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Knowledge of and Perceived Competence in Trauma-Informed Care and Attitudes of NICU Nurses Toward Mothers of Newborns With Neonatal Abstinence Syndrome

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ABSTRACT

Objective: To explore how knowledge of and perceived competence in trauma-informed care inform the attitudes of NICU nurses toward mothers of newborns with neonatal abstinence syndrome (NAS).

Design: A cross-sectional survey study.

Setting: A southern U.S. metropolitan children's hospital with 145 NICU beds.

Participants: Convenience sample of 150 NICU nurses.

Methods: Participants completed an online survey questionnaire adapted from the Attitudes About Drug Abuse in Pregnancy questionnaire and the Trauma-Informed Pediatric Care survey. Participants also responded to one open-ended question about their experiences in working with mothers of newborns with NAS. We used descriptive and inferential statistics and content analysis to analyze the survey data.

Results: Participants demonstrated low to moderate knowledge about and perceived competence in trauma-informed care and showed more judgmental attitudes toward mothers of newborns with NAS. Level of knowledge about mothers with substance use disorder and perceived competence in trauma-informed care were associated with participants' attitudes toward mothers of newborns with NAS. Emergent themes from qualitative data included the following: *Mother–Newborn Dyads Shape Nurses' Judgmental Attitudes*, *Caring for Mothers of Newborns With NAS Is a Challenging Experience*, and *Need to Refine Care for Mothers Through Intra- and Interdisciplinary Collaboration.*

Conclusion: NICU nurses need further education about mothers of newborns with NAS. Improved knowledge about these women and adaptation of the principles of trauma-informed care may influence NICU nurses' judgmental attitudes toward mothers of newborns with NAS.

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Neonatal abstinence syndrome (NAS) is a significant public health problem in the United States. The incidence of NAS has increased dramatically in recent years, from 3.39 per 1,000 hospital births in 2009 (Patrick et al., 2012) to 5.8 per 1,000 hospital births in 2012 (Patrick et al., 2015). The upsurge of antenatal opioid abuse has been linked to the increase in NAS (Haight et al., 2018; Patrick et al., 2012). NAS is a postnatal substance withdrawal syndrome that is characterized by excessive, high-pitched crying; difficulty feeding; seizures; and irregular sleep patterns (Artigas, 2014). Newborns with NAS require individualized care that involves a combination of pharmacologic methods, such as morphine and methadone, and nonpharmacologic methods, such as swaddling and breastfeeding (Cook & Fantasia, 2019; McQueen & Murphy-Oikonen, 2016).

Newborns with NAS are hospitalized for an average length of stay of 16.9 days (Patrick et al., 2015). Given that the most newborns with NAS are Medicaid eligible (82%) and that the

Although mothers of newborns with neonatal abstinence syndrome can be stigmatized, little is known about NICU nurses' competence in trauma-informed care for this population.

incidence of NAS among Medicaid-eligible newborns increased from 2.8 per 1,000 births in 2004 to 14.4 newborns per 1,000 births in 2014 (Winkelman et al., 2018), the cost of caring for these newborns great. In their study of 570 patients with opioid use disorder, Campbell et al. (2018) found that women were more likely to be unemployed and financially dependent than men. Emerging efforts to find cost-effective models of care to address perinatal substance use and NAS emphasize destigmatization to promote treatment for mothers and support the connection between the mother and newborn (Marcellus, 2018; Nikoo et al., 2015).

Care for a mother with substance use disorder (SUD) and her newborn who exhibits withdrawal symptoms is often fraught with challenges (Rockefeller et al., 2019). These women can have symptoms of depression (Belt et al., 2012), often feel judged by nurses, and can feel guilty when they observe their newborns in withdrawal (Cleveland & Bonugli, 2014; Rockefeller et al., 2019). Hence, to optimize their care, neonatal nurses should facilitate mother–newborn contact (Kondili & Duryea, 2019). However, current evidence shows that nurses need further education with regard to mothers of newborns with NAS (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Maguire et al., 2012). Most of what is known about nurses' knowledge and attitudes toward addiction in mothers is based on qualitative reports rather than quantitative inquiries or a combination of methods (Fraser et al., 2007; Maguire et al., 2012; Murphy-Oikonen et al., 2010). Using qualitative and quantitative research methods will help illuminate the educational needs of NICU nurses, their attitudes toward mothers of newborns with NAS, factors that influence these issues, and ways to tailor interventions to improve the knowledge and attitudes of NICU nurses toward this population.

Given that a greater proportion of women with SUD have histories of being victimized through sexual or physical abuse (Campbell et al., 2018) and domestic violence (Lipsky et al., 2010), current practice recommendations include the application of trauma-informed care principles in the NICU (Marcellus, 2014). To be "trauma-informed" means to be cognizant of current and past abuse in women's lives and to understand the effects of trauma on women. "Trauma-informed care" is the consideration of trauma when providing health care for women with SUD to prevent retraumatization and to help them manage their trauma symptoms (Center for Substance Abuse Treatment [CSAT], 2009). However, the extent to which NICU nurses perceive competence in trauma-informed care is not documented, nor is the association between perceived competence in trauma-informed care and NICU nurses' attitudes toward mothers of newborns with NAS. We intended to begin to fill these gaps through exploration of how knowledge of and perceived competence in trauma-informed care inform the attitudes of NICU nurses toward mothers of newborns with NAS.

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Literature Review

Newborns with NAS require pharmacologic and nonpharmacologic therapies (McQueen & Murphy-Oikonen, 2016). Pharmacologic therapy is indicated to relieve moderate to severe signs of NAS and to prevent complications such as fever, weight loss, and seizures (Hudak & Tan, 2012). Opioid replacement medications include morphine, diluted tincture of opium, and methadone (Disher et al., 2019). The nonpharmacologic care for newborns with NAS is essential to support their physiologic stability and neurodevelopment (Edwards & Brown, 2016). This care involves careful evaluation of the newborn's and mother's behaviors, modification of the environment, and opportunity for social interactions between the newborn and mother (Kondili & Duryea, 2019).

Despite the ongoing recommendation to support mother–newborn dyads in the NICU (Catlin, 2012; Kondili & Duryea, 2019), the focus of neonatal care is on newborns with NAS and not their mothers (Maguire et al., 2012; Murphy-Oikonen et al., 2010). Through surveys conducted in the United States (Ludwig et al., 1996; Romisher et al., 2018; Selleck & Redding, 1998), Canada (Murphy-Oikonen et al., 2010), and the United Kingdom (Raeside, 2003), researchers showed that nurses demonstrated a low level of knowledge about addiction in mothers. Of these studies, only two were solely conducted among NICU nurses: Murphy-Oikonen et al. (2010) used a Web-based, open-ended questionnaire, and Romisher et al. (2018) included close-ended and

open-ended survey questions. The results of qualitative studies of neonatal nurses (Fraser et al., 2007; Maguire et al., 2012) and of mothers of newborns with NAS (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013) showed that neonatal nurses need further training with regard to addiction and with regard to the provision of optimal care for mother–newborn dyads affected by SUD. Although a few investigators found that formal and self-education was positively correlated with knowledge of addiction (Ludwig et al., 1996; Selleck & Redding, 1998), Ludwig et al. (1996) found that knowledge of addiction positively influenced nurses' attitudes toward mothers with SUD. Notably, these studies were conducted in the 1990s, and we found no recent studies that addressed the association between level of knowledge among nurses and their attitudes toward mothers of newborns with NAS.

Stigmatization and judgmental attitudes are important practice concerns in the NICU (Catlin, 2012; Cleveland & Bonugli, 2014; Cleveland & Gill, 2013; Murphy-Oikonen et al., 2010). In older studies, neonatal nurses had punitive rather than supportive attitudes toward mothers with SUD (Fraser et al., 2007; Ludwig et al., 1996; Murphy-Oikonen et al., 2010; Selleck & Redding, 1998). In two qualitative studies, mothers of newborns with NAS stressed that they felt judged by NICU nurses and therefore avoided visiting and caring for their newborns in the NICU (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013). Neonatal nurses expressed concerns about how mothers cared for newborns with NAS and showed an inability to maintain a nonjudgmental attitude toward these mothers (Murphy-Oikonen et al., 2010).

Given that most mothers with SUD have complex socioemotional problems (CSAT, 2009), researchers advocate the use of a trauma-informed care framework in the NICU (Marcellus, 2014). In this framework, it is assumed that women with addiction issues typically have experienced one or more traumatic events (Covington, 2008; CSAT, 2009; Elliott et al., 2005). Multiple traumatic experiences, especially in childhood, are strongly linked to mental health and addiction issues in adulthood (Covington, 2008). For many women, the process of childbirth and watching their newborns go through withdrawal can be retraumatizing (Marcellus, 2014). Through the use of a trauma-informed care perspective, health care providers can create environments and experiences to help prevent retraumatization (Covington, 2008; CSAT, 2009). A trauma-informed environment includes privacy, respect for personal boundaries, and maximization of a woman's choice in her own and her newborn's treatment (Covington, 2008). To our knowledge, no other researchers have investigated nurses' competence in the provision of trauma-informed care for mothers of newborns with NAS in the NICU. In addition, there is a lack of evidence to indicate whether this perceived competence is associated with nurses' attitudes toward this vulnerable population of mothers. Therefore, the purpose of our study was to explore how knowledge of and perceived competence in trauma-informed care informs the attitudes of NICU nurses toward mothers of newborns with NAS.

Methods

We conducted a cross-sectional survey study of NICU nurses that included quantitative survey items and an open-ended qualitative item. We obtained approval from the institutional review board of a southern U.S. metropolitan university with a waiver of informed consent.

Sample and Setting

We used a convenience sampling approach to invite 272 NICU nurses from two NICUs (44-bed Level III and 101-bed Level IV) of a southern U.S. metropolitan children's hospital. All NICU nurses employed in this hospital were eligible to participate, and there were no exclusion criteria. The hospital receives more than 1,500 infants each year, including 120 to 240 newborns with NAS. The NICU policy allows unlimited access for parents to stay with their infants.

Measures

We structured the survey to measure knowledge of and perceived competence in trauma-informed care and the attitudes of NICU nurses toward mothers of newborns with NAS. Demographic items included race/ethnicity, years of clinical experience, level of education, specialized certification in the area of expertise, and a family member or friend who dealt with addiction.

The Knowledge scale included 18 items to measure knowledge regarding mothers of newborns with NAS and trauma-informed care for mothers with SUD. The response options of each item included *true*, *false*, and *not sure*. We adapted 11 items used to address knowledge about mothers with SUD from Selleck and Redding's (1998)

Table 1: Characteristics of Participants

Characteristic	*n* (%)
Race/ethnicity	
White	139 (92.7)
Non-White	11 (7.3)
Years of clinical experience	
5 or fewer	69 (46.0)
6–10	29 (19.3)
11 or more	52 (34.7)
Level of education	
Associate degree	34 (23.1)
Baccalaureate degree or higher	113 (76.9)
Having specialized certification in the area of expertise	
Yes	34 (22.7)
No	116 (77.3)
Having a family member or friend who has dealt with addiction	
Yes	91 (60.7)
No	59 (39.3)

validated Attitudes About Drug Abuse in Pregnancy (AADAP) questionnaire. We obtained permission to adapt and use the AADAP questionnaire. We selected the items based on considerations of the most commonly used drugs among pregnant women (Salameh & Hall, 2020); hence, we excluded questions used solely to address cocaine use. In addition, we developed three questions to address recent evidence about mothers of newborns with NAS, including the effects of prenatal cigarette use on newborns compared with other substances (Bailey et al., 2012), the development of withdrawal symptoms in newborns, and breastfeeding of newborns with NAS (Edwards & Brown, 2016). Furthermore, we adapted and modified four questions from the knowledge about the Trauma-Informed Care scale of the Trauma-Informed Pediatric Care Survey and excluded the items that reflect knowledge specifically about injury related to posttraumatic stress in children (Kassam-Adams et al., 2015). The total score of the Knowledge scale ranges from 0 to 18, and higher scores indicate greater knowledge. The Cronbach's alpha of the Knowledge scale in our study was .60.

The Attitude scale consisted of 21 items to measure attitudes toward mothers of newborns with NAS and toward trauma-informed care of mothers with SUD. Responses to the items ranged from *strongly agree* to *strongly disagree* on a 5-point Likert-type scale. We adapted 13 items from the validated Attitude scale of the AADAP (Selleck & Redding, 1998) and excluded one item used to address emotional problems solely in children of alcoholics. We also adapted eight items from the Trauma-Informed Pediatric Care Survey (Kassam-Adams et al., 2015). The total score of the Attitude scale ranges from 21 to 105, and lower scores indicate more judgmental attitudes. This scale demonstrated acceptable internal consistency reliability in our study with a Cronbach's alpha coefficient of .83.

We used the nurses' self-rated Competence in Trauma-Informed Care scale from the Trauma-Informed Pediatric Care Survey (Kassam-Adams et al., 2015). This scale consists of nine items with a 3-point scale for responses that range from *very competent* to *not competent*. To assess the content validity of items, two NICU nurse experts (NICU nurse educator, nursing instructor) prepared at the graduate level reviewed the adapted survey to determine the appropriateness of the items and ensure the clarity of each item. The total score of the self-rated Competence scale ranges from 9 to 27, and higher scores indicate greater perceived competence. The scale had a Cronbach's alpha coefficient of .90 in our study. Last, the survey included one open-ended question about NICU nurses' experiences in working with mothers of newborns with NAS: "Please share any comments or stories about working with mothers of infants with NAS."

Data Collection Procedures

To recruit participants, scripted weekly emails were sent to the NICU nurses, flyers were posted in areas frequented by nurses (e.g., nurses lounge, bathrooms), and members of the research team verbally informed nurses about the study using a scripted message two weeks before data collection. Information provided about the study included the availability of the survey in paper form and the possibility to complete the survey at work or at home. We collected the data in March and April 2017 via an online survey using Survey Monkey. In addition, a research assistant placed a paper version of the survey in the NICU for nurses who preferred to complete a paper version of the survey. Completed surveys without identifiers were then

Table 2: Participants' Knowledge About Mothers of Newborns With NAS ($N = 150$)

Item	*True*, *n* (%)	*False*, *n* (%)	*Not Sure*, *n* (%)
1. It is well established that infants with prenatal drug exposure have long-term deficits.	76 (53.9)	35 (24.8)	30 (21.3)
2. In general, illegal drugs seem to have more serious consequences for prenatally exposed babies than legal drugs.	39 (27.9)	81 (57.9)	20 (14.3)
3. As a result of the increase in illegal drug use there are many preterm babies with serious medical conditions.	97 (69.3)	15 (10.7)	28 (20.0)
4. Substance abusers usually stick to a single drug rather than using a variety of drugs.	4 (2.8)	125 (88.7)	12 (8.5)
5. Sudden Infant Death Syndrome (SIDS) occurs more frequently in alcohol, tobacco and other drug exposed infants.	87 (61.7)	13 (9.2)	41 (29.1)
6. Drug abuse in pregnancy is associated with a high rate of pregnancy complications.	110 (78.0)	17 (12.1)	14 (9.9)
7. Prenatal drug and alcohol exposure have been found to be a cause of learning problems in school age children.	119 (84.4)	4 (2.8)	18 (12.8)
8. Child abuse and neglect are often reported in families where drug and alcohol abuse are a problem.	128 (90.8)	5 (3.5)	8 (5.7)
9. Making a pregnant woman feel guilty about her substance abuse is an effective way of stopping alcohol and drug use.	2 (1.4)	134 (95.7)	4 (2.9)
10. Women who abuse drugs and alcohol usually associate with men who do too.	87 (62.1)	20 (14.3)	33 (23.6)
11. Nicotine abuse (cigarettes) causes more deaths per year in the United States than any other abuse substance.	34 (24.1)	43 (30.5)	64 (45.4)
12. Alcohol and tobacco use in pregnancy cause more fetal damage than all other drugs combined.	27 (19.1)	47 (33.3)	67 (47.5)
13. All infants exposed to prenatal drugs will develop withdrawal symptoms.	9 (6.4)	128 (91.4)	3 (2.1)
14. Mothers on medication assisted addiction treatment can breastfeed their babies.	103 (73.6)	18 (12.9)	19 (13.6)
15. The psychological effects of an injury or illness often last longer than the physical symptoms.	116 (82.3)	4 (2.8)	21 (14.9)
16. I know the common signs and symptoms of traumatic stress in families.	67 (47.5)	25(17.7)	49 (34.8)
17. There are things that nurses can do to help prevent re-traumatization in mothers of NAS infants.	98 (70.0)	2 (1.4)	40 (28.6)
18. There are effective screening measures for assessing traumatic stress that nurses can use in practice.	79 (56.4)	7 (5.0)	54 (38.6)
Total scale score			
Range		7–17	
M (*SD*)		11.51 (2.10)	

Note. Frequencies and percentages do not include missing data. Percentages do not add up to 100 due to rounding. Items 1 to 11 adapted with permission from the Attitudes About Drug Abuse in Pregnancy questionnaire in "Knowledge and Attitudes of Registered Nurses Toward Perinatal Substance Abuse" by C. S. Selleck and B. A. Redding, 1998, *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *27*(1), p. 72 (https://doi.org/10.1111/j.1552-6909.1998.tb02593.x). Copyright 1998 by Elsevier. Items 15 to 18 adapted with permission from the Trauma-Informed Pediatric Care Survey in "Nurses' Views and Current Practice of Trauma-Informed Pediatric Nursing Care" by N. Kassam-Adams, S. Rzucidlo, M. Campbell, G. Good, E. Bonifacio, K. Slouf, . . . D. Grather, 2015, *Journal of Pediatric Nursing*, *30*(3), p. 481 (https://doi.org/10.1016/j.pedn.2014.11.008). Copyright 2015 by Elsevier. *M* = mean; NAS = neonatal abstinence syndrome; *SD* = standard deviation.

NICU nurses perceived themselves to be moderately competent in trauma-informed care, but they demonstrated judgmental attitudes toward mothers of newborns with neonatal abstinence syndrome.

placed in a sealed envelope. A research assistant collected the sealed envelopes a few times per week. The survey opened with a statement that participation was voluntary, that participants could choose not to complete any items, that responses were anonymous, and that completion of the survey indicated consent for participation.

Data Analysis

We downloaded online surveys into an SPSS-PC database (IBM SPSS Statistics for Windows, Version 22.0) and entered data from surveys completed on paper into SPSS. We used descriptive statistics to report the sample characteristics, knowledge of and perceived competence in trauma-informed care, and attitudes toward mothers of newborns with NAS. We then analyzed differences in participants' attitudes toward mothers of newborns with NAS by demographic characteristics using one-way analysis of variance and *t* tests. We analyzed the relationships among knowledge and attitudes toward mothers of newborns with NAS and self-rated competence in providing trauma-informed care using Pearson's correlation coefficients. We conducted a multiple regression with backward elimination to identify the best predictive model of attitudes toward mothers of newborns with NAS given potential predictors of demographic characteristics, knowledge level about mothers of newborns with NAS and their care, and perceived competence in trauma-informed care. Finally, we used content analysis techniques to analyze the open-ended question (Burnard, 1996). One primary coder, the first author (T.N.S.), read the participants' answers line by line several times to derive codes and to sort them according to their meaning. Then the primary coder compared the codes according to their commonalities to capture the emerging categories. This thematic analysis revealed three main themes and nine subthemes. To improve the trustworthiness of this analysis, the second author (B.P.) and one research assistant reviewed the participants' answers and discussed ambiguous responses and the derived categories to achieve mutual agreement. T.N.S. and B.P. agreed on the final categories and calculated the frequencies and percentages for each emerging theme and category.

Results

We obtained a 55% response rate after 3 weeks, which resulted in a convenience sample of 150 NICU nurses. Most of the participants were White (92.7%), had at least 6 years of clinical experience (54%), were at least baccalaureate prepared (76.9%), did not have specialized certification in their areas of expertise (77.3%), and had family members or friends who dealt with addiction (60.7%; see Table 1).

Knowledge Pertaining to Mothers of Newborns With NAS

Participants' responses to the 18 items of the Knowledge scale are presented in Table 2. The Knowledge scale scores about mothers of newborns with NAS ranged from 7 to 17 ($M = 11.5$, $SD = 2.1$) out of a possible score of 18. Approximately 54% ($n = 76$) of the respondents answered *true* to Item 1, "It is well established that infants with prenatal drug exposure have long-term deficits," and 58% ($n = 81$) answered *false* to Item 2, "In general, illegal drugs seem to have more serious consequences for prenatally exposed babies than legal drugs." In addition, most participants incorrectly answered *false* or *not sure* to Item 11, "Nicotine abuse (cigarettes) causes more deaths per year in the United States than any other abuse substance" ($n = 107$, 76%), and Item 12, "Alcohol and tobacco use in pregnancy cause more fetal damage than all other drugs combined" ($n = 114$, 81%). Finally, 53% ($n = 74$) of participants answered *false* or *not sure* to Item 16, "I know the common signs and symptoms of traumatic stress in families."

Attitudes Toward Mothers of Newborns With NAS

Participants' responses to the 21 items of the Attitude scale are presented in Table 3. Scores on the scale of attitudes toward mothers of newborns with NAS ranged from 34 to 84 ($M = 62.96$, $SD = 9.38$) out of a range of 21 to 105. Lower scores indicated more negative, judgmental attitudes. Responses to items on the Attitude scale varied, but there were five items for which at least 70% of participants' responses were indicative of negative attitudes: Item 13, "The mother is responsible for the damage done to her unborn child by alcohol or other drugs" ($n = 118$, 90%, *strongly agreed/agreed* [*SA/A*]); Item 5, "All pregnant women should be given a urine screen for drugs"

Table 3: Participants' Attitudes Toward Mothers of Newborns With NAS ($N = 150$)

Item	*Strongly Agree*, *n* (%)	*Agree*, *n* (%)	*Not Sure*, *n* (%)	*Disagree*, *n* (%)	*Strongly Disagree*, *n* (%)
1. The best thing to do for drug-exposed babies is to remove them from the homes of their mothers.	10 (7.6)	32 (24.2)	38 (28.8)	46 (34.8)	6 (4.5)
2. Women who abuse drugs and alcohol during pregnancy are more concerned with themselves than with their babies.	15 (11.4)	40 (30.3)	13 (9.8)	58(43.9)	6 (4.5)
3. Prenatal drug and alcohol use should be considered a form of child abuse.	37 (28.2)	69 (52.7)	14 (10.7)	11 (8.4)	—
4. Women who abuse drugs during their pregnancy should be punished by being put in jail.	11 (8.4)	26 (19.8)	31 (23.7)	57 (43.5)	6 (4.6)
5. All pregnant women should be given a urine screen for drugs.	62 (47.0)	52 (39.4)	6 (4.5)	10 (7.6)	2 (1.5)
6. Taking care of infants who are born sick or addicted as the result of their mother's drug abuse places an unfair burden on society.	23 (17.4)	50 (37.9)	19 (14.4)	31 (23.5)	9 (6.8)
7. Drug addicts forget about their babies when they leave the hospital.	4 (3.0)	6 (4.5)	27 (20.5)	79 (59.8)	16 (12.1)
8. Abusing drugs makes people manipulative and unreliable.	27 (20.5)	74 (56.1)	13 (9.8)	17 (12.9)	1 (.8)
9. Substance abusing women should have their tubes tied.	14 (10.6)	20 (15.2)	42 (31.8)	49 (37.1)	7 (5.3)
10. When I hear about the effects of alcohol and drug abuse on infants, I feel angry at the mothers.	17 (12.9)	66 (50.0)	27 (20.5)	20 (15.2)	2 (1.5)
11. Drug and alcohol abuse by women that endangers children should be handled through the legal system.	37 (28.0)	72 (54.5)	16 (12.1)	7 (5.3)	—
12. To prevent further damage to the fetus, pregnant drug abusers should be put in jail until their baby is born.	3 (2.3)	8 (6.1)	39 (29.5)	74 (56.1)	8 (6.1)
13. The mother is responsible for the damage done to her unborn child by alcohol or other drugs.	37 (28.2)	81 (61.8)	9 (6.9)	4 (3.1)	—
14. Women who abuse drugs usually have at least one traumatic experience in their pasts.	18 (13.7)	59 (45.0)	34 (26.0)	19 (14.5)	1 (.7)
15. Addicted women use drugs as a coping mechanism to manage traumatic symptoms like fear, flashbacks and depression.	16 (12.1)	71 (53.8)	35 (26.5)	10 (7.6)	—
16. It is necessary for nurses to assess the mental health needs of the mothers of NAS infants.	25 (18.9)	79 (59.8)	17 (12.9)	8 (6.1)	3 (2.3)
17. The way that medical care is provided can be changed to make it less stressful for mothers of NAS infants.	12 (9.1)	50 (37.9)	50 (37.9)	16 (12.1)	4 (3.0)
18. Nurses should regularly assess for symptoms of traumatic stress.	17 (12.9)	79 (59.8)	19 (14.4)	14 (10.6)	3 (2.3)
19. Nurses should focus on medical care for mothers of NAS infants as opposed to their mental health.	4 (3.0)	8 (6.1)	46 (34.8)	64 (48.5)	10 (7.6)
20. Nurses can teach families of NAS infants how to cope with trauma.	10 (7.6)	52 (39.4)	40 (30.3)	25 (18.9)	5 (3.8)
21. I have colleagues I can turn to for help with a mother of an NAS infant experiencing significant traumatic stress.	16 (12.2)	68 (51.9)	30 (22.9)	15 (11.5)	2 (1.5)
Total scale score					
Range			34–84		
M (*SD*)			62.96 (9.38)		

Note. Frequencies and percentages do not include missing data. Percentages do not add up to 100 due to rounding. Items 1 to 13 adapted with permission from the Attitudes About Drug Abuse in Pregnancy questionnaire in "Knowledge and Attitudes of Registered Nurses Toward Perinatal Substance Abuse" by C. S. Selleck and B. A. Redding, 1998, *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 27*(1), p. 72 (https://doi.org/10.1111/j.1552-6909.1998.tb02593.x). Copyright 1998 by Elsevier. Items 14 to 21 adapted with permission from the Trauma-informed Pediatric Care Survey in "Nurses' Views and Current Practice of Trauma-Informed Pediatric Nursing Care" by N. Kassam-Adams, S. Rzucidlo, M. Campbell, G. Good, E. Bonifacio, K. Slouf, . . . D. Grather, 2015, *Journal of Pediatric Nursing, 30*(3), p. 481 (https://doi.org/10.1016/j.pedn.2014.11.008). Copyright 2015 by Elsevier. *M* = mean; NAS = neonatal abstinence syndrome; *SD* = standard deviation.

Table 4: Participants' Perceived Competence in Trauma-Informed Care for Mothers of Newborns With NAS ($N = 150$)

Item	*Very Competent*, *n* (%)	*Somewhat Competent*, *n* (%)	*Not Competent*, *n* (%)
1. Engaging with traumatized mothers so that they feel comfortable talking to you	37 (28.9)	70 (54.7)	21 (16.4)
2. Responding calmly and without judgment to a mother's strong emotional distress	54 (42.2)	69 (53.9)	5 (3.9)
3. Eliciting details of a traumatic event from a mother without re-traumatizing her	15 (11.7)	53 (41.4)	60 (46.9)
4. Educating mothers about common traumatic stress reactions and symptoms	10 (7.9)	60 (47.2)	57 (44.9)
5. Avoiding or altering situations within the hospital that a mother might experience as traumatic	11 (8.6)	82 (64.1)	35 (27.3)
6. Assessing a mother's distress, emotional needs, and support systems	25 (19.5)	86 (67.2)	17 (13.3)
7. Providing basic trauma-focused interventions (assessing symptoms, normalizing, providing anticipatory guidance, coping assistance)	13 (10.2)	60 (46.9)	55 (43.0)
8. Understanding how traumatic stress may present itself differently in different age groups	12 (9.4)	66 (51.6)	50 (39.1)
9. Understanding the scientific or empirical basis behind assessment and intervention for traumatic stress	7 (5.5)	64 (50.0)	57 (44.5)
Total scale score			
Range		9–27	
M (*SD*)		16.63 (4.11)	

Note. Frequencies and percentages do not include missing data. Percentages do not add up to 100 due to rounding. Items adapted with permission from "Nurses' views and current practice of trauma-informed pediatric nursing care" by N. Kassam-Adams, S. Rzucidlo, M. Campbell, G. Good, E. Bonifacio, K. Slouf, . . . D. Grather, 2015, *Journal of Pediatric Nursing*, *30*(3), p. 481 (https://doi.org/10.1016/j.pedn.2014.11.008). Copyright 2015 by Elsevier. *M* = mean; NAS = neonatal abstinence syndrome; *SD* = standard deviation.

($n = 114$, 86.4%, *SA/A*); Item 11, "Drug and alcohol abuse by women that endangers children should be handled through the legal system" ($n = 109$, 82.5%, *SA/A*); Item 3, "Prenatal drug and alcohol use should be considered a form of child abuse" ($n = 106$, 80.9%, *SA/A*); and Item 8, "Abusing drugs makes people manipulative and unreliable" ($n = 101$, 76.6%, *SA/A*).

Competence in Providing Trauma-Informed Care

The mean score on the scale of perceived competence in providing trauma-informed care was 16.63 ($SD = 4.11$); scores ranged from 9 to 27 (see Table 4). For the items that addressed perceived competence in providing trauma-informed care, most participants rated themselves as *somewhat competent* or *not competent*. More than 40% ($n = 57$–60) rated themselves as *not competent* with regard to Item 3, "Eliciting details of a traumatic event from a mother without re-traumatizing her"; Item 4, "Educating mothers about common traumatic stress reactions and symptoms"; and Item 9, "Understanding the scientific or empirical bases behind assessment and intervention for traumatic stress."

Differences by Demographic Factors

There were no statistically significant differences in the knowledge levels, attitudes toward mothers of newborns with NAS, or perceived competence in trauma-informed care among participants by demographic characteristics (see Table 5). The only significant difference was in the level of perceived competence in trauma-informed care between nurses who had baccalaureate degrees

Table 5: Associated Characteristics With Knowledge and Attitudes Toward Mothers of Newborns With NAS and Perceived Competence in Trauma-Informed Care Among Participants ($N = 150$)

	Knowledge About Mothers of Newborns With NAS			Attitudes Toward Mothers of Newborns With NAS			Perceived Competence in Trauma-Informed Care		
Characteristic	*M* (*SD*)	*F*/*t* test	*p*	*M* (*SD*)	*F*/*t* test	*p*	*M* (SD)	*F*/*t* test	*p*
Race/ethnicity									
White	11.35 (2.2)	–1.708	.090	63.07 (9.1)	0.476	.635	16.5 (4.1)	–1.015	.312
Non-White	12.60 (2.2)			61.60 (13.3)			17.9 (4.7)		
Years of clinical experience									
5 years or less	11.57 (2.0)	0.350	.705	62.59 (10.2)	0.781	.460	15.93 (3.8)	1.614	.203
6 to 10 years	11.14 (2.7)			61.46 (9.6)			17.58 (3.5)		
11 years or more	11.44 (2.3)			64.16 (8.3)			16.91 (4.7)		
Level of education									
Baccalaureate degree or higher	11.57 (1.9)	0.707	.484	62.77 (9.6)	–0.236	.814	16.24 (4.1)	–2.196	.030
Associate degree	11.16 (3.1)			63.23 (8.9)			18.10 (3.89)		
Having specialized certification									
Yes	11.68 (2.1)	0.705	.482	62.71 (8.4)	–0.184	.854	16.71 (4.2)	0.120	.904
No	11.36 (2.3)			63.05 (9.7)			16.60 (4.1)		
Having a family member or friend who has dealt with addiction									
Yes	11.66 (2.1)	1.503	.135	63.65 (9.1)	1.123	.264	16.73 (3.9)	0.362	.718
No	11.08 (2.5)			61.75 (9.8)			16.45 (4.5)		

Note. *M* = mean; NAS = neonatal abstinence syndrome; *SD* = standard deviation.

or higher ($M = 16.24$, $SD = 4.1$) and those who had associate degrees ($M = 18.10$, $SD = 3.89$): $t(124) = –2.196$, $p = .030$.

Relationships Among Variables

Attitude toward mothers of newborns with NAS was significantly positively correlated with knowledge level about mothers with SUD ($r = .176$, $p = .044$) and with perceived competence in trauma-informed care ($r = .280$, $p = .001$). In addition, knowledge of mothers of newborns with NAS was significantly positively correlated with perceived competence in trauma-informed care ($r = .265$, $p = .003$). A multiple regression with backward elimination revealed that levels of knowledge about the care for mothers of newborns with NAS and perceived competence in providing trauma-informed care accounted for 9.8% of the variance in attitudes toward mothers of newborns with NAS: $F(2, 125) = 7.86$, $p = .001$. The level of knowledge about care ($\beta = .201$, $p = .032$) and perceived competence in the provision of trauma-informed care ($\beta = .199$, $p = .033$) predicted attitudes toward mothers of newborns with NAS.

Qualitative Data Results

Thirty participants (20%) provided a total of 72 responses to the open-ended survey question regarding their experiences in working with mothers of newborns with NAS. Themes and subthemes and the percentages of participants who voiced each are shown in Table 6. Overarching themes were *Mother–Newborn Dyads Shape Nurses' Judgmental Attitudes* ($n = 25$, 34.72%), *Caring for Mothers of Newborns With NAS Is a Challenging Experience* ($n = 27$, 37.50%), and *Need to Refine Care for Mothers Through Intra- and Interdisciplinary Collaboration* ($n = 20$, 27.78%). The connections among the themes and subthemes are illustrated in Figure 1.

Mother–Newborn Dyads Shape Nurses' Judgmental Attitudes. Although participants emphasized that their attitudes toward mothers of newborns with NAS were "patient specific" and

Table 6: Themes and Subthemes Related to Participants' Experiences in Working With Mothers of Newborns With NAS ($N = 72$ responses)

Theme/Subtheme	Responses, *n*	%
Mother–Newborn Dyads Shape Nurses' Judgmental Attitudes	25	34.72
Attitudes Differ Depending on the Situation	15	20.83
Innocent Infants Pay the Price	10	13.89
Caring for Mothers of Newborns With NAS Is a Challenging Experience	27	37.50
The Mother Is Not the Legal Patient	6	8.33
Struggling in Interacting With Mothers of Newborns With NAS	7	9.72
Lack of Mother's Involvement in Care	4	5.56
System Barriers to Interacting With Mothers	10	13.89
Lack of Training	8	11.11
Workload	2	2.78
Need to Refine Care for Mothers Through Intra- and Interdisciplinary Collaboration	20	27.78
Try to Support	6	8.33
Understanding Addiction Is a Disease	5	6.94
Interdisciplinary Collaboration	9	12.50

Note. NAS = neonatal abstinence syndrome.

depended on the mother's life "story," the newborns with NAS also influenced judgmental attitudes toward mothers. Two subthemes emerged to describe these attitudes: *Attitudes Differ Depending on the Situation* and *Innocent Infants Pay the Price*. Participants' responses indicated that feelings and attitudes toward mothers are influenced by the mother's life situation: "There are many circumstances. Repeat offenders should be dealt with more severely. Sometimes there are traumatic events; sometimes they just like to party." In addition, responses showed a judgmental attitude toward mothers because of their "innocent infants" who "pay the price":

> I admit I have difficulty maintaining a nonjudgmental attitude with mothers who are in a drug withdrawal program and then come in positive for every drug in the book. Their babies pay the price. I can and am nice to everyone, but I fear for these little ones when they go home with drug-abusing parents.

Caring for Mothers of Newborns With NAS Is a Challenging Experience. Participants described that it is difficult to care for mothers with SUD in the NICU. Four subthemes emerged to describe this challenging care experience: *System Barriers to Interacting With Mothers*, *The Mother Is Not the Legal Patient*, *Struggling in Interacting With Mothers of Newborns With NAS*, and *Lack of Mother's Involvement in Care*. Participants perceived barriers to interacting with mothers in the NICU and expressed concerns about lack of training: "Although we do have training dealing with the infants, we have very little training about dealing with the families." Participants also reported that workload impeded efforts to work with mothers: "Most of our staff tries to be helpful to our new moms and help them cope. However, patient load doesn't always allow for that."

Participants did not consider mothers of newborns with NAS as their legal patients and assumed that they had no role in the care of these women except to provide information related to their newborns: "The mother is not my legal patient. I cannot assess her, nor can I offer her medical advice about anything other than the information relating to the patient, who is the baby." In addition, participants noted that it was difficult to interact with mothers because of addiction: "It is still difficult to work with many of these families. The main reason is manipulative behavior and mistruths." Participants also reported that mothers of newborns with NAS were often not active participants in the care of their newborns: "If the family does come, it seems like they are often asleep at the bedside or leave

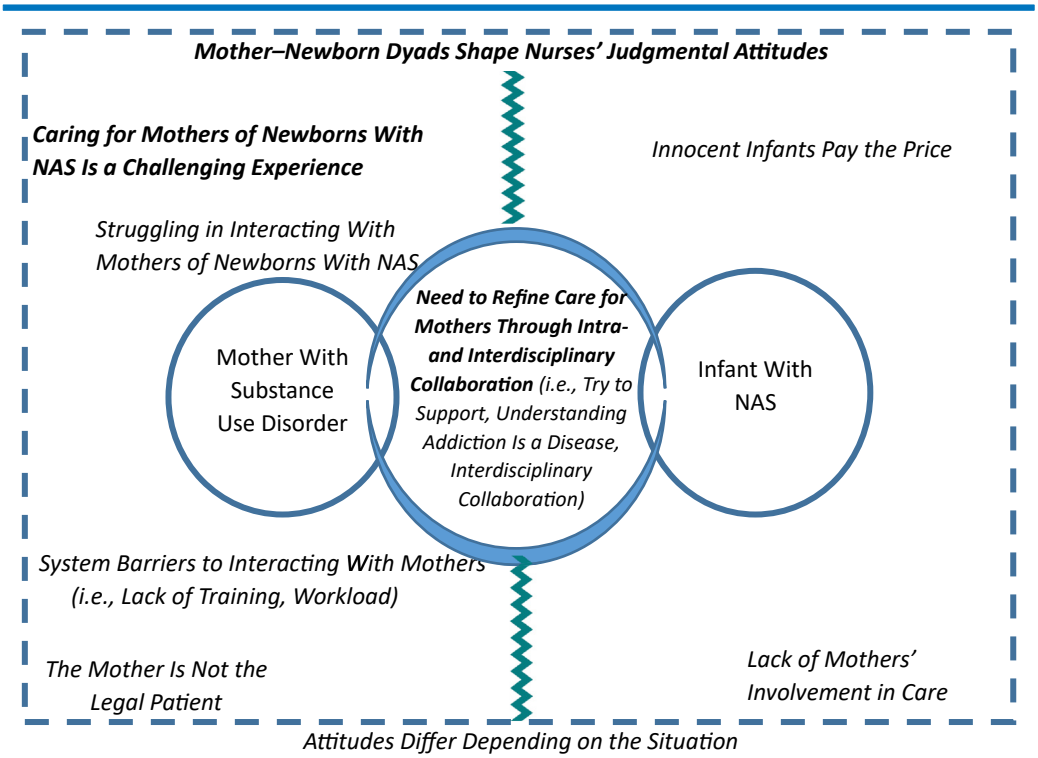

Figure 1. Themes and subthemes related to participants' experiences in working with mothers of newborns with neonatal abstinence syndrome (NAS).

right before or during care. It is rare for me to see a NAS family avidly involved in the infant's care."

Need to Refine Care for Mothers Through Intra- and Interdisciplinary Collaboration. Participants described that mothers with SUD require "ongoing support" and that intra- and interdisciplinary collaboration are necessary to address the needs of this population. Three subthemes emerged that described the need to refine the care for mothers of newborns with NAS: *Try to Support*, *Understanding Addiction Is a Disease*, and *Interdisciplinary Collaboration*. Participants described a desire to support mothers of newborns with NAS: "I have worked with many of these moms and infants and understand that each situation is unique and requires astute observation, careful assessment, and compassionate care to support the best outcome." In addition, participants understood that addiction is a disease: "My own personal experience has helped in my compassion and understanding of addiction as a disease." Finally, participants described their roles in helping the mothers care for their newborns, but they asked for interdisciplinary collaboration to help mothers meet their mental health needs:

> They need to see their primary care provider and other mental health services. I do believe that we can help them cope with their new baby but not with whatever posttraumatic stress disorder that they may have that has led to their drug use.

Discussion

Overall, our participants demonstrated low levels of knowledge about mothers of newborns with NAS and their care in the NICU, and they had judgmental attitudes toward these mothers. Consistently, authors of survey (Ludwig et al., 1996; Murphy-Oikonen et al., 2010; Raeside, 2003; Selleck & Redding, 1998) and qualitative studies (Maguire et al., 2012; Murphy-Oikonen et al., 2010; Shaw et al., 2016) reported that neontal nurses had low levels of knowledge about addiction. In our study, 11% of responses indicated a lack of training to provide care for mothers of newborns with NAS. Likewise, mothers of newborns with NAS who participated in qualitative studies expressed their concerns

Professional education and the provision of trauma-informed care for mothers of newborns with neonatal abstinence syndrome are essential to support mother–newborn dyads in the NICU.

about NICU nurses' knowledge about addiction (Cleveland & Bonugli, 2014; Cleveland & Gill, 2013).

In contrast to the findings of prior studies (Ludwig et al., 1996; Selleck & Redding, 1998), our findings did not show an association between knowledge level and education, special certification, and personal or family history. Nevertheless, our findings are congruent with those of Selleck and Redding (1998) in that we found no relationship between knowledge and experience. This may be related to NICU nurses' role confusion regarding the care of mothers of newborns with NAS in the NICU (Murphy-Oikonen et al., 2010). Our qualitative data also indicated that NICU nurses do not feel that caring for mothers is their role.

Consistent with the findings of prior studies (Fraser et al., 2007; Murphy-Oikonen et al., 2010; Raeside, 2003; Selleck & Redding, 1998), our participants held more punitive and judgmental attitudes toward mothers. However, Romisher et al. (2018) found that most NICU nurses (N = 54) had positive attitudes toward mothers of newborns with NAS. This discrepancy with our findings may be related to sample size and measurement issues. In our study, most NICU nurses reported that prenatal drug use should be considered a form of child abuse; in addition, participants' written responses indicated that commitment to the newborn plays a role in shaping attitudes toward mothers. This is contrary to recent initiatives and recommendations that support a nonpunitive approach for pregnant women with SUD (Patrick & Schiff, 2017).

Among our participants, having a family member or friend who has dealt with addiction did not influence the participants' attitudes. In addition, neither educational level nor special certification influenced nurses' attitudes toward mothers. Our data support prior findings of Ludwig et al. (1996) on the weak relationship between knowledge about addiction and attitudes toward mothers. This indicates that knowledge about addiction and its consequences may not necessarily lead to less judgmental attitudes toward mothers (Ludwig et al., 1996). However, authors of interventional studies suggested that educational training for NICU nurses resulted in less judgmental attitudes toward mothers (Lucas & Knobel, 2012; Sander et al., 2018; Seybold et al., 2014; Tobin, 2018). Nevertheless, careful interpretation of the findings of these studies is advised because of the lack of valid measurements of attitude (Lucas & Knobel, 2012; Sander et al., 2018; Seybold et al., 2014; Tobin, 2018) and follow-up on the effect of the educational interventions on clinical care (Lucas & Knobel, 2012; Tobin, 2018). Future research is needed to examine the efficacy of such education on nurses' attitudes toward mothers with SUD and their competence in trauma-informed care.

In our study, most nurses showed low to moderate competence in the provision of trauma-informed care; more than 40% of respondents perceived themselves as not competent in understanding the scientific basis of traumatic stress assessment and interventions. Likewise, in a qualitative study by Cleveland and Bonugli (2014), mothers with SUD stressed that nurses do not understand the mother's life history. For example, as one woman stated, "I felt judged. I felt like the nurses thought of me as a drug user and that was my whole life story" (p. 289). Of interest, our findings indicated that nurses' attitudes toward mothers of newborns is associated with their perceived competence in the provision of trauma-informed care. Nevertheless, no demographic characteristics were related to perceived competence in trauma-informed care except having an associate degree in nursing. This suggests that nurses with higher educational levels might tend to see themselves as less informed about and thus less competent in trauma-informed care.

Congruent with the findings of prior studies (Fraser et al., 2007; Maguire et al., 2012), the qualitative data of our study indicated that the care for mothers of newborns with NAS is complex and challenging, especially because NICU nurses reported their lack of training to interact with these mothers. In addition, our study findings extend prior evidence as participants expressed the need for a multidisciplinary team for the optimum care of mothers with SUD and their newborns.

Limitations

Our study included NICU nurses from one southern U.S. metropolitan children's hospital.

Thus, findings cannot be generalized to NICU nurses in other geographic areas across the United States or among nurses with other than neonatal nursing backgrounds. In addition, most of the NICU nurses who participated in the study were White; thus, further research is needed among a sample of nurses from different racial/ethnic backgrounds to detect potential differences in the attitudes toward mothers with SUD by nurses' race or ethnicity. Because of the cross-sectional nature of this study, causal relationships cannot be inferred. Internal consistency in our study was adequate for the Attitudes and Perceived Competence in Trauma-Informed Care scales. However, the Knowledge scale demonstrated less than adequate internal consistency. Further refinement of the tools, along with more rigorous psychometric testing, is warranted. Future mixed-methods design studies are needed to understand nurses' attitudes toward mothers of newborns with NAS while considering further characteristics related to participants' personal background (e.g., having a female relative or friend with SUD) and work experiences (e.g., job description).

Implications for Nursing Practice

Our findings suggest important implications for nursing practice. First, there is a need for educational programs to improve NICU nurses' knowledge of and competence in trauma-informed care for mothers of newborns with NAS and thereby address potential judgmental attitudes. Second, evidence suggests that nonpharmacologic therapy, including rooming-in, breastfeeding, and positioning, is essential to support the neurobehavioral functioning in newborns with NAS (Edwards & Brown, 2016). Thus, not only is education required with regard to trauma-informed care, but use of its framework as a component of care for these newborns is also crucial to support maternal involvement in the NICU (Marcellus, 2014). Third, our results indicated role confusion among NICU nurses, who reported that mothers of newborns with NAS were not their patients. This is of critical concern given the recommendation to apply consistent family-centered care in the case of NAS (Marcellus, 2014, 2018). The involvement of a mother in her newborn's care is clinically essential to decrease NAS severity and hospital length of stay (Howard et al., 2017) and to improve the newborn's developmental and behavioral outcomes (Arora, 2017). Recent evidence supports nonpharmacologic therapy (e.g., breastfeeding) as the primary intervention, with pharmacologic therapy as secondary for newborns with NAS—that is, "hugs before drugs" (Marcellus, 2018, p. 515). This suggests that NICU nurses have a pivotal role in the promotion of mother–infant attachment for newborns with NAS. Last, our participants stressed the need for intra- and interdisciplinary collaboration to help mothers of newborns with NAS address addiction issues and their mental health needs, thus promoting their ability to be involved in the care of their newborns.

Conclusions

Because NICU nurses are committed to the provision of quality care for newborns with NAS, our findings suggest the need for education about addiction. Adapting a trauma-informed care framework in the NICU is essential to promote less punitive and judgmental attitudes toward mothers, thus facilitating maternal involvement in the care of newborns with NAS. Finally, there is an urgent need to recognize the challenges that NICU nurses face in working with mothers of newborns with NAS, and therefore, addressing the training needs of NICU nurses while facilitating an interdisciplinary collaboration is crucial.

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