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A cross-sectional study of stigma towards opioid users among rural law enforcement and community members in tennessee

Kahler W. Stone[1*], Gabrielle M. Chesak[1], Angela S. Bowman[1], Michael Ayalon[2] and Cynthia Chafin[2]

Abstract

Background The U.S. opioid crisis, resulting in nearly 500,000 deaths from 1999 to 2019, has been exacerbated by persistent stigma, which hinders treatment and recovery efforts. This stigma, whether structural, social, or self-imposed, challenges overdose prevention and recovery. Our study aimed to assess and compare levels of stigma towards opioid users among rural law enforcement officers (LEOs) and community members in Tennessee, highlighting rural community-level attitudes.

Methods Methods involved surveying two groups: LEOs (N=48) and community members (N=393). Utilizing a Likert Scale based on prior research, the survey probed attitudes toward drug use across four stigma domains: dangerousness, blame, social distancing, and fatalism. Analysis employed standardized scoring and ANOVA for evaluating stigma differences by participant characteristics.

Results LEOs (75%) and community members (51.7%) predominantly identify drug users as white, with varied perceptions regarding socioeconomic status and employment. Despite similar perceptions, normalized stigma scores revealed statistical differences between groups across stigma domains. ANOVA found no significant impact of participant type or gender on stigma levels, though race/ethnicity and its interaction with gender suggested potential influences on overall stigma score.

Conclusions Both LEOs and community members in rural Tennessee hold measurable stigma against opioid users, spanning dangerousness, blame, social distancing, and fatalism domains. These insights highlight the need for further research into both professional and public attitudes toward individuals with opioid or other substance use disorders within shared communities. This research should aim to develop specific stigma-reducing interventions that target both providers and community members.

Highlights

Explores rural drug-use stigma, comparing officer and community views.
Urgency for anti-stigma interventions in rural areas with high overdose incidence.
Both officers and the community in rural Tennessee show drug-use stigma across four domains: dangerousness, blame, social distance, and fatalism.

*Correspondence:
Kahler W. Stone
Kahler.Stone@mtsu.edu

Full list of author information is available at the end of the article

Keywords Stigma, Opioids, Community, Law enforcement, People who use drugs, Provider

Background

The opioid crisis has been a significant public health concern in the United States over the last two decades. From 1999 to 2019, nearly 500,000 people have died from an overdose involving an opioid, including prescription opioids, heroin, and synthetic opioids like fentanyl [1]. In 2019 alone, there were 70,630 drug overdose deaths in the United States, with opioids accounting for 49,860 (70.6%) of these deaths [1]. In Tennessee, the overdose death rate in 2022 was 56 per 100,000, reflecting the state's ongoing struggle with opioid-related deaths. Individuals experiencing homelessness, incarceration, and unstable housing are at heightened risk of opioid overdose, underscoring the need for targeted interventions. Additionally, many states, including Tennessee, continue to report thousands of overdose deaths each year, emphasizing the critical need for comprehensive public health strategies [2]. In Tennessee, rural areas continue to face a significant opioid overdose problem. In 2022, these regions, typified by their limited healthcare resources and high rates of synthetic opioid involvement, particularly fentanyl, saw persistently high numbers of overdose deaths. Tennessee comprises 95 counties, with over 50 of them classified as rural, highlighting the scale of the opioid crisis in less urbanized areas. Wilson County, a Health Resource Service Administration Rural to Urban Commuting Area - which indicates a mix of rural and suburban characteristics with healthcare access challenges often seen in rural areas - has a population of 150,000. In 2022, the county reported 68 overdose deaths, 60 of which were attributed to opioids, highlighting the acute challenge this rural community faces in combating the opioid crisis [3]. Despite having an overdose death rate of 45 per 100,000, which is lower than the state average of 56 per 100,000, Wilson County ranked in the top ten for most fatal overdoses by county in Tennessee out of 95 counties. Wilson County exemplifies a significant problem in rural counties.

In response to the opioid crisis, various measures have been implemented, such as increasing access to naloxone, an opioid overdose reversal drug, and expanding access to medication-assisted treatment for opioid use disorder [4]. Despite these efforts, the opioid crisis remains a significant public health challenge, and it is essential to identify and address barriers to accessing treatment and recovery services for individuals with opioid use disorder [5]. Rural areas face distinct challenges in the opioid crisis, including limited access to healthcare facilities and professionals, higher poverty rates, and a smaller, close-knit community structure that can exacerbate stigma and isolation for those with substance use disorders (SUDs) [6, 7].

Stigma, defined as an unfavorable perception of an individual based on characteristics like substance use, can exacerbate health issues and create barriers to care. In the context of opioid use disorder or persons who use drugs, stigma, whether structural (institutional discrimination), social (community-based discrimination), or self-imposed, can impede overdose prevention strategies, recovery efforts, and access to necessary treatment [8–10]. Social stigma encompasses both public stigma (general societal attitudes) and provider-based stigma (bias from those in an occupational role when they encounter a person who uses drugs such as law enforcement officers or healthcare workers). Although distinct, these facets often overlap, as provider-based stigma is shaped by the same societal beliefs that drive public stigma. Four key facets of social stigma emerge - dangerousness, the perception that individuals with substance use disorder pose a threat to others; blame, where these individuals are unfairly held responsible for their substance use disorder; social distance, the desire to avoid or exclude them from social circles physically and metaphorically; and fatalism, the belief that recovery and healing is impossible [9, 11, 12].

Link and Phelan's conceptualization of stigma illustrates how it is socially generated and reproduced fostering status loss and discrimination, resulting in socio-economic disadvantages, reduced community engagement, and negative health outcomes, especially for individuals with opioid use disorder or other substance use disorders [13]. Stigma creates barriers in key life areas, including socioeconomic status, education, housing, mental health, and medical treatment, limiting help-seeking behavior and affecting provider perception [14–17]. However, stigma can be combated via strategies including educational anti-stigma interventions, contact interventions, peer support programs, advocacy efforts, and legislative policy changes aimed at promoting social equity and improving the overall quality of life for affected individuals [18].

The objective of this study was to assess and compare social stigma levels towards people who use drugs among rural law enforcement officers (LEOs) and residents in a rural county in the state of Tennessee, US. We aimed to add to the limited body of literature on rural community-level stigma towards drug use, focusing particularly on potential similarities between LEOs and community members' attitudes. Specifically, this study seeks to answer two key questions: What is the prevalence, among a sample, of social stigma toward people who use

drugs among law enforcement officers and community members? and Are there significant differences in the types of stigma (danger, blame, social distance, and fatalism) between these two groups?

Methods

This study served to examine the prevalence of population-level stigma towards substance use, specifically opioid use, in a rural Tennessee county. Additionally, we aimed to assess the relationship, if any, between provider-level stigma (local LEOs) and population-level stigma within the rural Tennessee county. Survey and data collection procedures were approved by the Human Subjects Institutional Review Board at Middle Tennessee State University under protocol: 22-1072 1q.

Sample

Two pools of participants were recruited for this study, one from law enforcement and the other from the community at large, using convenience sampling. In January of 2022, LEOs in Wilson County, TN, were recruited during a series of peer-led harm reduction training provided by the local drug prevention coalition. "Peer" in this context refers to peers of LEOs, as the training was led by a veteran LEO with over 20 years of experience in a major U.S. city police department. His background in supervising narcotics operations and managing mid- to high-level narcotic cases provided relevant expertise for the attending officers. There were six training opportunities offered for law enforcement officers over the course of two days. Trainings were all virtual and offered in the morning, afternoon and evening to accommodate work shifts and to maximize participation. The training was voluntary and promoted to officers through electronic sharing of promotional fliers that included a quote from the captain of the county sheriff's office. The fliers were shared with three law enforcement agencies: Wilson County Sheriff's Office, Mt. Juliet Police Department, and Lebanon Police Department. In addition, the research team visited each location during lunch hours and provided box lunches to officers along with information about the training opportunities. Each of the 112 LEOs that attended one of the trainings were asked to participate in the study via a pre-training survey. LEOs opted into the training, with food provided as an incentive for participation. The training covered harm reduction strategies broadly, with specific attention given to medication-assisted treatment (MAT) as a key solution.

To recruit community participants, 12 study investigators attended the 2022 Wilson County State Fair from August 18th to August 27th for 26 total hours of surveying. To mitigate potential selection bias, data collection teams were mobilized across four distinct days of the fair: Saturday, August 20th; Sunday, August 21st; Thursday evening, August 25th; and Saturday, August 27th. The approach taken by the survey collectors was to interact with the adult attendees of the fair randomly. Investigators were strategically spread about the fairgrounds to walk and interact with participants in non-overlapping patterns. They offered fair attendees information about the project, extending an invitation for participation. Participants could respond to the survey in one of two ways: by filling out a physical paper form or by utilizing their mobile device to scan a QR code that redirected to an electronic version of the survey hosted on Qualtrics. Any adult fair attendee was eligible to participate, including attendees who resided outside of Wilson County. In total, 413 surveys were at least partially completed, with the majority being paper based (79%). Study investigators did not keep track of interactions or refusals during the recruitment process, therefore a response rate was not reported with this sample. Surveys that were missing entire sections, left open and not finalized, or lacked informed consent authorization were excluded from the final analysis.

Materials and Procedures.

Materials

The questionnaire for this study was adapted from existing literature and prior surveys used by both Kruis and colleagues (2020) and Davis and colleagues (2014) to assess provider-level stigma [11, 12, 19]. The same questionnaire was used for LEOs and the community. Each question relative to the participant's perceptions and beliefs of people who use drugs was measured using a 5-point Likert Scale ranging between "Strongly Agree," "Agree," "Not Sure," "Disagree," or "Strongly Disagree." Four survey items were related to the "danger" domain of stigma, and those items include: "If I knew that a heroin addict lived nearby, I would not allow my children to play alone outside;" "One important thing about people addicted to heroin or opioids is that you cannot tell what they will do from one minute to the next;" "People who use heroin opioids are a threat to the safety of our community;" and "Although some heroin/opioid users may seem all right it is dangerous to forget that they are drug users." One survey item was related to the "blame" domain: "Persons addicted to heroin and/or opioids are usually responsible for their own condition." Six survey items were related to the "social distance" domain, and those items include: "If I knew someone was addicted to heroin or opioids I would try not to socialize with them;" "It would bother me to live near a person who used heroin or opioids;" "It would be difficult for me to develop a friendship with someone who uses heroin or opioids;" "I would not vote for a politician if I knew they had been addicted to heroin or opioids;" "If I could, I would prefer not to work with someone who was a known user of

heroin or opioids;" and "I would be fine letting someone who had a history of opioid and heroin use marry into my family." One survey item was related to the "fatalism" domain, which was "Most people who become addicted to heroin or opioids are addicts for life." We used both person-first and non-person-first language (e.g., 'heroin addict,' 'addicted') in our survey to mirror terminology commonly encountered in public discourse and media. This approach was intended to capture participant attitudes as they naturally perceive individuals who use drugs, thus maintaining authenticity in responses. Although we acknowledge that stigmatizing language could introduce bias, this choice aligns with previous research strategies aimed at eliciting natural responses.

Bias toward people who use drugs may be influenced by racial and ethnic biases [20]. To understand how race, gender, and socio-economic status connect to participant beliefs, participants were asked to report the demographics of their perceived typical drug user. They answered four questions about the typical drug user's social class, gender, race, and employment status: "A typical drug user belongs to the lower class;" "Males are more likely to be a drug user;" and "Most drug users are employed." Participants were also asked to answer what race and/or ethnicity they perceived a typical drug user to be. Finally, participants were asked to indicate how strongly they agreed or disagreed with the statements "Drug abuse is a disease" and "Medical assisted treatment (MAT) programs can be an essential tool in aiding in treatment and preventing overdose deaths." Participant demographics (age, gender, race/ethnicity, and county of residence) were also collected through the survey process.

Data analysis

Items were coded (1=Strongly Agree, 2=Agree, 3=Not Sure, 4=Disagree, 5=Strongly Disagree) and used to measure the domains of stigma (danger, blame, social distance, and fatalism) and participant perceptions through standardized scoring – where we summed up the score of each item, and those within a domain to create the domain. For single-item perceptions and single-item domains (blame and fatalism), no summation was required. Three item statements were reverse coded for consistency (Supplemental Table). These included the statements "Drug abuse is a disease," "Medical assisted treatment (MAT) programs can be an essential tool in aiding in treatment and preventing overdose deaths," and "I would be comfortable if a person who uses drugs married a close friend or family member." Domain variables danger and social distance were formed in SPSS to create a scale score for each domain (i.e., danger=item 1+item 2+item 3+item 4). The internal consistency reliability of the survey items was strong, as indicated by Cronbach's alpha (alpha=0.85). Lower scores on stigma-related items indicate stronger agreement with stigmatizing statements; therefore, the lower the score, the higher the stigma. Domains of stigma were also normalized for comparison across domains and perceptions – where we take the average of scores in each domain in lieu of the total score. ANOVA was used to measure the differences in stigma level by participant characteristics. A Levene's test indicated that homogeneity of variance was met. Data analyses were performed using SPSS (Version 28) and R (R Core Team, 2022) and figures were produced using the package ggplot2 [21].

Results

A total of 441 participants, including 48 LEOs and 393 fair attendees, completed the survey (Table 1). The majority of respondents were women (55.6%), aged 50 or older (30.2%), and white (78.2%). Among LEOs, most were men (77.1%), aged 30–39 (35.4%), and white (91.7%), while fair attendees were predominantly women (59.5%). The majority of participants were from Wilson County (55%) and neighboring counties, with 83% of surveys coming from the region. Additionally, 89% of community participants were from rural-designated counties. There were no significant differences in stigma responses between Wilson County residents and those from outside the county, suggesting that community-level attitudes toward substance use disorder are consistent across regional boundaries. There was a significant difference in gender distribution between the groups, $\chi 2(1, N=441)=<0.001$, $p>.05$. Most LEOs identified typical drug users as white (75.0%) and did not associate drug use with lower socioeconomic status (68.6%). Nearly half of the LEOs did not perceive drug use as a male issue, with 31.3% expressing uncertainty. Regarding the nature of drug abuse, more than half (56.3%) considered it a disease, and a similar proportion viewed MAT programs as essential for treatment and overdose prevention. Community participants shared similar views on race, identifying typical drug users predominantly as white (57.1%), but showed more variability in race and gender perceptions. More participants believed drug abuse to be a disease (68.2%), and a larger portion supported MAT programs (65.1%). A detailed breakdown of the response items by stigma domain is available in the supplementary table.

Reported normalized mean stigma domain scores for community and LEOs

Normalized mean stigma domain scores were calculated for both community participants and LEOs. When all stigma domains are combined, there is a statistically significant difference between community participants (M=31.13, 95% CI [30.3, 32.0]) and LEOs (M=28.25, 95% CI [26.1, 30.4]) (Fig. 1). When domains were separated, there was no significant difference in dangerousness

Table 1 LEO vs. Community participants by demographics and perceptions of drug users

		LEO	Community	Total
		N = 48	N = 393	N = 441
Gender	Man	37 (77.1%)	149 (37.9%)	186 (42.2%)
	Woman	11 (22.9%)	234 (59.5%)	245 (55.6%)
	Other	0 (0%)	3 (0.8%)	3 (0.7%)
	Missing	0 (0%)	7 (1.8%)	7 (1.6%)
Age	18–29	14 (29.2%)	82 (20.9%)	96 (21.8%)
	30–39	17 (35.4%)	104 (26.5%)	121 (27.4%)
	40–49	11 (22.9%)	67 (17.0%)	78 (17.7%)
	50+	6 (12.5%)	127 (32.3%)	133 (30.2%)
	Missing	0 (0%)	13 (3.3%)	13 (2.9%)
Race/Ethnicity	Non-White	4 (8.3%)	75 (19.1%)	79 (17.9%)
	White	44 (91.7%)	301 (76.6%)	345 (78.2%)
	Other	0 (0%)	8 (2.0%)	8 (1.8%)
	Missing	0 (0%)	9 (2.3%)	9 (2.0%)
Race/Ethnicity of Drug Users	Black	2 (4.2%)	42 (10.7%)	44 (10.0%)
	Asian	0 (0%)	4 (1.0%)	4 (0.9%)
	Hispanic/Latinx	0 (0%)	9 (2.3%)	9 (2.0%)
	White	36 (75.0%)	203 (51.7%)	239 (54.2%)
	Not Listed	10 (20.8%)	107 (27.2%)	117 (26.5%)
	Missing	0 (0%)	28 (7.12%)	28 (6.35%)
Low SES Drug Users	Agree	6 (12.5%)	24 (6.1%)	30 (6.8%)
	Disagree	33 (68.6%)	306 (77.9%)	339 (76.9%)
	Not sure	9 (18.8%)	61 (15.5%)	70 (15.9%)
	Missing	0 (0%)	2 (0.5%)	2 (0.5%)
Male Drug Users	Agree	10 (20.8%)	49 (12.5%)	59 (13.4%)
	Disagree	23 (47.9%)	194 (49.4%)	217 (49.2%)
	Not sure	15 (31.3%)	148 (37.7%)	163 (37.0%)
	Missing	0 (0%)	2 (0.5%)	2 (0.5%)
Employed Drug Users	Agree	21 (43.8%)	115 (29.3%)	136 (30.8%)
	Disagree	13 (27.1%)	104 (26.5%)	117 (26.5%)
	Not sure	14 (29.2%)	172 (43.8%)	186 (42.2%)
	Missing	0 (0%)	2 (0.5%)	2 (0.5%)
Drug Abuse is a Disease	Agree	27 (56.3%)	268 (68.2%)	295 (66.9%)
	Disagree	13 (27.1%)	63 (16.0%)	76 (17.2%)
	Not sure	8 (16.7%)	58 (14.8%)	66 (15.0%)
	Missing	0 (0%)	4 (1.0%)	4 (0.9%)
MAT programs are essential tools	Agree	27 (56.3%)	256 (65.1%)	288 (65.3%)
	Disagree	13 (27.1%)	21 (5.3%)	26 (5.9%)
	Not sure	11 (22.9%)	109 (27.7%)	120 (27.2%)
	Missing	0 (0%)	7 (1.8%)	7 (1.6%)

scores between community participants (M = 2.17, 95% CI [2.09, 2.25]) and LEOs (M = 2.03, 95% CI [1.84, 2.22]) (Fig. 2-A). For blame scores, there was no significant difference between community participants (M = 2.81, 95% CI [2.69, 2.93]) and LEOs (M = 2.48, 95% CI [2.15, 2.81]) (Fig. 2-B). There was a significant difference in social distance scores between community participants (M = 2.73, 95% CI [2.65, 2.81]) and LEOs (M = 2.48, 95% CI [2.18, 2.64]) (Fig. 2-C). Finally, there was no significant difference in fatalism scores between community participants (M = 3.31, 95% CI [3.20, 3.42]) and LEOs (M = 3.19, 95% CI [2.83, 3.55]) (Fig. 2-D).

Differences in stigma level by participant characteristics

An analysis of variance (ANOVA) was employed to assess the influence of various participant characteristics on overall stigma score, including participant type (community member or LEO) reported gender, race/ethnicity, county of residence, and an interaction between gender and race/ethnicity. The overall model was statistically significant, $F(14, 388) = 184.75$, $p < .05$, indicating that the set of predictors as a whole did influence overall stigma score.

Upon individually considering the predictors, several findings emerged. Participant type (community member

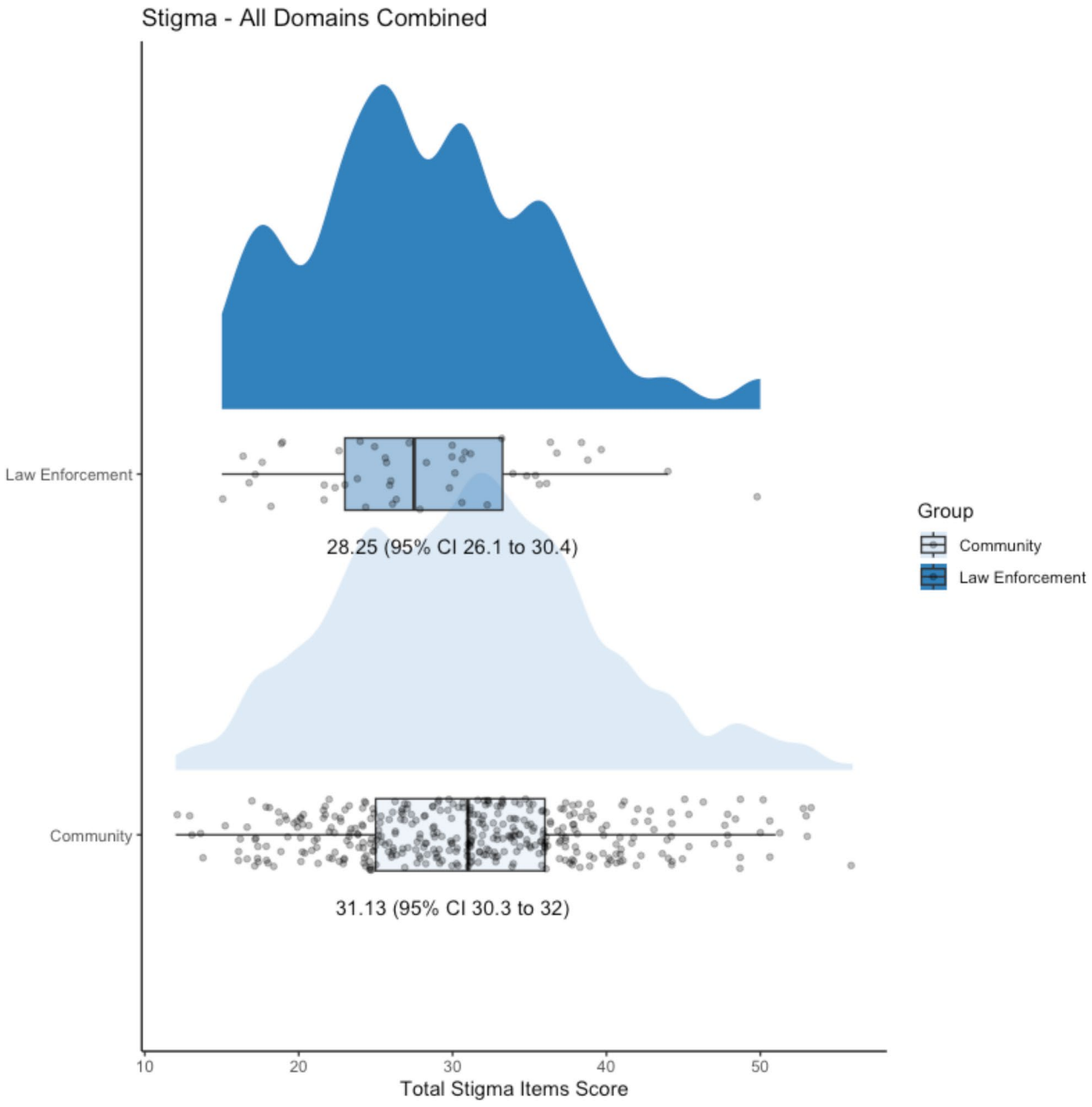

Fig. 1 Mean Scores for All Stigma Domains Combined. Lower scores reflect stronger endorsement of stigmatizing attitudes toward people who use drugs (PWUD); The summed stigma score ranged from 13 to 57 for the community and 15–49 for LEOs

or LEO) did not significantly affect the overall stigma score, F(1, 388)=130.87, p=.214. Similarly, participant gender was not found to significantly influence overall stigma score, F(2, 388)=106.35, p=.286. The effect of participant race/ethnicity on overall stigma score approached statistical significance, F(5, 388)=174.05, p=.07, indicating a potential sample size issue in racial and ethnic minority groups. Participant county of residence did not demonstrate a significant impact on stigma level, F(1, 388)=200.75, p=.124. Finally, the interaction term of participant gender and race/ethnicity was close to reaching statistical significance, F(5, 388)=175.71, p=.067, indicating a potential, though not definitive, interaction effect on stigma level.

Discussion

[11, 22] This study aimed to explore the prevalence of public and provider-based stigma and how they align or differ, with the goal of identifying areas where anti-stigma interventions can be most effectively targeted.

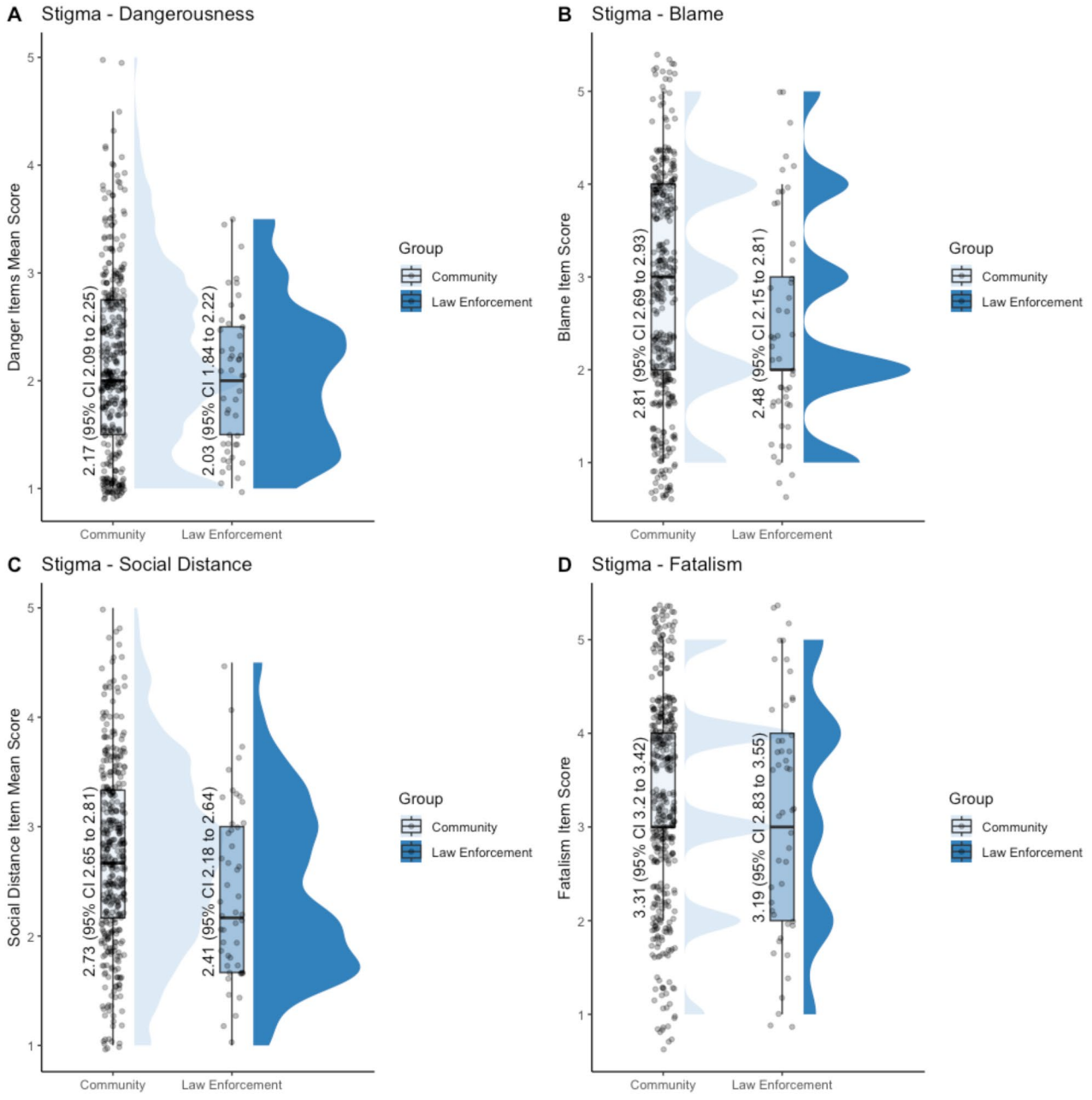

Fig. 2 Normalized Mean Stigma Specific Domains for Community Participants and LEOs. Lower scores reflect stronger endorsement of stigmatizing attitudes toward people who use drugs (PWUD); The average stigma score ranged for community participants from 1 to 5 for each domain; The average stigma score ranged for LEOs from 1 to 3.5 for danger and 1–5 on the remaining domains

It is evident that provider-based stigma, particularly within law enforcement, remains a concerning barrier in addressing the opioid crisis. Our study findings support that stigma in a rural Tennessee county from law enforcement towards people who use drugs is present and similar with the community. Regarding LEOs, research from the Northeastern Region of the U.S. echos that police officers harbor considerable stigma against those with substance use disorders, as manifested in perceptions of dangerousness, blame, and social distance, albeit with a lesser fatalistic outlook [11].

[12] The Theory of Planned Behavior (TPB) offers a useful conceptual framework to understand the factors influencing police officers' intentions to opt for referrals to treatment and harm reduction resources over arrests for minor offenses. TPB posits that behavior is driven by three key factors: attitudes (an individual's positive or negative evaluation of the behavior), subjective norms (perceived social pressures to perform or not perform the

behavior), and perceived behavioral control (an individual's belief in their ability to perform the behavior) [23]. In the context of law enforcement, TPB helps elucidate how officers' personal attitudes toward harm reduction, the influence of departmental or societal norms, and their perceived capacity to direct individuals toward treatment rather than arrest, collectively shape their behavioral intentions. By applying TPB, we can better understand how these factors impact officers' decisions to engage with harm reduction strategies, which may ultimately influence the broader approach to handling substance use disorders within their communities. A multi-state study found similar results, demonstrating that officers' beliefs about treatment referrals, reduced arrests, and increased community trust were associated with non-arrest practices [24]. Stigma towards PWUD was negatively linked to these practices, suggesting public stigma and community attitudes may influence officer behavior [24]. Similarly, a study of Illinois officers found blame and distrust toward PWUD, aligning with our findings in the blame domain [25]. Stigma significantly influences the support for diversion programs, with LEOs who hold stigmatizing views toward individuals with SUD being less likely to refer them to treatment rather than arrest [26]. This reluctance can lead to fewer individuals being diverted, pushing more people into the criminal justice system, which often exacerbates their substance use condition rather than helping them recover. Studies have shown that diversion programs can reduce recidivism and improve health outcomes, but stigma remains a critical barrier that limits their effectiveness [27].

Stigma also has direct consequences for officers' attitudes towards individuals who overdose and their inclination to administer potentially life-saving interventions like naloxone [12]. Such practices are intertwined with broader departmental policies, and understanding how law enforcement policies either perpetuate or reduce stigma is crucial for advancing harm reduction efforts, and ultimately lowering the number of overdose deaths. Another recent examination of Illinois police department deflection programs serves as a clear example of how policies can directly impact these efforts. The study found notable inconsistencies in deflection program policies, including challenges with readability, the use of stigmatizing language, and limitations placed upon deflection opportunities [25]. These findings reveal how the structure and wording of departmental policies may unintentionally reinforce stigma against individuals with substance use disorders, further complicating officers' ability to engage in effective harm reduction practices. The examination highlights the need for clear, accessible, and stigma-free policies to ensure law enforcement plays a constructive role in addressing substance use disorders. These overarching trends emphasize the paramount need to not only understand but also address the undercurrents of stigma to actualize true harm reduction and save lives. Efforts are underway federally to develop and deliver essential treatments to counteract the opioid epidemic, but the pervasive stigma surrounding OUD and other SUDs impedes these initiatives [22]. Notably, the criminal justice system's stance towards SUDs, which is more punitive than health-oriented, contributes to this stigma [11].

Social stigma toward people who use drugs is pervasive and multifaceted, involving both public and provider-based stigma. These forms of stigma are interconnected and reinforce one another, creating significant barriers for people who use drugs in seeking and receiving treatment. When individuals experience stigma from healthcare providers, such as dismissive attitudes or discriminatory care, they may develop anticipatory stigma, avoiding future healthcare interactions out of fear of judgment. This can lead to feelings of hopelessness and lower chances of recovery [28, 29]. Public stigma, which includes societal stereotypes and discrimination, also plays a crucial role. TPB suggests that perceived social pressure influences behaviors, and LEOs, who often serve as a bridge between the public and the health system, are influenced by the public attitudes they observe. Therefore, understanding both public and provider-based stigma is essential in addressing these issues. Addressing both forms of stigma can reduce barriers to care, improve access to treatment, and potentially lead to better outcomes in recovery [24]. Our study documents considerable stigma, particularly in the areas of perceived danger, blame, and social distancing, both among LEOs and the public in rural Tennessee.

Stigma associated with drug use exists in both urban and rural settings, but findings indicate a heightened sense of stigma in rural environments compared to urban ones. One such study used data from the Person to Person (P2P) Health Interview Study, revealing that rural dwellers reported significantly higher levels of stigma towards individuals using opioids nonmedically compared to urban dwellers [30, 31]. They found that individuals from more rural counties were not only more likely to know someone with a substance use disorder but also associated higher levels of stigma with treatment, including fear of becoming a social outcast, losing friends, and facing limited opportunities. Heightened stigma in rural areas can also discourage people who use drugs from seeking treatment or using life-saving medications like naloxone, further exacerbating the overdose crisis in these regions [9, 29, 32]. Another study suggests that stigma might be more pronounced in rural areas due to the reduced anonymity of residents and their limited access to, or resistance against, accurate and comprehensive information about the causes and realities of drug

use [33]. This lack of anonymity and access increases the social pressure to conform to stigmatizing norms, making it even harder for individuals to seek help without fear of judgment from their community [34].

Given the high prevalence of OUD and other SUDs and the reluctance to seek treatment in rural communities [6], our findings underline the need for anti-stigma interventions and stigma reduction campaigns. As our understanding of stigma related to OUD and other SUDs in rural communities evolves, it remains crucial to continually evaluate the attitudes of providers and community members to inform these campaigns. Additionally, our findings suggest that both community members and LEOs in rural areas harbor significant stigma towards individuals with SUDs, which can impede the effectiveness of public health interventions. Our study found that while individual characteristics, including self-reported gender, race/ethnicity, and their interaction, approached significance when examined separately, they are important factors to consider. When we look at all individual characteristics together, they were significantly associated with stigma scores. This underscores the need for tailored interventions that address the specific cultural and societal dynamics of rural communities and specific populations and subgroups [18]. To reduce stigma beyond anti-stigma campaigns, targeted educational interventions and contact strategies can be valuable. Law enforcement training and curricular changes in medical education are examples of direct approaches that improve understanding of OUD [9]. However, the long-term effectiveness of these interventions remains unclear [35]. Indirect strategies, such as media reform and guidance on reducing stigmatizing portrayals, also hold promise in addressing public stigma [36]. More research is needed to determine the sustained impact of these methods in reducing both public and provider-based stigma.

Although this study found a documented level of community stigma across each domain as well as similarities in stigma level between LEOs and community members, there are some limitations. Future research should consider including self-reported drug use, as it may interact with demographics like age or education, offering deeper insights into stigma [37, 38]. Additionally, the findings from rural Tennessee may not be generalizable to other rural areas, where cultural and economic differences can influence stigma (Monnat & Rigg, 2016). This study design was the potential selection bias exhibited during the community participant recruitment process. Convenience sampling was done to recruit community participants, which could result in an unbalanced selection of the population. Future researchers should opt for a random sampling technique to avoid this potential discrepancy. The difference in the number of participants for LEOs and community members was another limitation. Only 48 LEOs were a part of this study compared to 393 community members. With this, statistical power was not maximized, and variation in group sizes could potentially skew the results, most notably in the breakdown classifications of race. Future researchers should consider this in the recruitment process and aim to have closer group sizes. Another limitation was that LEOs self-selected into the harm reduction training, which may have introduced selection bias. Officers who opted into the training may have had more favorable attitudes toward harm reduction strategies or greater openness to learning about substance use interventions compared to those who did not attend. This study was also limited by the potential for social desirability bias, where participants may have provided responses they perceived as more acceptable rather than their true beliefs. Additionally, the collection of limited demographic characteristics (age, race, and gender) restricts a deeper exploration of how other factors may influence stigma. Furthermore, examining only two groups—LEOs and community members—limits the generalizability of the findings. Future research should explore stigma across other sectors, such as healthcare providers, emergency responders, and additional community and social support groups.

Despite these limitations, the current study contributes to a strong foundation for future studies investigating social level stigma towards people who use drugs. To our knowledge, this is the first study to assess similarities in stigma level towards individuals with OUD or other SUDs among rural-based LEOs and community members from the same population. Our research suggests that both LEOs and community members in a rural Tennessee county have a documented level of stigma measured by the dangerousness, blame, social distance, and fatalism domains as well as similar beliefs/perceptions in relation to drug abuse and the opioid epidemic. With this, our work provides support for future research intended to investigate provider-level and community-level stigma towards people who use drugs. Notably, our study met its objectives of estimating the prevalence of stigma towards individuals with OUD and other SUDs within rural communities and illustrating the parallels in stigma levels between LEOs and community members.

In conclusion, our study highlights the pervasive stigma associated with OUD in rural Tennessee, suggesting an urgent need for both continued research and the immediate implementation of strategies proven to reduce stigma and enhance treatment outcomes. Future policies should focus on community-specific barriers and facilitators to care, promoting a more inclusive and effective health response.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12954-024-01114-7.

Supplementary Material 1

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Author contributions
K.W.S. was involved in drafting the manuscript, conducting the initial analysis, conceptualizing the study, collecting data, and reviewing and editing the manuscript. G.M.C. was the lead author, drafted the manuscript, and conducted the initial analysis. C.C. and M.A. reviewed and edited the manuscript, helped conceptualize the study, and collected data. A.S.B. provided statistical assistance and reviewed and edited the manuscript. All authors reviewed the final manuscript.

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Data availability
No datasets were generated or analysed during the current study.

Declarations

Competing interests
The authors declare no competing interests.

Author details
[1]Health and Human Performance, Middle Tennessee State University, 1301 E. Main Street Box 96, Murfreesboro, TN 37132, USA
[2]Center for Health and Human Services, Middle Tennessee State University, 1114 East Lytle Street Box 99, Murfreesboro, TN 37132, USA

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