent risk behavior. WWIDs encounter stigma and discrimination in the family, street encounters, interactions with police and health facilities. Awareness of harm reduction services varies among WWIDs, with some having limited or no knowledge. Accessing harm reduction services is considered a challenge for some participants. WWIDs face violence from men, including the police, often involving extortion of monetary amounts. Incidents of sexual violence are mentioned, with underreporting being a prevalent problem.

Conclusion WWIDs in Mozambique navigate a lethal intersection of poverty, gendered violence, and systemic exclusion. Stigma and geographic disparities in harm reduction services perpetuate HIV transmission and healthcare avoidance. Urgent action is needed to decentralize methadone programs, integrate gender-based violence response into HIV care, and reform punitive policing practices. Prioritizing WWID in policy—through community-led harm reduction and anti-stigma campaigns—is essential to achieving Mozambique's HIV targets and health equity goals.

Keywords Women who inject drug, HIV, Harm reduction, Stigma, Mozambique

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Background

Globally, An estimated 14.8 million people in the world are People Who Inject Drugs (PWID), with women accounting for approximately 2.8 million of this population [1]. Women who inject drugs (WWID) face a heightened vulnerability to HIV, exacerbated by prevailing social gender inequalities, exposure to gender-based violence (GBV), systemic health disparities, and restrictive legal policies [2–4]. These risks are compounded by intersecting vulnerabilities, including engagement in high-risk sexual behaviors, unsafe injection practices, and socioeconomic marginalization, which increase the likelihood of contracting HIV and other sexually transmitted infections (STIs) [3]. The intertwining of drug use with factors such as gender-based violence and systemic health inequalities creates a complex web of risk for women who inject drugs [5].

The barriers to accessing health and prevention services are notably higher for WWIDs, driven by social stigma and discrimination. The dimension of stigma assessed was linked to the personal and behavioral characteristics most visible in WWIDs such as lack of hygiene, low self-esteem, aspects related to drug addiction (being very sleepy), and drug consumption, which marginalizes them from society in general [6]. Limited access to harm reduction programs, lack of sterile injection equipment, and inadequate gender-sensitive interventions further exacerbate their health risks, reinforcing the urgent need for inclusive and evidence-based public health strategies [7, 8].

Mozambique ranks among the ten countries with the highest HIV prevalence globally. As of 2021, the adult HIV prevalence rate in Mozambique was estimated at 12.5%, with women of reproductive age experiencing a higher rate of 15.4%, reflecting significant gender disparities in HIV burden [9]. The first Biological Behavioral Survey (BBS), conducted in the country between 2013 and 2014, revealed alarmingly high HIV prevalence rates among PWID — 50.1% in Maputo and 19.9% in Nampula/Nacala. Additionally, 15% of PWIDs in these cities suffered physical violence for being PWID [10]. This survey also highlighted several risk factors, including unsafe injection practices, multiple sexual partners, unsafe sexual practices, and higher levels of hepatitis B virus [16]. However, gender-disaggregated data remains scarce, with women comprising only 5% of the study participants, highlighting the lack of research and tailored interventions for WWID in the country [18].

Mozambique's legal and policy frameworks remain restrictive toward drug use and harm reduction efforts. Drug possession and consumption are criminalized, discouraging PWID from seeking harm reduction services due to fear of arrest and harassment by law enforcement [11]. While harm reduction programs including opioid substitution therapy (OST) using methadone exist, they are geographically concentrated in Maputo, leaving large parts of the country underserved [17, 19].

Data on WWID in Mozambique are scarce, and they face multiple overlapping challenges, including inadequate access to family planning, high levels of intimate partner and gender-based violence, and severe stigma, particularly among those living with HIV. Despite their heightened vulnerabilities, policies and services often fail to comprehensively address their specific needs. Additionally, little information exists on WWID engaged in transactional sex, despite their heightened exposure to sexual and physical violence [12].

The National Strategic Plan for HIV/AIDS (PEN V, 2021–2025) recognizes the need for gender-sensitive harm reduction strategies, but challenges in implementation have led to gaps in service delivery [5]. While some gender-specific services exist, their reach remains limited, leaving WWID with inadequate protection from gender-based violence and insufficient access to reproductive health services [13, 14].

Violence against women is an urgent public health priority [15, 16]. In 2022 in six high-incidence countries in sub-Saharan Africa including Mozambique, women exposed to physical or sexual violence by an intimate partner were 3.2 times more likely to have recently contracted HIV than those who had not experienced such violence [17]. Beyond intimate partner violence, WWIDs frequently encounter violence from law enforcement, drug networks, and within their communities, often linked to coercion, extortion, and exploitation [15]. These experiences further push WWIDs into hidden, high-risk environments where harm reduction and health interventions become even less accessible [18]. Violence is defined as any physical harm, threatened harm, or forced sexual acts inflicted on a person in the past year [15]. In addition to intimate partner violence, WWIDs are vulnerable to experiencing other types of violence such as injecting illegal drugs, leading them to engage in acts of threat, intimidation, and punishment as a resolution system [18].

Cultural and social factors shape drug use patterns among WWID in Mozambique. Many WWIDs alternate between injecting and smoking drugs based on availability, peer influence and social norms. Economic hardship often drives them into sex work as a means of sustaining their drug use, further increasing their risk of HIV and other sexually transmitted infections (STIs) [19, 20]. Despite these known risks, gender-disaggregated data on who inject drugs, often overlook or underrepresent female populations, leading to a gap in comprehensive knowledge about their specific needs and circumstances [17].

As Mozambique strives to achieve global HIV prevention and harm reduction targets, including those set to end AIDS as a public health threat by 2030—including the 95-95-95 strategy, it is crucial to ensure that WWID are not left behind [21]. Moreover, the Global Plan to Eliminate New HIV Infections in Children and Keep Their Mothers Alive emphasizes the need to reach vulnerable women, including those who use drugs, with prevention and treatment interventions tailored to their realities [22].

This study seeks to fill these knowledge gaps by examining the experiences and perceptions of WWID in Mozambique, focusing on stigma, discrimination, violence, and healthcare access. By generating evidence on how these factors contribute to their heightened vulnerability to HIV, the study aims to inform policies and interventions that align with Mozambique's national health priorities and international commitments to ending AIDS as a public health threat.

Methods

Study sites and design

Since 2012, Mozambique has been conducting BBSs rounds among key populations such as Men who have sex with other men, Female sex workers (FSW), PWID and prisoners to better understand and address the health challenges and needs faced by these groups. As part of the implementation of the second round of BBS among PWID, a formative assessment was carried out in 2023. This assessment used a cross-sectional qualitative approach to gather in-depth insights into the behaviors, needs, and challenges of WWID. The assessment was conducted from February to April 2023, in six cities across the country: Maputo, Beira, Tete, Quelimane, Nampula/Nacala. These locations were identified because stakeholders believe that these areas account for the large majority of PWID in Mozambique, there is geographic and cultural diversity, they have an adult population size large enough to be likely to have enough PWID to meet the needed sample size, and there are plans to provide PWID-friendly STI and HIV services for referrals. Contiguous areas that share social networks are included.

The methodology for this formative assessment consisted of Focus Group Discussions (FGD) and in-depth semi-structured Key Informant Interviews (KII). These methods were chosen to facilitate a comprehensive understanding of the issues at hand, allowing for a rich exploration of the experiences, with a particular focus on understanding the unique challenges faced by women within this population.

A specific assessment for WWID was conducted as part of this study. The participants in this assessment included women over 18 years old, encompassing both current and former WWIDs, female sex workers who inject drugs, female drug dealers, women healthcare providers for PWID, and women members of community-based organizations that work with PWID. This diverse group was carefully selected to provide a broad spectrum of perspectives and experiences related to drug use, healthcare, and community support for women who inject drugs.

The KII was conducted with individuals who have in-depth knowledge about PWID in general and WWID in particular offering deep insights into the context of this community. These informants were well-informed about the community and provided valuable perspectives. Each interview lasted between 45 and 90 min, ensuring enough time to gather comprehensive information.

A total of five FGD were organized (one in each city), involving multiple participants simultaneously and led by a moderator, with the assistance of a note-taker/observer. Each group was composed by at least six participants and the participants for the focus groups were carefully recruited at each study site. A purposive sampling method was employed to select individuals most suited to provide an in-depth description of the experiences of WIDs. The composition of each focus group was intentionally kept relatively homogeneous in terms of relevant sociodemographic characteristics to encourage participants to share their ideas and perceptions openly, facilitating an abroad dialogue and deeper understanding of the issues at hand.

Data collection tools

Data collection was carried out on the ODK software using semi-structured interview scripts, used both in FGD and KII, that allowed for the capture of information related to the demographic characteristics of the WWID community in each location. Additional scripts with open-ended questions of an exploratory nature were used to collect information related to stigma and discrimination, challenges in accessing health services and gender-based violence both from an individual and group point of view. Before data collection began and after a brief introduction to the study, the moderator presented the objectives of the session, obtained written informed consent from each participant separately and began the data collection process. All interviews were conducted in Portuguese, recorded, annotated, and transcribed by a trained team.

Data analysis

The interviews were audio-recorded and used to expand on the development of field notes after each KII and FGD session. The interviews were then transcribed and coded in relation to the themes and sub-themes of interest. The analysis was conducted using NVivo software for qualitative data analysis (Version 12, QSR International,

Table 1 Participant characteristics

Characteristic	*n* = 48	%
Age (median, years) 31.5 (IQR 22:42)		
18–29	24	50.0%
30–39	18	37.5%
40–49	3	6.3%
50+	3	6.3%
Level of Education		
Primary	3	6.3%
Secondary/Medium Technician	29	60.4%
Post-secondary	1	2.1%
Missed	15	31.3%
Marital Status		
Single	30	62.5%
Married/Live in partner	13	27.1%
Widow	5	10.4%
Religion		
Christian	10	20.8%
Muslim	7	14.6%
Protestant	16	33.3%
Other/No religion	15	31.3%
Type of key informant		
WWID	39	81.3%
WWID Sex worker	1	2.1%
Peer educator	4	8.3%
Healthcare professional	4	8.3%
Participants per type of interview		
KII	18	37.5%
FGD	30	62.5%

2018) and followed the Grounded Theory approach to gain an understanding of a particular phenomenon being researched at the time [23]. In this process, the main thematic codes were aggregated into categories, which in turn were grouped to create emerging themes that manifested themselves during the interviews.

Ethical considerations

All participants provided informed consent and identifying information was not collected. The study protocol was approved by the Ethics Review Board of the National Institute of Health (CIBS) under reference 097/CIBS-INS/2022, by the National Bioethics Committee for Health in Mozambique (CNBS) under reference 877/CNBS/22. To ensure the privacy and safety of participants, the team did not request or collect any individually identifying information.

Results

Participants' main characteristics

In this study, we gathered insights from 48 participants across five cities, with their ages ranging from 18 to 56 years and a median age 31.5 (IQR 22:42). Most participants had secondary/technical education (60.4%) and were single (62.5%) (Table 1).

HIV risk behaviors

The findings reveal significant HIV risk behaviors among women who inject drugs (WWID), particularly regarding syringe-sharing and unsafe sexual practices. Participants widely acknowledged that renting and reusing syringes were common due to financial constraints and limited access to harm reduction services. These practices increase the risk of HIV and hepatitis transmission, underscoring the urgent need for expanded needle exchange programs and improved access to sterile injecting equipment.

> *"...yes, we rent used syringes where we smoke in the abandoned building." In KII, WWID, Nampula, participant 5.*
> *"...There are always people ready to lend syringes at the site..." In KII, WWID, Beira, participant 4.*
> *"... amount that's left in the syringe is what you have to put into someone else..." In FGD, WWID, Beira, participant 6.*
> *"...last week, I got a bruise here, because of using someone else's syringe that wasn't cleaned properly, it still had blood..." In FGD, Maputo City, participant 1.*
> *"...We all share syringes..." In FGD, Nampula, participants 1 to 5.*

Beyond syringe-sharing, a notable concern is the intersection of drug use and sex work. Many WWID reported engaging in unprotected sex in exchange for higher payments, driven by economic desperation. This highlights the necessity for comprehensive harm reduction programs that integrate sexual health services, including condom distribution and education on safer sex practices.

> *"...there are certain men who say they want it without a condom, then pretend they're going to give you so much, for example 300Mt (~USD4.7), you know I'm going to buy 4 pintxos (shot)." In KII, Beira, participant 7.*
> *".... They have sex without a condom when the client increases the money at the time of sex." In KII, Beira, participant 6.*
> *"...Some men force them to do it without a condom in exchange for paying more than if they use a condom..." In KII, WWID, Nampula City, participant 4 and 5.*
> *"...yes, many times they even have sex without a condom, it's the client who asks because he says he doesn't feel anything with a condom so if he wants money, we go without a condom..." In KII, WWID, Quelimane, participant 3.*

Stigma and discrimination

Issues linked to stigma and discrimination were investigated in terms of how PWID perceives them and feel discriminated against because of this practice. Based on the perception, opinions, and experiences of WWIDs, they encounter stigma and discrimination in multiple settings, ranging from public spaces like streets to healthcare environments. These experiences underscore the pervasive nature of the challenges they face, marked not only by societal judgment on the streets but also by prejudiced treatment within health facilities.

"When we walk on the streets, people call us names. Others insult us, beat us, call us thieves, and that's not good…" In KII Nampula, participant 5.
". Yes, several times. Yesterday I was cutting through the undergrowth and I saw two young men so I stopped and they said what are you afraid of, you junkie, you have what we need to rob you…"In KII_ WWID_Maputo City, participant 2.
"…we are discriminated in the hospital, humiliated a lot by the health providers… by the police, and the whole community in general…" In FGD, Quelimane, participant 2.
"…The doctors discriminate against us, they call us names…" In FGD, Quelimane participant 2.

A crucial observation made by the participants is that there is a perception that the hygiene and appearance of WWIDs play an important role in whether they are discriminated against. According to them, most WWIDs are usually in poor conditions, often dirty, sleeping on the streets and, when they interact with other people, they may display behaviors associated with their state of health, such as closed eyes. This condition also seems to contribute to the stigma they face.

". They suffer because others walk dirty, others sleep in the street and walk with their eyes closed, when you show this reaction, they discriminate against you and shout Mafuma-fuma but when you walk well they don't discriminate against you." In KII, Beira City, participant 2.
"…his discrimination is because they are drug users and usually they are dirty…" In KII, Nampula, participant 6.

Challenges in accessing health services

WWID also faces challenges related to stigma and discrimination in healthcare facilities. Those who have been diagnosed as HIV positive find it difficult to adhere to treatment, as many of them are unable to strictly follow the schedule of appointments and medication, which results in them giving up and stopping antiretroviral treatment. This, in turn, leaves them in a state of weakness.

In addition, among the challenges that WWID mentioned, the reluctance to seek medical attention when they feel ill stands out. This is related to their behavior and personal beliefs, since many of them avoid hospitals due to the fear of being stigmatized or of people finding out that they are drug users.

"…we generally don't seek health services because when we're sick, we take drugs and the drugs hide the illnesses…" in FG, WWID, Tete City participants 2 and 3.
"…people who take drugs don't get sick… yes, they don't go to the hospital when they have a headache, a sore throat, if they just smoke it goes away…" in KII, WWID, Tete City, participant 3.
"…Yes, abscesses can develop, and they may not go to the hospital due to neglect; they take care of each other instead. Each one cleans the other's wound, and they say 'ah, it will pass…" In KII, Female PID, Beira, participant 4.

The provision of specific services such as harm reduction, social reintegration and occupational therapy were explored in this evaluation and according to some of the WWIDs they said they were aware of the existence of the harm reduction service but argued that access to it has been very difficult.

Harm reduction and health system barriers

The discussion around harm reduction services revealed a range of awareness levels among participants. Some expressed unfamiliarity with the concept, indicating they had not encountered such services before. Others acknowledged a basic awareness, albeit lacking depth in their understanding. Notably, participants from Maputo showed a clearer grasp of harm reduction services, suggesting regional disparities in the dissemination and availability of such information and support.

"…I have never heard of this type of service…" In KII, Beira City, participant 7.

"…I've heard it, I just heard it, but I don't remember. A group of advisors appeared in the past. They fought to ensure that those who inject stop injecting to smoke and those who smoke reduce the amount they smoke. For example, I smoke 10, they struggle to reduce it…" In KII, Beira City, participant 3.
"…There is methadone and morphine, this helps people a lot…" KII, City of Maputo, participant 3.
"I stopped 2 years ago; I am taking methadone…" In FG, City of Maputo, participant 9.

"…We are well treated because the sisters from the center…, they go to the military zone, pressuring us to go to the health center to get treatment, and they bring us medication because we don't have time to go for treatment, we are busy with drugs…" In FG, City of Maputo, participant 1.

Some participants also pointed out that, at times, the response to psychoactive substance use veers away from harm reduction methods towards psychiatric intervention. This shift often leads to users being monitored and treated within psychiatric units, occasionally resulting in repeated hospitalizations.

"…Users are often taken to psychiatry for treatment, but they say they are not crazy. They are very intelligent…" In KII, WWID, Maputo City, participant 1.
"…I go to Nampula for psychiatry for detoxification…" In FG, Nacala City, participants 3, 5 and 6.
"…Once I came with my sister, they made it very difficult for us. We went to Infulene, and they transferred us to Central Hospital, but they wanted money…" KII, WWID, Maputo City, participant 3.

Gender-Based violence

Various aspects related to gender-based violence were addressed, and according to the participants' observations, it was found that violence is often associated with the search for financial resources to purchase drugs. WWID are more likely to find money by engaging in sex work. This situation exposes them to higher risks of physical violence, predominantly from men, including law enforcement officials who may exploit their vulnerability for monetary gain.

"…they get beaten up, sometimes their clothes are taken off in the street with colleagues when they have money, they hold their necks, they say because they don't want to share. They've even squeezed my neck…." KII Beira City, participant 6.
"…men beat us, and sometimes we are forced to have sexual relations. Policy beats us, and puts us in jail, whoever has money pays to get out" In FG, Quelimane, participants 2,3,4 and 5.

Various aspects related to sexual violence were investigated, and based on the participants' perspectives, incidents of sexual violence have been underreported.

"…They are not obligated. They have sex without a condom when the client increases the money during sex…" In KII, Beira City, Participant 6.
"They already tried but failed to rape me, there were two of them, in Xai-Xai. I've had more situations, but they didn't succeed, Allah is with me…" In KII, Maputo City, Participant 3.

The experience and opinion of WWIDs is that they have also suffered psychological and verbal violence from some men when they approach them in smoke shops and/or in places of socialization.

"…I've heard nothing but insults, even people who smoke usually insult us for injecting drugs…" In KII, WID, Maputo City, Participant 2.
"…We suffer all types of violence, psychological violence comes from neighbors, from family…" In KII, WID, Nampula City, Participant 6.

Discussion

Globally, WWID face overlapping vulnerabilities that increase their risk of HIV, including syringe sharing, engagement in sex work, and systemic stigma [19, 20, 24]. Similar patterns were observed in Mozambique, where economic precarity drove WWID to share syringes and engage in unprotected sex work. Stigma emerged as a pervasive barrier, particularly within healthcare settings, law enforcement interactions, and community environments, reinforcing isolation and deterring care-seeking behaviors [10, 24, 25]. However, beyond these universal challenges, this study highlights Mozambique-specific barriers that require targeted intervention.

One of the study's key findings is that harm reduction services, such as methadone programs, are concentrated in Maputo, reflecting urban-centric resource allocation. Participants from Maputo noted the positive impact of harm reduction services, whereas those in Beira and Nampula reported no access to such programs. This disparity is driven by underfunded regional health systems and persistent stigma, which frames harm reduction as "encouraging drug use" [14, 25]. To address these gaps, scaling harm reduction efforts beyond Maputo is essential, requiring decentralized service provision and capacity-building among provincial healthcare providers.

Mozambique's health system presents contradictory approaches to drug treatment—with harm reduction programs aligning with global best practices, while psychiatric institutionalization is still widely used. The study revealed that WWIDs are frequently redirected to psychiatric units rather than receiving harm reduction services, illustrating the systemic preference for punitive abstinence-based treatment over evidence-based harm reduction. This misalignment, influenced by limited provider training and deep-seated stigma, discourages WWID from seeking care and exacerbates their risk of HIV and hepatitis transmission [26]. Currently, Mozambique lacks dedicated substance use disorder services for

PWID, with drug dependency treatment largely confined to psychiatric hospitals with minimal addiction-specific support, leading to high dropout rates and continued cycles of substance use [26].

Findings from this study underscore the role of law enforcement in perpetuating violence and discrimination against WWID [27]. A specific police practice of beating and jailing was described in the results as a form of physical punishment in which WWIDs are forced to stay in jail and pay for their freedom as a method of humiliation and control. These abusive tactics entrench fear of authorities, discourage healthcare access, and perpetuate underreporting of gender-based violence. Addressing these systemic issues requires legal reforms and harm reduction training for law enforcement personnel to align policing strategies with public health goals.

Economic dependency and gendered power dynamics force WWID into sex work, exposing them to higher risks of HIV and physical violence [28]. This study found that WWID frequently experienced violence from law enforcement officials, drug networks, and intimate partners, often in exchange for money or protection. Additionally, community stigma toward WWID, often linked to perceptions of hygiene and social status, isolates them from essential social support systems. These structural barriers further delay healthcare-seeking behaviors, increasing vulnerability to poor health outcomes and heightened HIV exposure.

Conclusion

This study reveals the intersecting vulnerabilities faced by WWID in Mozambique, where structural inequities, stigma, and systemic neglect amplify their risk of HIV and violence. Financial precarity drives WWID to share syringes and engage in condomless sex work, while pervasive stigma manifested in healthcare exclusion, police brutality, and community ostracization isolates them from critical services. Harm reduction programs remain concentrated in urban centers like Maputo, leaving other areas WWID without access to lifesaving interventions such as methadone or sterile syringes.

Mozambique's experience offers critical lessons for low-resource settings: Addressing HIV among WWID requires dismantling structural barrier not just biomedical interventions. Policymakers can transform health systems to protect this marginalized population by centering equity, accountability, and cultural relevance. Urgent, targeted action is not only a moral imperative but a public health necessity to curb Mozambique's HIV epidemic and uphold the rights of WWID.

Abbreviations

BBS	Biological Behavioral Survey
FSW	Female Sex Workers
FGD	Focus Group Discussions
KII	Key Informant Interviews
PWID	People Who Inject Drugs
STI	Sexually Transmitted Infections
WWID	Women who inject drugs

Acknowledgements

The authors would like to thank the survey's technical working group for BBS including investigators, qualitative study teams, Non-Governmental Organizations, members of civil society, and the National HIV/STD program.

Author contributions

ARB elaborated the manuscript and supervised data collection in the field. CB supervised data collection and performed qualitative analyses. EM did the interviews and transcriptions. SC and MN mobilized participants for the interviews. MB, SGS, IC and CSB reviewed and approved all drafts and the final manuscript. All authors reviewed and approved all drafts and the final manuscript.

Funding

This manuscript used data from research supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). The opinions and conclusions presented in this article are solely those of the authors.

Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

The survey was granted approval by the National Bioethics Committee for Health (CNBS) in Mozambique. Written informed consent was obtained from all participants in the surveys.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 12 June 2024 / Accepted: 1 April 2025
Published online: 19 April 2025

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