



Systemic barriers and stigma: Healthcare provider perspectives on perinatal and neonatal care in the fentanyl crisis

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ARTICLE INFO

Keywords:

Perinatal opioid use disorder (OUD)
Neonatal abstinence syndrome (NAS)
Fentanyl
Polysubstance use
Healthcare providers
Qualitative

ABSTRACT

Introduction: The rise in fentanyl use during pregnancy has created new challenges in caring for women with opioid use disorders (OUD) and their infants with neonatal abstinence syndrome or neonatal opioid withdrawal syndrome (NAS/NOWS). Despite complexities in treating opioid-affected dyads, little research exists on healthcare workers' perspectives regarding fentanyl's impact on perinatal and neonatal care.

Objectives: Explore dynamic challenges fentanyl has brought to the care of perinatal women with OUD and their infants experiencing NAS/NOWS from healthcare providers' perspectives.

Methods: Fifteen healthcare providers (neonatologists, OBGYNs, nurse practitioners, registered nurses, and pediatricians) from the Pacific Northwest completed an online qualitative survey with a mixture of Likert-type and open-ended questions. Reflexive thematic analysis was used to analyze open-ended responses.

Results: Three themes emerged from provider data that reflect systemic failures in addressing the complex needs of perinatal women and their families and highlight challenges in implementation of evidence-based care: 1) Systemic Barriers to Perinatal and Infant Care, 2) Impact of Increasing Polysubstance Use on Neonates and Mothers, and 3) Stigma and Judgment from Healthcare Providers toward Perinatal Women with Substance Use Disorders.

Conclusions: Themes reflected how broad and interconnected systemic issues contribute to inadequate care and support for mothers and newborns in the context of rising fentanyl and polysubstance use. Themes echoed the root of the problems lies in systemic failures—issues within the healthcare system, societal attitudes, and policy frameworks that collectively fail to meet the complex and evolving needs of families affected by the ever-changing landscape of substance use.

1. Introduction

Mirroring the worsening opioid crisis in the United States, the prevalence of opioid use during pregnancy and the resulting Neonatal Abstinence Syndrome (NAS) and Neonatal Opioid Withdrawal Syndrome (NOWS) continue to present a public health challenge. Between 2010 and 2017, the rate of perinatal opioid use rose 131 % while the rate

of NAS rose 82 %, with significant variation between states (Hirai et al., 2021). The current gold standard of pharmacologic care for opioid use disorder (OUD) consists of methadone and buprenorphine, long-acting opioid agonist collectively called medication for opioid use disorder (MOUD). Despite ample evidence showing that MOUD is safe and effective during pregnancy compared to no MOUD (Boyars & Guille, 2018; Gynecologists, 2012; Suarez et al., 2022), only approximately 13

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<https://doi.org/10.1016/j.josat.2025.209644>

Received 9 November 2024; Received in revised form 6 January 2025; Accepted 17 February 2025

Available online 20 February 2025

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% of pregnant patients with OUD receive MOUD (Martin et al., 2020), and only about half (55 %) of all perinatal patients with OUD enrolled in Medicaid receive MOUD (Roberts et al., 2023). Furthermore, of those who initiate MOUD during pregnancy, anywhere from 34 % to 56 % discontinue treatment during the first 12 months postpartum (Schiff et al., 2021; Wilder et al., 2015). Further, there are significant racial and ethnic variations in both MOUD receipt and duration during pregnancy and the first year postpartum, with White non-Hispanic women being more likely to receive MOUD during pregnancy and postpartum and also for their MOUD to last longer compared to Hispanic and Black non-Hispanic women (Austin et al., 2023; Landis et al., 2024; Roberts et al., 2023; Schiff et al., 2021).

Newborns exposed to opioids in utero can often experience NOWS, a condition resulting from the sudden absence of opioids after birth. Symptoms include tremors, irritability, poor feeding, unstable vital signs, and growth issues. More severe withdrawal with a heightened irritability can also disrupt bonding between the mother and infant (Dinger et al., 2017; Gaalema et al., 2012; Jilani et al., 2022; Jones & Kraft, 2019; Kocherlakota, 2014; LaGasse et al., 2011; Nguyen et al., 2010). NOWS falls under the broader neonatal abstinence syndrome (NAS), which encompasses withdrawal symptoms from various substances but is predominantly linked to opioids. Federal agencies have introduced the term NOWS to specify opioid-related withdrawal within NAS, highlighting its unique impact on neurobehavioral domains like autonomic control, sensory processing, attention control, and motor regulation (Food & Administration, 2016; Jilani et al., 2022; Jones & Kraft, 2019). Several factors can affect the intensity and duration of NAS/NOWS, such as prenatal exposure to multiple substances (poly-substance use), co-occurring mental health disorders, and a breadth of external environmental stressors (Faherty et al., 2018; Holbrook & Kaltenbach, 2012; Jones & Fielder, 2015).

Management of NAS/NOWS typically involves a combination of non-pharmacologic and pharmacologic interventions. Pharmacological interventions include medication such as morphine and methadone (Patrick et al., 2016; Wachman et al., 2018). An example of a primarily non-pharmacological intervention, the "Eat, Sleep, Console" (ESC) model has emerged as the gold standard for treating NAS/NOWS in the last decade (Grossman et al., 2017; Grossman et al., 2018). This non-pharmacologic approach emphasizes undisturbed sleep, clustering care, breastfeeding, skin-to-skin contact, and parental or caregiver consoling. The ESC model is most effective when mothers or close caregivers are engaged in MOUD and are able to continually engage with their infants in ESC care. Continuous caregiver engagement with the ESC model has been shown to reduce infants' hospital length of stay, readmissions, and the need for pharmacological treatment (Devlin et al., 2024; Young et al., 2023).

A surge in use of potent synthetic opiates, such as fentanyl, and polysubstance use, with simultaneous use of opiates and other substances, such as methamphetamine, have further exacerbated this public health crisis (Jalal et al., 2018). In 2019, the rate of co-use of methamphetamine in pregnant persons who use heroin was 51.7 % (Board et al., 2023). Furthermore, between 2017 and 2020, mortality rates related to fentanyl and stimulant use among pregnant and postpartum individuals more than doubled (Bruzelius & Martins, 2022). While research in this area remains sparse, some evidence suggests that co-occurring opioid and methamphetamine use significantly elevates the risk of maternal morbidity and mortality, with rates up to four times higher than in cases of single-substance use (Smid et al., 2024).

Case reports have noted variations in neonatal withdrawal patterns related to prenatal exposure to fentanyl and other substances (Nellhaus et al., 2019). However, these observations come from limited animal research and isolated human cases, necessitating cautious interpretation. The combined use of fentanyl with stimulants like methamphetamine introduces complexities that warrant further exploration, particularly in understanding addiction dynamics and parental vulnerability. Additionally, inadequate access to MOUD and comprehensive

psychosocial support for pregnant patients often hinders their engagement in both prenatal care and ESC care for their newborns. These barriers likely contribute to extended NAS/NOWS symptoms and poorer outcomes for the dyad (Short et al., 2018; Titus-Glover et al., 2021).

These findings align with local clinical observations that exposure to fentanyl and polysubstance during pregnancy is on the rise, and its use is complicating current treatment protocols for both perinatal persons and their infants in the Pacific Northwest (Health, 2023). Despite an 18 % decrease in NAS rates from 2016 to 2020 and slight increase in perinatal opioid use nationally, Washington State specifically has experienced significant increases in both (West et al., 2023).

Caring for NAS/NOWS-affected mother-infant dyads may present unique challenges for healthcare workers. Several qualitative studies explored experiences of healthcare staff caring for dyads affected by NAS: themes included stigmatization by healthcare staff, inconsistencies in care and communication, understaffing, and the emotional toll of providing complex care to this population (Loyal et al., 2019; Shannon et al., 2021; Titus-Glover et al., 2021). However, there is a lack of research on healthcare workers' perspectives regarding the impact of the recent fentanyl and polysubstance use crisis on the care of perinatal individuals and infants with NAS/NOWS.

1.1. Objective

The goal of this qualitative study was to explore the experience of healthcare providers treating perinatal patients with substance use disorders and their infants experiencing NAS or NOWS and understand the dynamic challenges and changes the perinatal Fentanyl and polysubstance crisis has brought to the health care of this population.

2. Methods

The study relied on a non-probability convenience sample of healthcare providers from Washington State recruited from existing partnerships. Healthcare providers completed a confidential online survey that included both categorical and open-ended questions between April and June 2024. Survey questions asked participants about their perspectives and professional experiences related to perinatal and neonatal care in the context of Fentanyl and polysubstance use (see Appendix 1 for complete survey questions). Recruitment of healthcare providers utilized pre-existing partnerships with local providers and four hospitals, employing active recruitment and snowball sampling. Participants received a \$25 Amazon e-gift card after completing the online survey by providing their email address in a separate survey that was not linked with the study survey. There was no way for the research team to link participants' responses with their email addresses.

The inclusion criteria for participants were any 1) nurse or physician that provide health care to perinatal or neonatal populations, including: Neonatologist, pediatrician, OBGYN, nurse practitioner or advanced practice registered nurse, registered nurse, or certified nurse midwife in Washington state; 2) ≥ 18 years of age. The beginning of the online survey described the study and its goals and asked participants for their consent in completing this survey. Clicking "I agree-next" indicated consent. The university's Institutional Review Board deemed this study minimal risk and exempt from review. All data collected was survey data via Qualtrics™.

2.1. Design and data analysis

A Reflexive Thematic Analysis (RTA) consisting of six stages: 1) familiarizing with the dataset, 2) coding the data, 3) generating initial themes, 4) developing and reviewing themes, 5) refining, defining, and naming themes, and 6) writing up the results, (Braun & Clarke, 2021) was used to analyze the open-ended survey questions. This method is rooted in qualitative principles and encourages researchers to reflect on their own identities, positionality, beliefs, and practices in shaping the

research data analysis and findings (Braun & Clarke, 2021).

The research analysis team, which included six of the ten authors, adhered to the structured and systematic process of RTA both individually and collaboratively as a research team. Authors initially read and re-read survey responses to generate preliminary themes that clearly described key ideas conveyed in the open-ended responses. Survey questions, created by researcher EB based on expertise and feedback from co-authors, guided this process. Following individual review, the authors held four meetings to refine the main and sub-categories and further develop the themes. During these meetings, the authors discussed categories alongside supporting quotes, which led to modifications or exclusions. The team analyzed and reported each open-ended survey question separately to ensure authentic representation of providers' experiences. Team consensus identified precise and informative language for each theme and sub-theme and determined data saturation based on the observation that similar information was consistently shared across responses to the various survey questions. During the four meetings, the authors shared thoughts on the survey responses determined themes based on data depth, richness, and complexity. Finally, through active revision and editing, authors articulated themes and sub-themes to align with the original research question and to accurately reflect the healthcare providers' experiences in caring for perinatal and neonatal dyads. The team assigned participant quotes to a single main theme without duplication across categories. To ensure reliability, each researcher initially reviewed the data independently and then compared agreement in subsequent meetings. The team maintained an audit trail throughout the analysis, documenting decisions, and outlining the next steps. See Table 1 for a detailed checklist of the Consolidated criteria for reporting qualitative studies (COREQ).

2.2. Researcher reflexivity

In RTA, personal reflexivity involves becoming aware of and incorporating one's positionality in relation to the qualitative research process. By reflecting on our own backgrounds and experiences both individually and as a group of ten authors, we made a deliberate effort to cultivate self-awareness throughout the analytic process. We continually considered how our beliefs, experiences, backgrounds, and perspectives could influence our engagement with and interpretation of the data. The research team consists of ten women, each bringing diverse backgrounds, lived experiences, and professional expertise to this work. Most of the team identifies as Caucasian, with two members also identifying as Hispanic and two as Jewish. Several members are immigrants or first-generation students. No team members report a personal history of substance use disorder (SUD); however, more than half have a significant family history of SUD, which may foster an empathetic and informed approach to analyzing data. Additionally, several members have worked with families impacted by addiction for over 30 years, bringing valuable clinical and real-world insights into the study. Six authors have educational backgrounds and expertise in either clinical or experimental psychology, two are nurse-scientists, and two are medical students. All authors are familiar with Braun and Clarke's work, different qualitative research methodologies, and mixed methods approaches to data analysis. Additionally, two authors conducted a more detailed review of Braun and Clarke's (Braun & Clarke, 2021) text on RTA. This diverse set of experiences, both personal and professional, fostered critical reflection throughout the research process, with a collective aim of approaching the data sensitively and acknowledging how their positionality may influence interpretations.

3. Results

3.1. Participant characteristics

The study invited 32 healthcare providers from pre-existing partnerships to participate via email with a description of the survey and the

survey link. Fifteen of the 32 healthcare providers, all practicing in Washington State across five hospitals, completed the online qualitative survey consisting of a mixture of categorical and open-ended questions. Eleven participants reported their gender identity as female, and $n = 4$ as male, with $n = 14$ reporting their race as white and $n = 1$ as Asian. Participants consisted of neonatologists ($n = 4$), neonatal nurse practitioners ($n = 4$), one pediatrician, one nursing professional development specialist, one neonatal hospitalist, one clinical assistant nurse manager, one obstetric nurse specialist, one OBGYN, and one obstetric hospitalist. On average, participants had spent $m = 4.0$ years in their current professional role ($SD = 1.60$; range 2–7 years). See Table 2 for details.

3.2. Themes

Three themes arose from provider data that reflect systemic failures in addressing the complex needs of perinatal women and their families and highlight challenges in implementation of evidence-based practices: 1) Systemic Barriers to Perinatal and Infant Care, 2) Impact of Increasing Polysubstance Use on Neonates and Mothers, and 3) Stigma and Judgment from Healthcare Providers toward Perinatal Women with SUDs. See Fig. 1.

The central feature threaded throughout all themes reflects how broad and interconnected systemic issues contribute to inadequate care and support for both mothers and newborns in the context of increasing fentanyl and polysubstance use. Participant feedback indicated that the root of the problems lies in systemic failures—issues within the healthcare system, societal attitudes, and policy frameworks that collectively fail to meet the complex and evolving needs of families affected by the ever-changing landscape of substance use.

1) Theme 1: Systemic Barriers to Perinatal and Infant Care

Participants noted systemic deficiencies and environmental factors that prevent effective perinatal health care and support for substance-affected families.

- 1.1. *Lack of resources, accessibility, and environmental stressors*: Every participant spoke about lack of access to medical and mental health care, transportation issues, inadequate recovery centers, lack of inpatient hospital detox protocols desperately needed, and not enough staff to help with infant patients. These types of barriers can lead to additional stress on healthcare providers and the patients. Participants also highlighted environmental stressors such as lack of living conditions, reliable phones, and stable housing exacerbating the challenges faced by their perinatal patients (quotes 1–6 in Table 3).
- 1.2. *Communication Gaps*: Participants emphasized how fragmented healthcare and lack of coordinated care (e.g., poor coordination and communication between healthcare providers, treatment centers, and social services) can negatively impact their patient populations and, alternatively, smooth communication and patient referral can be an advantage for families in communities where it exists (quotes 1–5 in Table 3).

Other quotes in this theme highlighted the need for improved communication between different providers and facilities. Mothers and babies go through several distinct stages and use different providers and resources at each stage, causing fractioning of care without clear communication (quotes 7–10 in Table 3).

- 1.3. *Importance of holistic support systems*. Participants noted the need for holistic patient support systems. Participants emphasized the need to provide family centered care and comprehensive support, including mental health care, parenting support, and lactation consultation. If these support systems are in place, then current health care practices work well.

Participants expressed a desire to support mothers and babies

Table 1
Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist.

Domain 1: Research team and reflexivity	
<i>Personal characteristics</i>	
Interviewer/Facilitator	Qualitative survey with open ended questions
Credentials	Seven PhDs; one MS; two BS
Occupation	Seven academic faculty; one research supervisor; two medical students
Gender	All ten study team members are females
Experience and training	The research team includes ten members with diverse backgrounds. All members identify as White, and additionally two identify as Hispanic, and two identify as Jewish. Six members have educational backgrounds and expertise in either clinical or experimental psychology, two are nurse-scientists, and two are medical students. Most members have either a significant family history of SUD and/or professional experience with working with families affected by substance use.
<i>Relationship with participants</i>	
Relationship established	Three of the study team members had established collaborations with two of the participants
Participant knowledge of the interviewer	Two participants know the study PI and two other study team members professionally, having collaborated on previous research. All participants were aware of the study intent through information provided via the recruitment email and consent page.
Interviewer characteristics	Recruitment email included study PIs title and affiliation as well as brief information regarding the purpose of the study.
Domain 2: Study design	
<i>Theoretical framework</i>	
Methodological orientation and theory	A Reflexive Thematic Analysis (RTA)
<i>Participant selection</i>	
Sampling	A non-probability convenience sample of healthcare providers from Washington State recruited from existing partnerships.
Method of approach	Email
Sample size	Fifteen
Non-participation	Thirty-two healthcare providers from pre-existing partnerships were contacted via email
<i>Setting</i>	
Setting of data collection	All survey data was collected online via Qualtrics.
Presence of non-participants	N/A
Description of sample	All participants were healthcare providers in Washington state across five hospitals. Eleven identified as female, and four as male, with n = 14 reporting their race as white and n = 1 as Asian. Participants consisted of neonatologists (n = 4), neonatal nurse practitioners (n = 4), one pediatrician, one nursing professional development specialist, one neonatal hospitalist, one clinical assistant nurse manager, one obstetric nurse specialist, one OBGYN, and one obstetric hospitalist, mean age = 48.6 (SD = 10.9). On average, participants had spent m = 4.0 years in their current professional role (SD = 1.60; range 2–7 years)
<i>Data collection</i>	
Interview guide	Survey questions were created by study PI based on expertise and feedback from co-authors
Repeat interviews	N/A
Audio/visual recording	N/A
Field notes	N/A
Duration	Survey took an average of 33 min to complete
Data saturation	Data saturation was discussed and determined by team consensus, based on the observation that similar information was consistently shared across responses to the various survey questions.
Transcripts returned	No
Domain 3: Analysis and findings	
<i>Data analysis</i>	
Number of data coders	Six study team members partook in the data analysis
Description of the coding tree	The coding tree includes three themes and several subthemes that emerged from the data. Theme one with six subthemes, theme two with five subthemes, and theme three with two subthemes.
Derivation of themes	Derived from the data
Software	No software was used to analyze open-ended questions. SPSS was used to summarize descriptive statistics of the sample
Participant checking	No
<i>Reporting</i>	
Quotations presented	Quotes were used to illustrate the themes and numbered to reflect distinct participants. Quotes were only used once to support themes
Data and findings consistent	We observed consistency between the data presented and the findings
Clarity of major themes	Major themes were clearly presented in the findings
Clarity of minor themes	There is a description of diverse cases and discussion of minor themes in the manuscript

Table 2
Participant characteristics and categorical response frequencies.

	Mean (SD)	N (out of 15)
Demographic questions		
Age	48.6 (10.9)	
Gender identity		
Female		11
Male		4
Race		
White		14
Asian		1
Current professional role		
Neonatologist		4
Neonatal Nurse Practitioner		4
Physician		1
Nursing professional development specialist		1
Neonatal hospitalist		1
Clinical assistant nurse manager		1
Obstetric nurse specialist		1
OBGYN		1
OB hospitalist		1
Years in current role	4.0 (1.6)	
Past relevant roles		
Yes		11
No		4
Survey questions		
Has fentanyl use in pregnancy impacted perinatal patient population and your ability to care for this population		
Yes		15
Has perinatal polysubstance use impacted perinatal patient population and your ability to care for this population		
Yes		14
No		1
Do current assessment and treatment standards for NAS meet the care needs of newborns?		
Yes		9
No		1
Unsure		4
Has in-utero polysubstance exposure impacted your newborn patient population and your ability to care for this population with current standards?		
Yes		12
No		3

to achieve a healthy and safe relationship. With a holistic support system, participants have seen mothers be successful but feel there is a need to have systemic structures in place to ensure parental support (quotes 11–15 in Table 3).

1.4. *Need for both patient and provider education:* Participants wrote about wanting to ensure their patients felt empowerment in parenting but also that their perinatal patients were not prepared to parent an infant with NAS or Nows. Participants also emphasized education for providers around stigma and judgmental attitudes when they provide health care for patients with OUD. Participants also noted confusion or lack of sufficient knowledge of best practices important for care of both perinatal and neonatal patients with fentanyl exposure.

Several participants also shared not knowing a protocol or best practice for patients with OUD because of not having time, changes to best practices, simply not having a protocol in place, or not being permitted to provide a service based on location (i.e. postpartum, NICU, or outpatient location) (quotes 16–21 in Table 3).

1.5. *The system imposes obstacles to change.* Providers identified challenges on how wading through systems issues in their work settings hinders implementation or adaptation of timely and evidence-based care strategies. Alternatively, providers noted instances of how supportive administrations and protocols ease the implementation of changes to health care practices, observing that in certain clinical settings, change happens quickly especially when there is administrative support and clear implementation plans (quotes 22–26 in Table 3).

1.6. *Need for Standardized Practices:* Participants called for standardized guidelines and protocols to manage neonatal withdrawal and support mothers, including expansion of inpatient MOUD initiation protocols in the hospital setting, and NAS or Nows management. When answering questions about which changes to hospital specific or general healthcare policies would have the biggest impacts to successful support and care of this perinatal and neonatal population, participants wrote about standard protocols for NAS management and inpatient MOUD initiation programs and peer support (quotes 28–32 in Table 3).

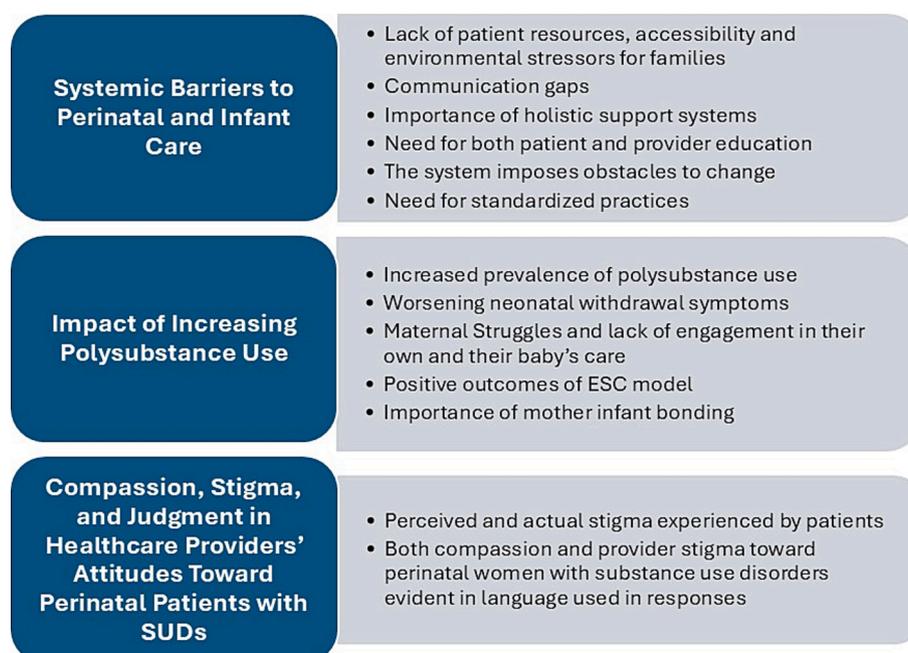


Fig. 1. Schematic of emergent themes and subthemes.

Table 3
Themes, subthemes, and participant quotes.

Themes	Subthemes	Participant quotes
1. Systemic Barriers to Care	Lack of resources, accessibility, and environmental stressors	1. <i>Access to medical care. Access to mental health care. Transportation constraints. Immediate access to rehabilitation centers. Immediate access to rehabilitation and immediate access to mental health support for the mother. Parenting support (transportation, respite support, help ensuring the infant attends all his/her appointments).</i> [participant 2]
		2. <i>Prior authorization for buprenorphine mono-product, transition to outpatient prenatal and substance use services, transportation to appointments for patients, childcare for appointments, partners/father of baby continued use of substances.</i> [participant 14]
		3. <i>I think resources for the mother are challenging, I care for the baby, but mothers verbalize difficulty getting into programs or difficulty getting to the hospital, communication with the mother is sometimes difficult, some mothers don't have a reliable phone number.</i> [participant 5]
		4. <i>More staff to care for these babies. Staff designated to hold the baby. Staff designated to teach and support the mother. Community supports for the mother with transportation, childcare, counselling would all help the baby.</i> [participant 2]
		5. <i>There are not enough recovery programs available. The mom may be supplied medication but getting into a supervised recovery program is difficult.</i> [participant 8]
		6. <i>Increase number of volunteers to help with holding and comforting the babies. - better access to DBM - improved education for the parents about NAS.</i> [participant 10]
	Communication gaps	7. <i>Improved communication between all local programs for inpatient/outpatient treatment of moms and babies; understanding which facilities provide the best resources for which phase of treatment would improve coordination of care. Although we stand to improve our communication and coordination of care, I think having all of these resources available for moms/babies is</i>

Table 3 (continued)

Themes	Subthemes	Participant quotes
		<i>a huge advantage to our community that not all other communities have.</i> [participant 6]
		8. <i>Clear communication between treatment programs and newborn provider team.</i> [participant 5]
		9. <i>Communication between social work and Peds.</i> [participant 15]
		10. <i>Difficult in follow-through with patients. May make a connection with them, but once discharge can't track them for follow-up.</i> [participant 12]
	Importance of holistic support systems	11. <i>Treatment and support for mothers can be empowered to care for their baby. If mothers are established in treatment and have good support systems in place, the current treatment system can work.</i> [participant 5]
		12. <i>The mothers need a comprehensive treatment team, treatment plan and support in and out of the hospital.</i> [participant 13]
		13. <i>In my role caring for the newborn, the key need for the mom's is support, encouragement, and lactation consultation. Increased support for the moms early in pregnancy to ensure mom is on a stable dose of medication throughout pregnancy and that the fetus is stable and growing.</i> [participant 7]
		14. <i>Parental involvement -access to clean maternal breast milk or donor breast milk - inadequate support from social work and cps.</i> [participant 10]
		15. <i>Immediate access to rehabilitation and immediate access to mental health support for the mother. Parenting support (transportation, respite support, help ensuring the infant attends all his/her appointments).</i> [participant 2]
	Need for both patient and provider education	16. <i>Treatment and support for mothers so they can be empowered to care for their baby.</i> [participant 5]
		17. <i>Better prenatal education regarding NOWs.</i> [participant 10]
		18. <i>Education and Training of nurses and providers. Safety parameters for patients and staff.</i> [participant 15]
		19. <i>Mothers express interest in being able to detox in the hospital, but the OBs seem to lack education and/or are not permitted by the hospital to perform this function.</i> [participant 11]

(continued on next page)

Table 3 (continued)

Themes	Subthemes	Participant quotes
		20. The criteria regarding why inpatient is not the first choice is not clearly for the birthers. Well, [participant 8] teaching prior to delivery for mother's so they can prepare (mentally and logistically) for how they will care for their baby (both in the hospital and after discharge). [participant 2]
	The system imposes obstacles to change	22. Slowly. A lot is hindered by the number of "approvals" at the system level. We're trying to develop an orderset for medical stabilization. When there are key people in influence who care and make decisions. Best if they are MDs. [participant 12]
		23. Getting health care systems to adopt new policies has proven to be challenging. Dose limitations on buprenorphine from managed care organizations has also been an unnecessary barrier. [participant 14]
		24. One hospital change occurs fairly easily and staff are accepting. One hospital change occurs more slowly. [participant 8]
		25. Change is created through review, input from stakeholders, and implementation plans. [participant 15]
		26. Support from administration and nursing management has been key in implementing policies and procedures. [participant 14]
		27. I just know the extreme difficulties in coding and billing and trying to get the HCA reimbursement for the 5-day extended newborn stay involved a lot of leg work, building of "HAR" codes and the reimbursement from the state is maybe 1 out of 6 cases we submit. Too many restrictions. Too many rules to follow. It's impractical for real-life hospitals. [participant 12]
	Need for standardized practices	28. Developing a protocol for NAS management. [participant 4]
		29. Education requirements for nursing and physicians and development of process for plan of safe care. [participant 15]
		30. Understanding best practice for obstetrical patients experiencing acute withdrawal. Understanding best practice for neonatal patients experiencing acute withdrawal related to fentanyl, and their ability to

Table 3 (continued)

Themes	Subthemes	Participant quotes
		participate in the ESC model of care. [participant 1]
		31. Inpatient clinics. Emergency detox. Methadone clinics in the hospital. Peer support programs. [participant 13]
		32. in-patient stabilization unit for pregnant people. [participant 12]
2. Impact of Increasing Polysubstance Use on Neonates and Mothers	Prevalence of polysubstance use	33. Fentanyl use is widespread throughout our community and many users who report single substance abuse will concurrently test positive for fentanyl regardless of what substance of choice is reported by the user. [participant 6]
		34. Increased withdrawal cases seen in the NICU. [participant 3]
		35. Seeing more NAS babies with increased severity & requiring high dose medications. [participant 4]
		36. More babies are born with IUDE to fentanyl, withdrawal symptoms are often challenging. [participant 5]
	Neonatal withdrawal symptoms	37. Combined substance abuse leads to increasing challenges treating withdrawal in the newborn. For example, the anecdotal majority of neonates we have treated for NOWS in the past few years have been exposed to both opiates and stimulants (majority fentanyl and methamphetamine). This complicates acute treatment in the NICU and also impacts the long-term developmental outcomes for these babies. [participant 6]
		38. Opioid use has increased pre-term delivery. Parents have been less engaged with their infant due to drug use. This lack of bonding can have lasting effects. [participant 8]
		39. Similar to the fentanyl concerns. The neonate is even harder to care for when he/she has been exposed to polysubstance use. The child has long-standing health concerns such as difficulty consoling, difficulty eating, poor state regulation. [participant 2]
		40. Polysubstance use complicates management of babies. [participant 4]
		41. Difficult to provide ESC due to withdrawal symptoms. [participant 1]
		42. Infant exposed to Methamphetamine in combination with fentanyl seem to have more severe

(continued on next page)

Table 3 (continued)

Themes	Subthemes	Participant quotes
		<i>withdrawal symptoms and for longer duration. [participant 11]</i>
Maternal Struggles and lack of engagement in their own and their baby's care	43.	<i>Withdrawal symptoms in infants and parents is more severe. Mother's withdrawal symptoms make it difficult for them to engage with providers and their infants (who are also suffering withdrawal symptoms). If mothers had the opportunity to detox in the hospital after delivery and had more local treatment options, they would be able to engage more with their infants. [participant 11]</i>
		<i>Opioid use has increased pre-term delivery. Parents have been less engaged with their infant d/t drug use. This lack of bonding can have lasting effects. [participant 8]</i>
		<i>Ongoing maternal fentanyl addiction which limits the mother's ability to care for her child and herself. [participant 2]</i>
Positive outcomes of ESC model	46.	<i>Eat, sleep, and console is working well. Way shorter length of stay compared to when Finnigan was the standard. [participant 3]</i>
		<i>The ESC model that was introduced few years ago has had a big impact on our population. Babies that would stay for weeks on medication because of subjective scoring can now be managed with non-pharmacological interventions by their families. [participant 8]</i>
		<i>The change from decisions about treatment based on the Finnegan scoring system to the newer Eat, Sleep Console approach has resulted in fewer babies being treated with narcotics and shorter duration of narcotic treatment for those who need it. [participant 7]</i>
		<i>Using intermittent morphine and the "eat sleep console" symptom scoring has decreased length of stay and parent satisfaction. [participant 11]</i>
		<i>It works well when mother and baby can stay together in the hospital- I think it would be helpful if that could transition to outpatient support for mother and baby together where the mother continues treatment therapies if needed. [participant 5]</i>
Mother infant bonding	50.	<i>The ability of parents to stay with a withdrawing infant in the NICU. This would promote bonding and</i>

Table 3 (continued)

Themes	Subthemes	Participant quotes
		<i>comfort even if the infant requires medication and/or gavage feeds. [participant 8]</i>
		<i>Place for parents to room-in at the bedside 24/7 in the NICU. This would increase the success of eat-sleep-console and also engage moms more consistently during the NICU stay. The best outcome for both women and their babies is to have Moms engaged and participate in their infants care immediately and consistently throughout the NICU stay; this requires trust in the medical team for both acute care (NICU) and long-term care (outpatient support). [participant 6]</i>
3. Stigma and Judgment	Perceived and actual stigma	<i>I think reducing stigma and increasing support for the substance using population in the NICU from nursing and providers. The NICU is sometimes an unfriendly environment for out moms due to stigma from nursing staff and neonatologists/ARNP's. For instance, the nursing staff may provide cares for infant without waiting for the mother to come over to NICU from the SUPP program or without notifying the mother's that it is time. [participant 14]</i>
		<i>Women that are receiving prenatal care are encouraged toward recovery and placement in programs. This nonjudgmental approach assists those women who are ready for help. Not all of them are. [participant 8]</i>
		<i>Having mothers and babies cared for by the same provider, empowering mother's and helping them to learn coping skills for parenting and keeping clean. These mothers feel judged, sometimes it is real and sometimes it is perceived, this is a real barrier so finding ways to remove barriers would be very impactful. [participant 5]</i>
		<i>Most women whose infants require NICU admission, whether for NOWS or other problem e.g., prematurity, immediately express distrust of the medical community and are suspicious of our involvement and our potential impact on the mom's ability to maintain custody of child. [participant 6]</i>
		<i>Providing non-biased and safe care. Attempting ESC</i>

(continued on next page)

Table 3 (continued)

Themes	Subthemes	Participant quotes
		as much as possible. [participant 1]
	Provider compassion and stigma evident in language used in responses	58. <i>The NICU environment is not the best for the withdrawing baby. I would like more supports for the parents so it is easier for them to participate in the care of their baby.</i> [participant 2]
		59. <i>Helping the parents feel welcome and engaged in caring for the baby. The NICU can be a daunting place and we want the family to feel like they are an important part of the team.</i> [participant 7]
		60. <i>First treat the mothers. If we are successful treating the mother, the newborn will have a better quality of life.</i> [participant 13]
		61. <i>Doubt there is much that can be done Can't force compliance, morality, abstinence, rehab, chastity.</i> [participant 9]
		62. <i>Mother's leave the hospital against medical advice (AMA). Mother's fall asleep at the infant's bedside endangering her child. Poor choices for herself and her child because of fentanyl addiction.</i> [participant 2]
		63. <i>Changes in Washington laws that allow infants to go home with parents that are actively using has been disturbing and places more importance on parent visitation so that interactions can be observed.</i> [participant 8]

2) Theme 2: Impact of Increasing Polysubstance Use on Neonates and Mothers

Healthcare providers observed how increasing polysubstance use exacerbates existing systemic failures, revealing gaps in care and support for both mothers and newborns.

- 2.1 *Prevalence of Polysubstance Use:* Several participants noted that the recent high availability and use of substances like fentanyl and methamphetamine, or multiple substances, within the community is having a deleterious impact on both neonates and their mothers. Providers noted that polysubstance use poses challenges to providing robust health care to both mother and baby, as it confounds withdrawal protocols and treatment plans. Participants referenced the difficulty in caring for polysubstance use with increased severity and higher doses of withdrawal medications (quotes 33–36 in Table 3).
- 2.2 *Neonatal Withdrawal Symptoms:* Participants noted that they are observing more severe and complex withdrawal symptoms due to polysubstance exposure, possibly due to parents' inability to engage in ESC with their infants due to active addiction (quotes 37–42 in Table 3).
- 2.3 *Maternal Struggles and lack of engagement in their own and their baby's care:* Participants wrote about noticing mothers' ongoing

substance use or difficulty coping with withdrawal. Participants reported mothers having difficulty in accessing prenatal care, and challenges in participating in their infants' care due to active addiction, and the negative impact of mom and baby separation (quotes 43–45 in Table 3).

- 2.4 *Positive Outcomes of ESC Model:* Participants spoke of the success of the Eat, Sleep, Console model in reducing pharmacological interventions and promoting family involvement. Participants also noted that ESC has limitations in the current crisis of substance use due to the systemic barriers already addressed in the first theme (quotes 46–49 in Table 3).
- 2.5 *Mother-Infant Bonding:* Participants stressed the importance of fostering mother-infant bonding and providing opportunities for mothers to stay with their infants during treatment and in NICU particularly for effective ESC interventions (quotes 50–52 in Table 3).

3) Theme 3: Compassion, Stigma, and Judgment in Healthcare Providers' Attitudes Toward Perinatal Women with SUDs

This theme reflects how systemic stigma and judgment hinder effective health care and support, showing how these experiences affect both mothers' willingness to seek help and the quality of health care they receive. Alternatively, this theme also reflects how non-judgmental care and attitudes expressed by healthcare providers have a positive impact on patient engagement in healthcare and rapport.

- 3.1. *Perceived and Actual Stigma:* Participants wrote that they observed mothers often feeling judged by healthcare providers, which affects their willingness to seek and continue treatment and impacts the quality of health care provided. Participants noted that patients who are enrolled in prenatal care or in programs that offer non-judgmental, compassionate care, are better supported and better able to navigate the vulnerable postpartum period with an infant experiencing NAS/NOWS. Participants reported noticing instances of judgment and stigma negatively impacting the health care providers give to mothers and babies. ESC has made a positive impact for infants experiencing NAS or NOWS but providing non-judgmental support for mothers is a piece of effective ESC that is not always in place (quotes 53–57 in Table 3).
- 3.2. *Provider compassion and judgment evident in language used in responses:* Provider answers to open ended survey questions reflected a wide range of beliefs and attitudes regarding perinatal women with substance use disorders, from pervasive judgmental language to compassionate attitudes. Most responses reflect compassionate attitudes. Several participants made statements about patients that contained negative or judgmental language. Providers shared feelings of frustration at their inability to enforce behavior such as attending appointments and leaving the hospital against medical advice (quotes 58–63 in Table 3).

4. Discussion

The findings of this qualitative survey study highlight significant systemic barriers that healthcare providers face when treating perinatal patients with OUD and their infants with NAS/NOWS, particularly in the context of the ongoing fentanyl and polysubstance use crisis. The three main themes that emerged—systemic barriers to perinatal and infant health care, the impact of increasing polysubstance use, and compassion, stigma, and judgment from providers toward perinatal patients with SUDs—reveal how healthcare's and social systems' shortcomings exacerbate the challenges faced by both mothers and infants in context of the fentanyl crisis.

4.1. Systemic barriers to care

Participants identified systemic issues, such as lack of resources, communication gaps, limited access to treatment, inconsistent application of perinatal and neonatal treatment protocols, and inadequate support systems as critical elements in shaping the experience and outcomes for perinatal women with OUD and their infants. These findings align with existing literature that has identified similar barriers, as well as healthcare infrastructure challenges, including insufficient access to mental health and addiction services, inadequate recovery centers, standardized education, and transportation difficulties for perinatal populations. Perinatal persons with OUDs report lack of clarity around how to access treatment and resources, wanting less stigma and judgment and more transparency, support, education, and preparation from their healthcare providers during pregnancy and postpartum (Buczowski et al., 2020; Burduli et al., 2022; Goodman et al., 2020; Leiner et al., 2021). Pregnant women with OUD also face substantial barriers in accessing, engaging, and maintaining appropriate OUD care throughout the perinatal period (Patrick et al., 2020; Schiff et al., 2021; Stone, 2015; Wilder et al., 2015). These disparities are further exacerbated for minoritized and marginalized women. Compared to Black and Hispanic women, white non-Hispanic women are more likely to receive both methadone and buprenorphine MOUD during pregnancy and postpartum (Austin et al., 2023). Further, non-Hispanic Black women face both direct and implicit biases in healthcare, and are also more likely to experience environmental risks, such as lack of insurance, and discrimination in healthcare, all of which contribute to higher maternal and infant morbidity and mortality (Marcelin et al., 2019; Prather et al., 2018; Schiff et al., 2022; Sohn, 2017).

Pregnant women with OUD also frequently experience high rates of co-occurring mental health conditions like depression, PTSD, and anxiety (Hand et al., 2017; Holbrook & Kaltenbach, 2012), which can further hinder access to SUD treatment and negatively impact NAS/NOWS symptoms and infant outcomes (Kuo et al., 2013; O'Connor et al., 2018; Stone, 2015). The fragmented healthcare system in the US and the resulting lack of access to comprehensive mental health services and substance use treatment are particular barriers for perinatal individuals with substance use disorders (Clemans-Cope et al., 2019; Joshi et al., 2021; Martin et al., 2020; Short et al., 2018). Provider perspectives in this study emphasized the need for integrated, holistic care models that go beyond treating the medical symptoms of OUD and NAS/NOWS and focus on the broader social and economic needs of perinatal women and families.

Healthcare providers in this study advocated standardized guidelines and protocols to manage neonatal withdrawal and provide more comprehensive social and medical support for mothers, including expanding inpatient MOUD treatment initiation protocols and improving NAS/NOWS management in hospital settings. There is currently available both a standardized clinical and diagnostic definition of NAS and a validated, evidence-based NAS assessment and treatment tool that can be utilized universally in hospital and clinical settings across the US. In 2022, in collaboration with top clinicians, researchers, and policy experts, the US Department of Health and Human Services developed and disseminated a standardized clinical definition for opioid withdrawal in infants to enhance neonatal care (Jilani et al., 2022). This definition is further supported by foundational principles that emphasize ethical applications, focusing on the clinical and supportive care needs of mothers and infants through an evidence-based, compassionate, and equitable approach. In addition, robust evidence shows that the development and application of the ESC tool has contributed to less need for pharmacotherapy and shorter hospital stays for infants exposed to substances in utero (Young et al., 2023). The availability of ESC is a positive feature that providers in this study noted as a contributing factor to improved outcomes among their neonatal patients. However, there is a scarcity of available inpatient stabilization or MOUD initiation units, especially for pregnant persons across US hospitals, and this

service availability is further disparate in small metropolitan or rural areas (Zhu & Wu, 2018), including in Washington state.

The current study suggests that the lack of universal uptake of standardized assessment and treatment protocols for perinatal and neonatal patients in hospital settings despite such availability might reflect implementation and policy-level challenges that need to be addressed to provide the evidence-based care that is available to perinatal and neonatal patients.

4.2. Impact of increasing polysubstance use

The study also demonstrates how polysubstance use, especially the combination of fentanyl and methamphetamine among perinatal individuals, has increased significantly in the US. This is consistent with recent research. In 2019, 51.7 % of pregnant individuals who used heroin also reported methamphetamine use (Board et al., 2023). Though research is limited, some studies suggest that co-occurring opioid and methamphetamine use increases the risk of severe maternal health complications, including a four-fold rise in morbidity and mortality (Bruzelius & Martins, 2022). Preliminary findings suggest that fentanyl may present unique challenges in neonatal care compared to other opioids. Some case studies report withdrawal patterns not commonly observed with NAS and NOWS, though to date, this evidence comes from animal studies and limited human cases, which require cautious interpretation (Alipio, Brockett, et al., 2021; Alipio, Haga, et al., 2021; Wadman et al., 2023; Wouldes & Lester, 2023). Additionally, combined exposure to fentanyl and stimulants may exacerbate addiction-related challenges for parents. Barriers such as limited access to treatment and psychosocial support for pregnant patients further complicate care, potentially contributing to extended withdrawal symptoms and poorer outcomes for both infants and parents.

The severity of neonatal withdrawal symptoms was frequently highlighted by providers in this study, many of whom expressed concern over the inadequacy of current treatment protocols in addressing the complexity of prenatal polysubstance exposure. These challenges further underscore the need for rapidly adaptable and tailored approaches to treating NAS and NOWS in the context of polysubstance use, which has rapidly become more prevalent among pregnant individuals. Moreover, tackling perinatal and NAS/NOWS care necessitates a comprehensive approach that combines continuous research, policy changes, and empathetic care. Healthcare systems and policymakers must shift from punitive measures to supportive policies that enable families impacted by substance use disorders to escape poverty and access full-spectrum social, physical, and behavioral care. Frontline healthcare providers possess critical insights into the needs and challenges they encounter in real-time. However, the pace at which interventions are developed and made available often lags the urgent demands they observe in their daily practice. A coordinated effort between researchers, healthcare professionals, and policymakers is essential to develop, adapt, and implement interventions in a timely manner that are both evidence-driven and compassionate.

4.3. Stigma and judgment

Stigma and judgmental attitudes remain a pervasive issue in the care of perinatal women with OUD, influencing both the quality of care provided and patients' willingness to engage with healthcare systems. Participants in this study noted that perceived and actual judgment from healthcare providers often hindered maternal engagement in treatment and negatively impacted patients' trust in the medical system, and alternatively, identified how nonjudgmental, compassionate care is positively impactful. This aligns with other research showing that stigma and judgment significantly affect the care of perinatal women with OUD, reducing both the quality of care and patient engagement with healthcare systems. Many women avoid or drop out of treatment due to perceived judgment from providers, which undermines trust and

negatively impacts outcomes (Altamirano et al., 2022; Ashford et al., 2018; Salazar et al., 2023; Van Boekel et al., 2013; Committee Opinion No. 711, 2017). Studies show healthcare professionals often hold negative attitudes toward individuals with SUDs, partially due to insufficient training and support, leading to substandard care and poor patient retention. For example, a systematic review examining stigma and negative attitudes among health professionals toward patients with SUD found that healthcare professionals commonly exhibited a pessimistic outlook toward individuals with SUDs (Van Boekel et al., 2013). The negative attitudes of healthcare professionals undermined patients' sense of empowerment, subsequently and notably impacting treatment outcomes (Van Boekel et al., 2013). Numerous other studies have indicated that the perception of discrimination and stigma from healthcare providers significantly influences the likelihood of SUD treatment dropout and reduces retention in SUD treatment (Brener, Hippel, et al., 2010; Brener, Von Hippel, et al., 2010; Ramirez-Cacho et al., 2007). Evidence suggests that health professionals lacking training in interacting with patients with SUDs may intentionally shorten or avoid appointments and exhibit reduced empathy toward these patients. This behavior is shown to diminish the quality of care and lead to lower patient retention (Brener, Von Hippel, et al., 2010; Livingston et al., 2012; Mazel et al., 2023; Van Boekel et al., 2013).

The postpartum period poses heightened return to use and overdose risks, especially in the fentanyl crisis (Bruzelius & Martins, 2022; Davis et al., 2019; Gemmill et al., 2019; Goldman-Mellor & Margerison, 2019; Schiff et al., 2021; Smid & Terplan, 2022; Wilder et al., 2015). Providers play a critical role in improving outcomes by offering trauma-informed, empathetic, and non-judgmental care, but face educational and logistical challenges in delivering evidence-based treatment (Madras et al., 2020; Smid & Terplan, 2022; Tong et al., 2017; Tong et al., 2018; Wakeman et al., 2016). Addressing stigma and judgment from providers requires targeted interventions, including provider education and institutional changes that promote compassionate, non-judgmental care environments.

4.4. Implications for implementation, practice, and policy

Addressing the ever-evolving perinatal opioid crisis requires not only effective interventions but also overcoming challenges in implementing and sustaining these solutions across healthcare and community settings. For example, evidence-based treatments for OUD, such as MOUD (Jones et al., 2012; Reddy et al., 2017), and referral and coordinated care models (Joshi et al., 2021; Mittal & Suzuki, 2017), as well as care for NAS/NOWS, like the ESC approach (Young et al., 2023), are yet to be universally adopted, or equitably accessed. Nor are these models of care sufficiently quickly adapted to match current perinatal and neonatal needs in standard healthcare and community settings (Krans et al., 2019; Krans et al., 2021; Patrick et al., 2020; Roberts et al., 2023). This study underscores the urgent need for system-level reforms to address the systemic, societal, and policy-driven barriers that healthcare providers face in delivering care to substance-affected dyads. Developing, implementing, and sustaining standardized perinatal and neonatal care protocols, expanding access to comprehensive recovery and support services for substance affected families, and promoting education for providers and systems to reduce stigma, are critical steps in improving outcomes for perinatal and neonatal dyads impacted by fentanyl and polysubstance use. Further research should focus on how best to adapt, implement, and sustain current models of care to the evolving opioid and polysubstance use crisis in a timely and equitable manner using implementation science principles.

4.5. Limitations and future directions

While this study provides important insights, it is not without limitations. The small sample size, drawn from a specific geographic region, may limit the generalizability of the findings. Future research should

aim to include a more diverse sample of healthcare providers across different regions to capture a broader range of perspectives. Additionally, longitudinal studies could provide deeper insights into the long-term effects of systemic barriers on maternal and neonatal outcomes. Finally, a systems analysis could be useful in modeling the identified gaps and opportunities to be able to implement some of these suggestions (Crabbe et al., 2023; Pitt et al., 2018).

In conclusion, addressing the fentanyl and polysubstance crisis in perinatal and neonatal care requires not only effective interventions but also concerted efforts to overcome systemic barriers. There are a number of crucial steps toward improving the care and support available to perinatal individuals with OUD and their infants, including enhancing provider education, removing barriers to holistic comprehensive parental support, standardizing care practices, focusing on implementation barriers and facilitators to evidence-based neonatal and perinatal care, as well as integrating compassionate and evidence-based policy solutions.

CRedit authorship contribution statement

Ekaterina Burduli: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Tullamora Landis:** Writing – review & editing, Validation, Methodology, Formal analysis. **Christina Brumley:** Writing – review & editing, Validation, Methodology, Formal analysis, Data curation. **Leslie Kenefick:** Writing – review & editing, Writing – original draft, Formal analysis. **Kaylee Paulsgrove:** Writing – review & editing, Formal analysis. **Hendrée E. Jones:** Writing – review & editing. **Celestina Barbosa-Leiker:** Writing – review & editing. **Olivia Brooks:** Writing – review & editing, Validation, Project administration, Formal analysis, Data curation. **Maria A. Gartstein:** Writing – review & editing, Conceptualization. **Lisa Saldana:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the corresponding author used OpenAI/ChatGPT to refine the manuscript's title. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the published article.

Financial support

This work was supported by funding from the National Institute on Drug Abuse (K01DA051780, PI: Burduli). This work was also supported by NIDA/NIH under award number P50DA054072 (PI: McGovern). These funding sources had no other role other than financial support.

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.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.josat.2025.209644>.

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