Assessing Stigma Towards Substance Use in Pregnancy: A Randomized Study Testing the Impact of Stigmatizing Language and Type of Opioid Use on Attitudes Toward Mothers With Opioid Use Disorder

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Objective: To examine the extent to which colloquial phrases used to describe opioid-exposed mother-infant dyads affects attitudes toward mothers with opioid use disorder (OUD) to assess the role stigmatizing language may have on the care of mothers with OUD.
Methods: We employed a randomized, cross-sectional, case vignette of an opioid-exposed dyad, varying on 2 factors: (1) language to describe newborn (''substance-exposed newborn'' vs ''addicted baby'') and (2) type of maternal opioid use (injection heroin vs nonmedical use of prescription opioids). Participants were recruited using an online survey platform. Substance-related stigma, punitive-blaming, and supportive scales were constructed to assess attitudes. Two-way analyses of variance were conducted to determine mean scale differences by vignette. Posthoc analyses assessed individual item-level differences.
Results: Among 1227 respondents, we found a small statistical difference between language and opioid type factors for the supportive scale only (F = 4.31, η^2 = .004, P = 0.038), with greater agreement with supportive statements when describing injection heroin use, compared to prescription opioid use, for the ''substance-exposed newborn'' vignette only. In posthoc analyses, greater than 85% of respondents agreed the mother was ''responsible for her opioid use,'' her ''addiction was caused by poor choices,'' and that she ''put her baby in danger.''
Conclusions: We found no major differences in attitudes regardless of vignette received. Overall, respondents supported opportunities for maternal recovery yet blamed women, describing mothers as culpable for causing harm to their newborn, showcasing internally conflicting views. These views could contribute to ongoing stigma and avoidance of care among pregnant women with OUD.

Key Words: attitudes, opioid use disorder, parenting, perinatal, pregnancy, stigma, substance exposed newborn

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Addiction medicine and public health experts have long urged for use of person-centered, medically accurate terminology to describe people with substance use disorders, including infants born to women with opioid use disorder.[1,2] Person-centered language prioritizes describing the individual first rather than a specific disease process, for example, ''a woman with an opioid use disorder,'' rather than an ''addicted woman.''[3] Additionally, describing a newborn with in-utero opioid exposure as born ''addicted to opioids'' is not medically accurate, as addiction involves continued use of a substance despite knowledge of harmful consequences; rather infants experience physiologic dependence after delivery.[4,5] Despite this, over the last decade, thousands of news media

citations have been published using the phrase "drug-addicted baby" or "baby born addicted" to describe newborns exposed in-utero to opioids.[6,7] News media coverage using medically inaccurate language can influence public opinion and increase public fear and perception of the severity of an issue.[8]

A growing body of literature suggests that stigma is perpetuated by negative language which introduces an implicit cognitive bias.[1,9] For example, using non-person-centered language (eg, describing a person with a substance use disorder (SUD) as a "drug addict" or "substance abuser") is associated with greater perceptions of dangerousness, belief in personal culpability for addiction, and greater support for punitive measures compared with use of person-centered language such as a "person with a SUD."[10–12] Greater stigma, or negative views held toward individuals with SUD, has been identified as a barrier to substance use treatment.[13–16]

Pregnant women with SUD commonly report fear of a punitive response by providers as a barrier to treatment.[17,18] Use of medically inaccurate language such as "drug-addicted baby" may increase perceptions of blame toward the mother, increasing maternal shame, and impeding mothers' disclosure of their OUD. Such increased shame may also inhibit treatment-seeking that could ultimately help both the mother and their child.[19,20] Despite strong opinion about the use of inaccurate and potentially stigmatizing language describing children newborn to mothers with OUD, little is known from a systematic, empirical standpoint about the extent to which use of different terminology actually influences attitudes toward mothers with an OUD.[21]

To this end, the current study was designed to inform this discussion about the impact of medically inaccurate language by employing a randomized design. Our principal aim was to examine how colloquial phrases commonly used by the news media affect the endorsement of substance-related stigma, punitive-blaming, or supportive statements. Using the same vignette but substituting different terms to describe an opioid-exposed newborn allowed us to investigate different attitudes that may be uniquely elicited by exposure to each term. Secondarily, given that prescription opioids are socially and medically sanctioned and allied with a positive medical intent (even if used for nonmedical purposes) whereas heroin use is considered more clearly socially deviant and thus marginalized, we investigated whether the type of opioid use (ie, injection heroin use vs nonmedical use of prescription opioids) impacts stigmatizing beliefs.

We hypothesized that stigmatizing language (ie, "addicted baby") and injection heroin use would be associated with more agreement with statements that support substance-related stigma and align with a punitive-blaming approach to the mother's OUD when compared to medically accurate language and nonmedical use of prescription opioids.

METHODS

Recruitment, Survey Platform

We used Amazon's Mechanical Turk (MTurk), an online, crowdsourced marketplace, to recruit individuals ≥18 years old living in the United States. Compared to samples from in-person and online study recruitment, MTurk participants have been found to be more representative of the United States population, more attentive, and responses have not significantly differed from those acquired through in-person or other online recruitment.[22,23] Potential participants read the description of our study on MTurk and, if they were interested in participating, were directed to our survey hosted on Qualtrics, a secure survey platform.[24]

The "evenly present elements" tool was utilized within Qualtrics randomizer to ensure an even number of participants were randomized to receive each of the 4 vignettes.[24] Participants first reviewed the vignette, then answered 2 comprehension questions to ensure participants had read the vignette and had a basic understanding of what opioids are. Next, participants responded to the survey questions and demographic data was collected. The Partners Healthcare Internal Review Board reviewed this study and determined it exempt from full review. All surveys were completed in August of 2018.

Vignettes

The vignette first describes a newborn with symptoms of opioid withdrawal. Her mother has received medication used to treat OUD throughout her pregnancy. The description specified that the mother did not continue nonprescribed opioid use during their pregnancy. The vignettes differed on 2 factors each with 2 levels (ie, 2×2): Language Factor–language used to describe the newborn (stigmatizing description: "addicted baby" vs medically accurate description: "substance-exposed newborn"); and opioid type factor–type of opioid use (injection heroin or nonmedical use of prescription opioids). Vignettes were modeled off prior research by Kelly and colleagues depicting a character described as a "substance abuser" or a person with "a SUD."[10] Figure 1 shows the vignette text and the different text options used for each factor. The vignette and survey questions (described in the next section) were beta-tested for face validity, revised based on feedback from 10 individuals with a minimum of bachelor's level education, and edited by a patient educator for comprehension at an eighth grade reading level.

Surveys

Substance-related Stigma Items

Following the vignette, participants rated their agreement using a 6-point Likert scale ("strongly disagree" to "strongly agree") with 4 statements about perceived stigma towards addiction. Questions focused on the participants' own lives and how they would interact with individuals who have a SUD.[25]

Punitive-blaming and Supportive Items

Statements were adapted from published and validated survey tools used to assess attitudes toward people with SUDs.[10,25–29] The eight punitive-blaming statements focused on maternal culpability, maternal abilities to parent, and whether the mother should receive punishment. The eight supportive statements focused on treatment resources and recovery. The full list of questions is included in Table 4.

Laura Smith is a 3-day old baby **born addicted to opioids / exposed in the womb to opioids**. She is in the hospital newborn unit and being given medicine to help with opioid withdrawal symptoms. Her mother, Ms. Smith, has a history of **injection heroin use/prescription opioid misuse**, but she stopped using drugs when she got pregnant. When she was pregnant, she also got medication treatment for her opioid use disorder. Child welfare services are now deciding if she can keep custody of this **addicted baby / substance exposed newborn**.

Examples of opioids can include prescription pain medications or heroin. An opioid use disorder occurs when opioid use becomes a problem and impacts daily life activities.

FIGURE 1. Vignette.

Demographics

Information regarding age, gender, marital status, education level, income, and employment was collected. Participants were asked 2 questions about experiences with addiction themselves or among their close friends and family. The full list of items is included in Table 1.

Analysis

The frequencies of each demographic characteristic were calculated for participants receiving each of the 4 vignettes and compared using Pearson chi-square tests to evaluate randomization. For each scale, participant responses were averaged to produce a single mean scale score. Correlation between the 3 scales was assessed using a Pearson product-moment correlation. Scores were compared using two-way analyses of variance (ANOVA) to assess the effect of each factor and their potential interaction. Internal consistency of each scale was assessed using Cronbach's alpha.[30] To address the potential impact of skewing in the scale distributions, we also assessed the data with the punitive-blaming scale scores inverse log transformed and the supportive scale scores log transformed. Because there was no difference in the

TABLE 1. Survey Participant Characteristics, N = 1227

| | | "Addicted Baby" | | "Substance Exposed" | | |
| | | IV Heroin | Prescription Opioids | IV Heroin | Prescription Opioids | |
Variable	Total Sample N = 1227 (%)	n = 298 (%)	n = 308 (%)	n = 309 (%)	n = 312 (%)	P
Age						0.170
18−24	121 (9.9)	25 (8.4)	33 (10.7)	35 (11.3)	28 (9.0)	
25−34	554 (45.2)	135 (45.3)	151 (49.2)	131 (42.4)	137 (43.9)	
35−44	279 (22.8)	57 (19.1)	66 (21.5)	80 (25.9)	76 (24.4)	
45+	272 (22.2)	81 (27.2)	57 (18.6)	63 (20.4)	71 (22.8)	
Missing	1		1			
Gender						0.764
Men	601 (49.0)	150 (50.3)	142 (46.1)	152 (49.2)	157 (50.3)	
Women	624 (50.9)	148 (49.7)	165 (53.6)	156 (50.5)	155 (49.7)	
Other	2 (.2)	0 (.0)	1 (.3)	1 (.3)	0 (.0)	
Marital Status						0.297
Married or in a domestic partnership	624 (50.9)	160 (53.7)	149 (48.4)	148 (47.9)	167 (53.5)	
Single, separated, divorced, or widowed	603 (49.1)	138 (46.3)	159 (51.6)	161 (52.1)	145 (46.5)	
Education						0.521
High school graduate or less	141 (11.5)	36 (12.1)	43 (14.0)	34 (11.0)	28 (9.0)	
College graduate, some college, associates	859 (70.0)	211 (70.8)	207 (67.2)	221 (71.5)	220 (70.5)	
Some graduate school, graduate degree	227 (18.5)	51 (17.1)	58 (18.8)	54 (17.5)	64 (20.5)	
Income						0.689
Less than 29,999	408 (33.3)	100 (33.6)	104 (33.8)	103 (33.3)	101 (32.4)	
30,000−59,999	462 (37.7)	109 (36.6)	125 (40.6)	118 (38.2)	110 (35.3)	
More than 60,000	357 (29.1)	89 (29.9)	79 (25.6)	88 (28.5)	101 (32.4)	
Employment Status						0.838
Not working or prefer not to answer	170 (13.9)	41 (13.8)	39 (12.7)	47 (15.2)	43 (13.8)	
Working	1057 (86.1)	257 (86.2)	269 (87.3)	262 (84.8)	269 (86.2)	
Personal Experience with Drug Problem (Yes)	170 (13.9)	44 (14.8)	40 (13.0)	33 (10.7)	53 (17.0)	0.134
Family or Friend Experience with a Drug Problem (Yes)	587 (47.8)	142 (47.7)	141 (45.8)	145 (46.9)	159 (51.0)	0.604

P value for chi-square tests.

TABLE 2. Two-way ANOVA Results Comparing Stigma Scale Means by Factor (N = 1227)

Scales	F^*	Partial η^2	P
Substance-related stigma			
Language Factor	0.01	<0.001	0.942
Opioid type Factor	1.52	0.001	0.218
Language Factor x Opioid type Factor	1.79	0.001	0.181
Punitive-blaming			
Language Factor	2.88	0.002	0.090
Opioid type Factor	1.01	0.001	0.315
Language Factor x Opioid type Factor	0.13	<.001	0.714
Supportive			
Language Factor	0.28	<0.001	0.600
Opioid type Factor	1.42	0.001	0.233
Language Factor x Opioid type Factor	4.31	0.004	0.038

*Degrees of Freedom = 1, 1223;
Language Factor - language used to describe the newborn (Addicted Baby or Substance Exposed Infant); Opioid type Factor - type of opioid use (IV Heroin or Prescription Opioid).

pattern of results, the nontransformed results are presented to ease interpretability. Finally, in addition to potential differences in the mean scale scores, we examined potential differences in responses to individual questions in posthoc analysis. To extend the work from Kelly and colleagues[31] who dichotomized their Likert scale responses, we characterized each statement response as either in agreement or disagreement and effects of the 2 factors and their potential interaction were assessed using factorial logistic regression. SAS Version 9.4 was used for statistical analyses.[32]

RESULTS

Cohort Characteristics

There were 1527 participants who participated in the survey. Participants who missed either of the 2 comprehension questions, did not complete the survey or completed the survey in under 100 seconds were excluded from the analysis (n = 300). The final analytic sample included 1227 participants (Supplemental Figure 1, http://links.lww.com/JAM/A272).

Overall, 45.2% of the participants were between 25 and 34 years of age, 70.2% had some college education, 86.2% reported some type of employment, 33% made less than $30,000, and there was an even breakdown of participants by gender and marital status. In our sample, 13.9% reported

having ever had an alcohol or drug problem and 47.8% reported family or close friends have had one. There were no significant differences between participants across vignette received, indicating that the randomization across demographic variables was adequate (Table 1).

Survey Properties

The substance-related stigma scale had adequate reliability ($\alpha = .715$). The punitive-blaming ($\alpha = .828$) and supportive ($\alpha = .835$) scales had good reliability. The three scale scores were very weakly correlated using Pearson correlation (stigma/punitive R = 0.036, stigma/supportive R = 0.048, supportive/punitive R = −0.044).

Differences Across Scales

Two-way ANOVAs were conducted to examine the independent effect of each factor on scale means. There was a statistically significant interaction between the Language Factor and Opioid type Factor for the supportive scale only, $P = .038$, $\eta^2 = .004$. Comparing across those receiving the "addicted baby" vignette, there was no difference when participants received either type of opioid use (*Estimated Marginal Mean (EMM)* = 4.8, *SE* = .04 for both heroin and prescription opioids). Among those receiving the "substance exposed" vignette, participants who also received the prescription opioid as opioid type (*EMM* = 4.7, *SE* = .04) endorsed less agreement with supportive statements compared to participants who received injection heroin as opioid type (*EMM* = 4.9, *SE* = .04). There were no other significant interactions when comparing the substance-related stigma scale and punitive-blaming scale (Table 2).

Post-Hoc Exploratory Item-level Analysis

Overall, less than 30% of participants agreed that most people would hire someone who had been treated for their SUD to take care of their children. Just over half agreed that most people would be willing to date someone who has been treated for SUD. More than 85% of the respondents were in agreement that Ms Smith was "responsible for her opioid use," that her "addiction is caused by poor choices," that "child welfare services should require her to attend drug treatment," that she "should be required to provide a urine sample," and that she has "put her baby in danger." These responses were in contrast to over 80% of respondents agreeing that Ms Smith has "an illness," that she "can recover

TABLE 3. Estimated Marginal Mean Scores for Survey Scales from Two-Way ANOVA (N = 1,227)

		Substance-related Stigma	Punitive-Blaming	Supportive
		Estimated Marginal Means (SE)		
Overall		3.8 (.02)	4.3 (.02)	4.8 (.02)
Language Factor	Opioid type Factor			
"Addicted Baby"	IV Heroin	3.8 (.05)	4.4 (.05)	4.8 (.04)
	Prescription Opioids	3.8 (.05)	4.3 (.05)	4.8 (.04)
"Substance Exposed"	IV Heroin	3.9 (.05)	4.3 (.05)	4.9 (.04)
	Prescription Opioids	3.8 (.05)	4.2 (.05)	4.7 (.04)

n.b. *Scales are from 1 (="strongly disagree") to 6 (="strongly agree") on a Likert scale'; ANOVA, analysis of variance; SE, standard error; Language Factor - language used to describe the newborn (Addicted Baby or Substance Exposed Infant); Opioid type Factor - type of opioid use (IV Heroin or Prescription Opioid).

TABLE 4. Proportion of Any Agreement Across Both Factors (*Posthoc Analysis*) (N=1227)

		"Addicted Baby"		"Substance Exposed"	
	Total	**IV Heroin**	**Prescription Opioids**	**IV Heroin**	**Prescription Opioids**
	N = 1227 (%)	**n = 298 (%)**	**n = 308 (%)**	**n = 309 (%)**	**n = 312 (%)**
Variable	**N (%)**	**% (95% CI)**	**% (95% CI)**	**% (95% CI)**	**% (95% CI)**
Substance-related Stigma Scale ($\alpha = 0.715$)					
Most people would be willing to date someone who has been treated for substance use	579 (47.2)	47.3 (41.7–53.0)	49.7 (44.1–55.2)	43.0 (37.6–48.6)	48.7 (43.2–54.3)
Most people would willingly accept someone who has been treated for substance use as a close friend	778 (63.0)	66.8 (61.2–71.9)	63.3 (57.8–68.5)	58.9 (53.3–64.3)	64.7 (59.3–69.9)
Most people would hire someone who has been treated for substance use to take care of their children	346 (28.2)	26.9 (22.1––32.2)	27.2 (22.6–32.5)	26.9 (22.2–32.1)	31.7 (26.8–37.1)
Most people think less of a person who has been in treatment for substance use	1005 (81.9)	81.8 (77.1–85.9)	84.4 (79.9––88.1)	82.5 (77.9–86.4)	78.9 (74.0–83.0)
Punitive-Blaming Scale ($\alpha = 0.828$)					
Ms Smith has acted selfishly in becoming pregnant given her opioid use disorder.	773 (63.0)	64.4 (58.8–69.7)	64.9 (59.4–70.1)	62.1 (56.6–67.4)	60.6 (55.1–65.9)
Ms Smith is responsible for her opioid use.	1096 (89.3)	90.6 (86.7–93.4)	86.4 (82.1–89.8)	91.3 (87.6–93.9)	89.1 (85.1–92.1)
Ms Smith's addiction is caused by poor choices she has made.	1043 (85.0)	85.6 (81.1–89.1)	84.1 (79.6–87.8)	89.0 (85.0–92.0)	81.4 (76.7–85.4)
Ms Smith should be required to provide a urine sample to evaluate for current drug use.	1077 (87.8)	90.3 (86.3–93.2)	87.0 (82.8–90.3)	88.7 (84.6–91.8)	85.3 (80.9–88.8)
Ms Smith should be punished for her history of opioid use.	448 (36.5)	37.6 (32.3–43.2)	38.3 (33.1–43.9)	32.0 (27.1–37.5)	38.1 (32.9–43.7)
Child protective services should require Ms Smith to attend a drug treatment program.	1099 (89.6)	92.3 (88.7–94.8)	87.3 (83.1–90.6)	91.2 (87.6–93.9)	87.5 (83.4–90.7)
Ms Smith has put her baby in danger.	1078 (87.9)	88.6 (84.5–91.7)	87.7 (83.5–90.9)	88.7 (84.6–91.8)	86.5 (82.3–89.9)
Ms Smith should not be allowed to keep custody of her baby.	406 (33.1)	38.9 (33.6–44.6)	34.1 (29.0–39.4)	26.2 (21.6–31.4)	33.3 (28.3–38.8)
Supportive Scale ($\alpha = 0.835$)					
Ms Smith has an illness.	994 (81.0)	80.9 (76.0–85.0)	81.2 (76.4–85.2)	83.5 (78.9–87.2)	78.5 (73.6–82.7)
Ms Smith could benefit from seeing a therapist.	1129 (92.0)	91.3 (87.5–94.0)	90.9 (87.2–93.7)	96.4 (93.7–98.0)	89.4 (85.5–92.4)
Ms Smith can recover from her addiction.	1135 (92.5)	91.3 (87.5–94.0)	94.5 (91.3–96.5)	93.2 (89.8–95.5)	91.0 (87.3–93.7)
Ms Smith should be offered parenting classes to help care for her baby.	1117 (91.0)	91.6 (87.9–94.3)	90.6 (86.8–93.4)	91.9 (88.3–94.5)	90.1 (86.2–92.9)
Ms Smith should receive support getting treatment while her newborn is being monitored for withdrawal symptoms.	1147 (93.5)	94.0 (90.6–96.2)	93.8 (90.5–96.0)	95.8 (92.9–97.5)	90.4 (86.6–93.2)
Ms Smith should get help continuing her medication treatment after giving birth.	1138 (92.7)	93.0 (89.4–95.4)	91.9 (88.3–94.5)	95.5 (92.5–97.3)	90.7 (86.9–93.5)
Ms Smith can be a good mother even with her history of drug use.	1023 (83.4)	83.9 (79.3–87.6)	82.1 (77.5–86.0)	86.1 (81.8–89.5)	81.4 (76.7–85.4)
Mothers like Ms. Smith can successfully raise children.	1006 (82.0)	82.2 (77.5–86.2)	80.5 (75.7–84.6)	83.5 (78.9–87.2)	81.7 (77.1–85.6)

α = Cronbach alpha for each scale.

from her addiction," she "can be a good mother even with her history of drug use," and can "successfully raise children" (Table 4).

Agreement with the statement that "Ms Smith should not be allowed to keep custody of her baby" was low across vignettes (33.1% in agreement). For this question, there was a statistically significant interaction between the Language Factor and Opioid type Factor, Wald $\chi^2 = 5.07$, $P = 0.024$. (Supplemental Table, http://links.lww.com/JAM/A272). Looking at those who received the injection heroin as type of opioid use, agreement that the mother should lose custody was greatest in the "addicted baby" (38.9%) compared to "substance exposed newborn" and injection heroin vignette (26.2%) as shown in Table 4.

For type of OUD, individuals who received the vignette where the mother had a history of injection heroin use were more likely to agree with the following statements: Ms Smith's addiction was caused by poor choices she has made, she would benefit from seeing a therapist, she should receive support getting treatment during newborn hospitalization, and that she should get help continuing her medication treatment after delivery ($P < 0.05$). (Data shown in Supplemental Table, http://links.lww.com/JAM/A272). There was a statistically significant interaction between the Language Factor and Opioid type Factor for the question of whether Ms Smith would benefit from seeing a therapist, Wald $\chi^2 = 5.98$, $P = 0.015$. Among those receiving the substance-exposed newborn vignette, 96.4% of those receiving the injection heroin use language were in agreement that a therapist would be beneficial compared with 89.4% of those receiving the prescription opioids language.

DISCUSSION

This study examined the impact of exposure to randomly assigned terms describing a mother who received medications to treat her OUD during pregnancy that varied by description of the newborn and the type of maternal opioid use. In our primary analysis, the type of language used to describe opioid-exposed infants did not significantly impact respondent views across our three scales. For individuals receiving the ''substance exposed newborn'' vignette, we identified a small, but statistically greater agreement with supportive statements among those who also received injection heroin as the type of opioid used compared with non-medical use of prescription opioids. This was not supported across the other 2 scales, and was contrary to our hypothesis that prescription opioid use would garner more supportive responses than injection heroin use. In responses to the item-level questions, the overwhelming majority of individuals agreed with the supportive statements such as engaging in recovery and parenting supports for a mother with opioid use disorder, yet at the same time they endorsed agreement with punitive-blaming views such as mandated treatment and a personal responsibility for her disease of addiction.

Similar to prior survey research on stigma and OUD in the general population, we found that a high proportion of respondents held negative and stigmatizing views towards people with addiction, such as endorsing that a mother who used drugs is ''responsible for her opioid use'' (89.4%).[33,34] We found that less than one third of people would hire someone who has been treated for a SUD to care for their children whereas only approximately half would befriend or date such a person. This deep stigma toward individuals with a history of addiction was similar to college students' replies to the same questions in a psychometric study assessing the perceived stigma scale.[35] Unique to our vignette, and regardless of descriptive terms used, we found there was also strong support for the biomedical model of addiction and the belief that recovery is possible. However, when substance-use recovery intersected with parenting, views were at times contradictory. Most respondents felt the mother–who in our vignette ceased using nonprescribed opioids when she found out she was pregnant and received medication for her opioid use disorder–was ''putting her baby in danger.'' One third of individuals felt that the mother should not be allowed to keep custody of her newborn and more than half felt she had acted selfishly in becoming pregnant. Our findings suggest that pregnant and parenting women in recovery face a unique social stigma, rooted in both external and internal pressures to meet societal expectations of the ideal mother.

We were surprised that there were no differences across scales when assessing our 2 primary factors of interest separately and only a small significant difference when comparing the interaction of our 2 factors in the supportive scale. These findings are a departure from recent research that has found differences when using stigmatizing language to describe adults with SUD.[11,31,36] We propose several possible hypotheses to explain this finding. First, the use of person-centered, medically accurate language to describe infants may not have been sufficient to overcome the cognitive dissonance respondents expressed with both punitive-blaming and

supportive views toward mothers and recovery. Next, there may have been idiosyncrasies in the sample who completed the survey. The participants in our cohort may not be truly representative of the general public, with more than 70% obtaining some college-level education or greater. Although there are many advantages to using MTurk to quickly gather data from a large number of participants, users have consistently been found to be more educated than the general public, which may have led to greater knowledge and education around SUD impacting the responses.[37,38] Future research looking at health care and substance use treatment providers who work closely with women with OUD would be valuable. Furthermore, 1 in 7 individuals endorsed a personal history of having a drug or alcohol problem and almost half had a family member or close friend with a history of a drug or alcohol problem. These personal experiences may have contributed to a greater understanding of the chronic relapsing nature of addiction, decreasing, while still harboring, negative views toward individuals who use drugs.[39,40] Although the majority of questions either came from previously published studies or validated scales, the questions we used were not from formally validated survey instruments. The questions that we selected may have been too similar to detect subtle differences in individual perceptions based on which vignette they received.

Limitations

There are important limitations to this study that may have impacted our findings. As highlighted above, we adapted our vignette and survey questions from previously published studies, but the specific language we compared and the question scales were not validated independently before this study. Next, our study is subject to social desirability bias, where participants may have felt that there was a ''right'' response to certain questions. This bias may have overridden the subtler effects attributable to our factors of interest. Additionally, given high agreement with both punitive-blaming and supportive statements that at times appear contradictory, the quality of participant responses may be subject to acquiescence bias. We intentionally included comprehension checks and eliminated survey responses under 100 seconds to reduce this effect, but this may have been inadequate to completely eliminate the threat of such biases. Finally, given the large number of statistical tests we performed, the cumulative error rate is high, suggesting that our significant results may in fact be due to chance. Further research would benefit from rigorously controlling the number of tests to reduce this error rate.

CONCLUSIONS

In a randomized vignette study assessing the role of language describing opioid-exposed newborns and type of opioid use in pregnant women, we identified no clinically significant differences in respondents' views, regardless of type of vignette received. Overall, participants wanted mothers to recover and do well, yet they also blamed them, felt they were personally responsible, and caused harm to their newborn. By endorsing both punitive-blaming and supportive views, respondents showcased cognitive dissonance which

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may contribute to ongoing stigma towards mothers with OUD. Future work is needed to better understand the internal conflict in responses received, and whether responses among health care providers working with families impacted by OUD carry different beliefs than the general public.

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REFERENCES

1. Botticelli MP, Koh HK. Changing the language of addiction. *JAMA*. 2016;316:1361–1362.
2. Kelly JF, Wakeman SE, Saitz R. Stop talking 'dirty': clinicians, language, and quality of care for the leading cause of preventable death in the United States. *Am J Med*. 2015;128:8–9.
3. Kumar R, Chattu V. What is in the name? Understanding terminologies of patient-centered, person-centered, and person-directed care! *J Fam Med Prim Care*. 2018;7:487–488.
4. American Psychiatric Association. What is addiction? *Psychiatric News*. 2018;53. appi. pn. 2018.5a24.
5. Substance Use Disorders | SAMHSA - Substance Abuse and Mental Health Services Administration. Available at: https://www.samhsa.gov/disorders/substance-use. Accessed 30, 2018.
6. Rappleye, H., McHugh, R. & Farrow, R. Born Addicted: The Number of Opioid-Addicted Babies Is Soaring. Available at: https://www.nbcnews.com/storyline/americas-heroin-epidemic/born-addicted-number-opioid-addicted-babies-soaring-n806346. Accessed July 19, 2018.
7. Klaric, M. Drug-addicted babies: Wailing, gnashing of teeth | News | sharonherald.com. Available at: http://www.sharonherald.com/news/drug-addicted-babies-wailing-gnashing-of-teeth/article_661dd279-7ae3-5f5f-833e-dab768971dd0.htm. Accessed July 19, 2018.
8. McGinty EE, Stone EM, Kennedy-Hendricks A, Barry CL. Stigmatizing language in news media coverage of the opioid epidemic: Implications for public health. *Prev Med (Baltim)*. 2019;124:110–114.
9. McGinty EE, Goldman HH, Pescosolido B, Barry CL. Portraying mental illness and drug addiction as treatable health conditions: Effects of a randomized experiment on stigma and discrimination. *Soc Sci Med*. 2015;126:73–85.
10. Kelly JF, Dow SJ, Westerhoff C. Does our choice of substance-related terms influence perceptions of treatment need? an empirical investigation with two commonly used terms. *J Drug Issues*. 2010;40:805–818.
11. Goodyear K, Haass-Koffler CL, Chavanne D. Opioid use and stigma: The role of gender, language and precipitating events. *Drug Alcohol Depend*. 2018;185:339–346.
12. Ashford RD, Brown AM, Curtis B. The language of substance use and recovery: novel use of the go/no-go association task to measure implicit bias. *Health Commun*. 2018;34(11):1–7.
13. Kennedy-Hendricks A, Barry CL, Gollust SE, Ensminger ME, Chisolm MS. McGinty EEAT Social stigma toward persons with prescription opioid use disorder: associations with public support for punitive and public health–oriented policies. *Psychiatr Serv*. 2017;68:462–469.
14. McGinty EE, Kennedy-Hendricks A, Baller J, Niederdeppe J, Gollust S, Barry CL. Criminal Activity or Treatable Health Condition? News media framing of opioid analgesic abuse in the United States. *Psychiatr Serv*. 2016;67:405–411.
15. National Academies of Sciences Engineering and Medicine. Medications for Opioid Use Disorder Save Lives. (2019). doi: https://doi.org/10.17226/25310.
16. Volkow ND. Stigma and the toll of addiction. *N Engl J Med*. 2020; 382:1289–1290.
17. Stone R. Pregnant women and substance use: fear, stigma, and barriers to care. *Heal Justice*. 2015;3:2.
18. Cleveland LM, Bonugli R. Experiences of mothers of infants with neonatal abstinence syndrome in the neonatal intensive care unit. *J Obs Gynecol Neonatal Nurs*. 2014;43:318–329.
19. Roberts SCM, Pies C. Complex calculations: how drug use during pregnancy becomes a barrier to prenatal care. *Matern Child Health J*. 2011;15:333–341.
20. Jessup MA, Humphreys JC, Brindis CD, Lee KA. Extrinsic barriers to substance abuse treatment among pregnant drug dependent women. *J Drug Issues*. 2003;33:285–304.
21. National Advocates for Pregnant Women: Pregnancy and Drug Use: The Facts. Available at: http://www.advocatesforpregnantwomen.org/issues/pregnancy_and_drug_use_the_facts/. Accessed July 31, 2018.
22. Hauser DJ, Schwarz N. Attentive Turkers: MTurk participants perform better on online attention checks than do subject pool participants. *Behav Res Methods*. 2016;48:400–407.
23. Bartneck C, Duenser A, Moltchanova E, Zawieska K. Comparing the similarity of responses received from studies in amazon's mechanical turk to studies conducted online and with direct recruitment. *PLoS One*. 2015;10:e0121595.
24. Randomizer - Qualtrics Support. Available at: https://www.qualtrics.com/support/survey-platform/survey-module/survey-flow/standard-elements/randomizer/. Accessed August 8, 2020.
25. Luoma JB, O'Hair AK, Kohlenberg BS, Hayes SC, Fletcher L. The development and psychometric properties of a new measure of perceived stigma toward substance users. *Subst Use Misuse*. 2010;45:47–57.
26. Kelly JF, Westerhoff CM. Does it matter how we refer to individuals with substance-related conditions? A randomized study of two commonly used terms. *Int J Drug Policy*. 2010;21:202–207.
27. National Centre for Education and Training on Addiction. A Training Resource Health Professionals' Attitudes Towards Licit and Illicit Drug Users.
28. Chappel JN, Veach TL, And ED, Krug RS. The substance abuse attitude survey: an instrument for measuring attitudes. *J Stud Alcohol*. 1985;46.
29. Schiff DM, Zuckerman B, Wachman EM, Bair-Merritt M. Trainees' knowledge, attitudes, and practices towards caring for the substance-exposed mother-infant dyad. *Subst Abus*. 2017;38:414–421.
30. Cortina JM. What is coefficient alpha? An examination of theory and applications. *J Appl Psychol*. 1993;78:98–104.
31. Kelly JF, Dow SJ, Westerhoff C. Does our choice of substance-related terms influence perceptions of treatment need? An empirical investigation with two commonly used terms. *J Drug Issues*. 2010; 40:805–818.
32. SAS 9.4 Software Overview for the Customer. Available at: https://support.sas.com/software/94/index.html. Accessed December 7, 2020.
33. Kennedy-Hendricks A, Barry CL, Gollust SE, Ensminger ME, Chisolm MS, McGinty EE. Social stigma toward persons with prescription opioid use disorder: Associations with public support for punitive and public health-oriented policies. *Psychiatr Serv*. 2017;68:462–469.
34. Barry CL, McGinty EE, Pescosolido BA, Goldman HH. Stigma discrimination, treatment effectiveness, and policy: Public views about drug addiction and mental illness. *Psychiatr Serv*. 2014;65:1269–1272.
35. Tuliao AP, Holyoak D. Psychometric properties of the perceived stigma towards substance users scale: factor structure, internal consistency, and associations with help-seeking variables. *Am J Drug Alcohol Abuse*. 2019;46(2):158–166.
36. Sumnall HR, Hamilton I, Atkinson AM, Montgomery C, Gage SH. Representation of adverse childhood experiences is associated with lower public stigma towards people who use drugs: an exploratory experimental study. *Drugs Educ Prev Policy*. 2020.
37. Goodman JK, Cryder CE, Cheema A. Data collection in a flat world: the strengths and weaknesses of mechanical turk samples. *J Behav Decis Mak*. 2013;26:213–224.
38. Follmer DJ, Sperling RA, Suen HK. The role of MTurk in education research: advantages, issues, and future directions. *Educ Res*. 2017;46: 329–334.
39. Keyes KM, Hatzenbuehler ML, KMcLaughlin KA, et al. Original Contribution Stigma and Treatment for Alcohol Disorders in the United States. *Am J Epidemiol*. 2010;172(12):1364–1372.
40. Adlaf EM, Hamilton HA, Wu F, Noh S. *Adolescent stigma towards drug addiction: effects of age and drug use behavior*. 2008;34(4):360–364.