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Research

Recognition of Trauma Informed Care Responses in Forensic Nurses

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Abstract

Trauma is universal, affecting health and behavioral choices. Trauma Informed Care (TIC) principles guide healthcare providers to avoid re-traumatization. States now mandate TIC education. Adequate information integrating TIC principles in forensic nurse education exists. However, application of TIC principles in forensic nurse practices remains elusive to measurement. The study purpose is to explore forensic nurse knowledge before, and following basic TIC interventional education, recognition of TIC responses necessary to inform and promote behavior changes. The design is pre-, educational intervention, post-, and post-post survey that measures change in TIC intervention recognition. The analysis is a descriptive, correlational study to discover learning trends in practicing forensic nurses. Nineteen forensic nurses participated in the pre-test, intervention, post-, and/or post-post-test. The results revealed that nurses with >3 years' and <10 years' experience in nursing and forensic nursing are more likely to recognize TIC in variety of situations. When implemented consistently, TIC benefits all.

KEYWORDS

Trauma Informed Care, TIC, forensic nurse, forensic nurse educator, universal screening

Recognition of Trauma Informed Care Responses in Forensic Nurses

Globally, forensic nurses care for all populations traumatized by violence. The American Nurses Association (ANA) recognized the specialty of forensic nursing in 1995. Since then, forensic nurses emerged in nursing, while providing and improving the care quality for society's most vulnerable populations. Many nurses enter into forensic nursing by caring for the sexually assaulted population however, forensic nurses provide specialized care for a variety of patients who are experiencing acute and long-term health consequences associated with trauma (Academy of Forensic Nursing, 2022).

Violence and trauma are universal, affecting anyone at any time during their life with reactions that are based on their developmental stage and perceptions of their personal life experiences (Speck, Johnson, et al., 2023; Speck, Robinson, et al., 2023). The impact of trauma affects brain development, disease formation, and coping skills, where the reactionary behaviors from trauma are predictable. For many individuals with complex trauma backgrounds, clinical presentations include mental health concerns, substance use or misuse, physical health conditions, disease, or early death (Felitti et al., 1998; Speck, Robinson, et al., 2023). In healthcare, assessing, identifying, and treating trauma occurs at three levels: macro (state or national policy and legislation), meso AKA mezzo (organizational in communities of stakeholders), and micro (provider to patient). Regardless of intervention, violence and the subsequent trauma remains a public health challenge since trauma exposures frequently are not recognized or identified in healthcare settings, and often remain unaddressed (Levenson, 2014).

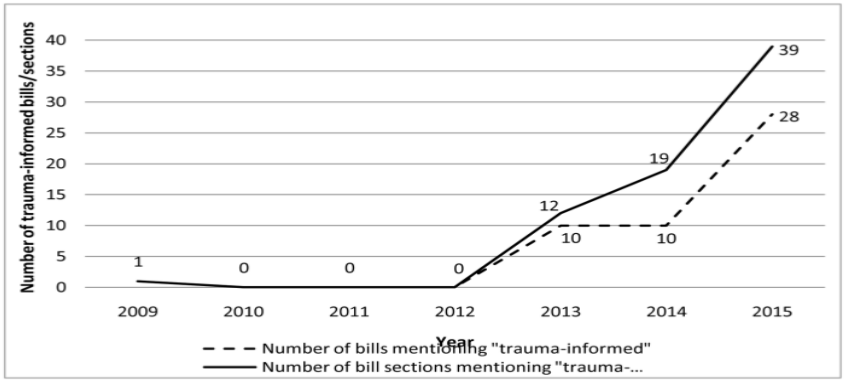
Literature Review

Trauma-Informed Care

Understanding that trauma is universal (National Academies of Medicine & Committee on the Future of Nursing 2020–2030, 2021; Substance Abuse and Mental Health Services Administration, 2014) is inadequate to guide the forensic nurses' education (Speck, Dowdell, et al., 2022). Scaffolding education uses learning theory and Bloom's taxonomy to identify the steps in learning that begin with knowledge, recognition and application, and the testing thereof (Speck et al., 2022). The six core principles in trauma informed care to learn are: (1) safety- physiologic and psychological; (2) trustworthiness and transparency; (3) empowerment; voice and choice; (4) collaboration and mutuality; (5) peer support; and (6) cultural, historical and gender acknowledgment (Substance Abuse and Mental Health Services Administration, 2014). When healthcare providers apply the six principles of TIC to practice, there is an expectation of positive adaptation and healing (Cutuli et al., 2019; Dowdell & Speck, 2022; Substance Abuse and Mental Health Services Administration, 2014). A recent federal (macro) approach is the 10-year effort to pass trauma-informed care (TIC) continuing education legislation for government bureaucracies and healthcare providers (Purtle & Lewis, 2017), demonstrated in Figure 1.

Figure 1

Trends in legislative proposals introduced in US Congress between December 22, 2009, and December 30, 2015 that mentioned "trauma-informed" and/or "trauma informed."



Source: Purtle, J., & Lewis, M. (2017).

As a result of funded mandates, healthcare systems responded and trends for teaching TIC are increasing (Purtle & Lewis, 2017). While the new *Essentials* from the American Association of Colleges in Nursing [AACN] (American Association of Colleges of Nursing, 2021a) do not mention trauma-informed care, the National Academies of Medicine report entitled, *The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity* (National Academies of Medicine & Committee on the Future of Nursing 2020–2030, 2021) mentions TIC care seventeen times and trauma seventy-seven times. Additionally, TIC is a guiding principle in Forensic Nursing Core Competencies for Generalist Level 1 and Advanced Forensic Nursing Practice Level 2, incorporating trauma-informed care principles in all aspects of forensic nursing.

Understanding that trauma is universal (National Academies of Medicine & Committee on the Future of Nursing 2020–2030, 2021; Substance Abuse and Mental Health Services Administration, 2014) is inadequate to guide the pedagogical scaffolding necessary for structured learning in the community of forensic nurses. When teaching TIC principles and subsequent interventions to forensic nurses, a deliberate pedagogical approach is essential (Dowdell & Speck, 2022; Speck, Dowdell, et al., 2022), threading nursing domains and performance measures throughout (AACN, 2021a). Subsequently, nurses promote higher levels of wellness by using TIC strategies and skills in *hopes of mitigating the impact of trauma on development of trust,* which is the essential goal in the first nurse-patient encounter. The expected outcome is avoiding judgement and retraumatization while promoting the other five TIC principles. Currently, there are no studies related to knowledge acquisition (remembering and understanding), recognition or retention of TIC principles in nursing practices. Consequently, lack of recognition of TIC actions in vignettes by a population of forensic nurses with and without previous exposure to TIC continuing education contributes to the obvious lack of and inconsistent application of or innovation using TIC principles (Speck et al., 2022). Blooms' learning theory promotes remembering and understanding, which includes the learning basic principles and underlying attributes of TIC in a direct patient encounter with a forensic nurse and is the focus of this study.

Forensic Nursing Education

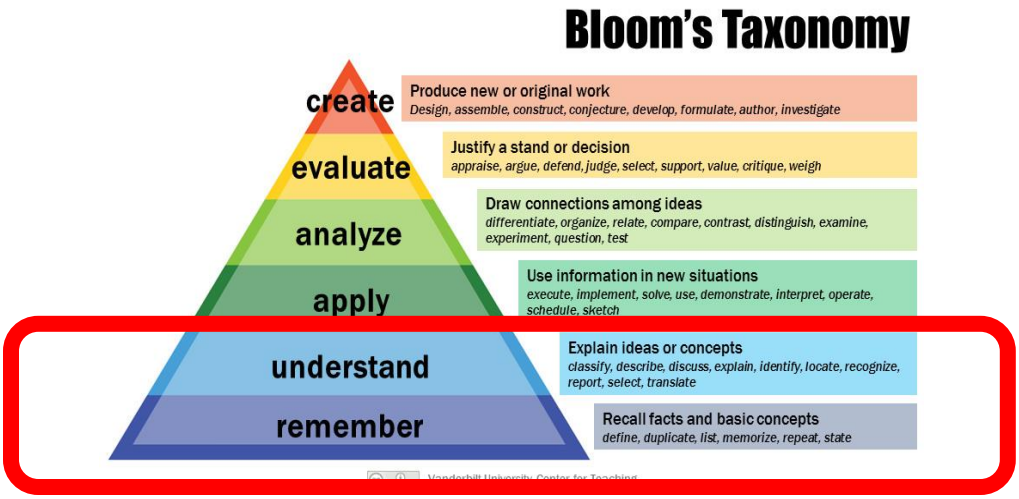
Learning theory guides all educators, providing models and frameworks for learning outcomes (AACN, 2021a; Wilson, 2016, 2013, 2005, 2001). Professional nursing organizations such as the AACN, use nursing theory to guide pedagogy and nursing education (AACN, 1998, 2006, 2011, 2021b; Baron, 2017). Bloom's taxonomy is one framework for the mechanisms by which new knowledge is acquired and for educators, guides foundational activities by informing and identifying increasingly complex ways of knowing, thinking, and applying (Anderson et al., 2001; Speck et al., 2022). In nursing education, Bloom's model helps establish and unify learning goals of remembering and understanding (Anderson et al., 2001; Wilson, 2016, 2013, 2005, 2001), and provides an organized set of learning objectives while encouraging higher-order thought in students when there is mastery of lower-level cognitive skills (Anderson et al., 2001; Forehand, 2005). Bloom's taxonomy model has six levels that classify thinking: Remember (copying, defining, listening, outlining and memorizing); Understand (annotation, summarizing, paraphrasing and contrasting); Apply (articulating, examining, implementing and interviewing); Analyze (categorizing, breaking down, organizing and questioning); Evaluate (arguing, testing, assessing and criticizing); and Create (collaborating, devising, writing and mixing) (Anderson et al., 2001; Forehand, 2005; Speck et al., 2022).

Nurses, in all clinical specialties and settings, are professional lifelong learners who routinely acquire new information. Continuing education in forensic nursing tends to focus on application of specific psycho-motor experiences (Bloom et al., 1956; Ferguson & Faugno, 2009; Mahoney, 2012; Mitchell et al., 2022) using the "see-one, do-one, teach-one" method of acquiring skills and knowledge (Speck et al., 2022). Using Bloom's Taxonomy, the first level is *remember* knowledge acquisition, thinking, and knowing (Anderson et al., 2001; Forehand, 2005). The second level of learning is *understand* with Bloom's Taxonomy that addresses interpretation, classification, comparison, and being able to explain concepts. Concept application is the ability to use information in new situations (Anderson et al., 2001). The *apply* level is viewed as the capability to synthesize information and connect different ideas to be evaluated (Anderson et al., 2001; Forehand, 2005). Knowledge acquisition is the driving force behind all three levels, which explains how new knowledge and learning are integrated into the learners' actions, attitude, values, motivation, and skillset.

Nursing education favors knowledge acquisition (remembering, understanding) before application with critical thinking and application of knowledge in the care of patients and families. Unfortunately, critical thinking (apply) captures a testable lower level of knowledge in forensic nursing, where creative thinking is more complex and harder to evaluate. The complexity often integrates concepts in designed circumstances and requires demonstration of learner approaches to include application of the same knowledge in a variety of forensic nursing situations, reflective in Bloom's taxonomy. Basic entry level nursing education requires critical thinking, which uses remember and understand to apply, with the purpose of deconstruction of the new knowledge for the application to predictable situations. For the purposes of exploring forensic nursing education, the adaptation and modifications in forensic nursing education reveals a pattern and order of thinking unique to forensic nursing practice and education. For faculty, threading forensic nursing core competencies through an assigned creative thinking product is more difficult to assess (Speck et al., 2022) and the subject of future research. The pedagogy used in this study focused on the first two levels in Bloom's Taxonomy – knowledge and thinking (remember and understand) where highlighted pedagogy at this level is in Figure 2.

Figure 2

Bloom's Taxonomy, highlighting in red foundational principles of learning



Used with permission https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

Aim of Study

The aim and purpose of the study was to *identify gaps in remembering knowledge and recognition* through understanding principles of TIC using case scenarios in a sample of experienced forensic nurses during the Covid-19 pandemic, recognizing that application is a psychomotor skill.

Methods

The descriptive, correlational study utilized a survey design in a Northeastern state with a sample of forensic nurses. The study used the traditional educational method (specifically, a narrated power point presentation) and pre-, post-, and post-post-test surveys. Survey Monkey™ was the platform for all surveys. Institutional review board (IRB) approved the study as exempt (Stonybrook University New York - SUNY IRB2021-00102). Experienced forensic nurse educators and researchers (the raters) constructed case scenarios and questions *a priori*. The study measured recognition of TIC knowledge through case scenarios, accompanied by questions. The common permission seeking answers, elicited from each scenario, was necessary to create a non-judgmental person-centered recognition of TIC. As such, the raters established face validity and enjoyed a high level of agreement about the scenarios and questions eliciting Bloom's recognition of TIC correct actions. The one educational intervention and TIC recognition in the survey answers created causal ambiguity (unable to assign cause and effect), where establishment of internal ("likely" causal) and external validity (generalizable) of the survey tool requires more study.

The pre-, post-, and post-post-test used the same 25-question survey, which consisted of 12 socio-demographic questions related to their nursing and forensic experience, as well as exposure to TIC education, and 13 questions that queried knowledge and application about the topic of TIC, specifically *seeking permission* to create safety, voice, and choice. All questions were edited for common errors in scenarios, for instance corrections occurred for confusing, leading, or ambiguous situations, answers, and distractors before administration. The cases used

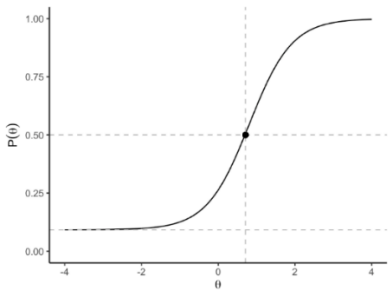
reflected common clinical nursing experiences by forensic nurses and required the participant to demonstrate recognition of TIC *seeking permission* responses through learning application of new knowledge in the same pre-, post-, and post-post survey, demonstrated in Supplemental Table 1.

The administration of the pre-test survey was completed prior to the educational intervention, which was a virtual presentation using narrated PowerPoint slides, highlighting principles of TIC application. A post-intervention test was immediately deployed after the intervention. Another survey deployment five to eight months asked participants to take the post-post-test survey. At the end of the study, the statistician received a de-identified aggregate data transmission via electronic transfer with a data dictionary.

The validity and reliability of questions to evaluate TIC education in healthcare providers are evaluated using an item response theory (IRT) model. IRT refers to a set of mathematical models that aim to explain the relationship between a latent ability or proficiency (denoted θ, as TIC knowledge here) and its observable manifestations (e.g., multiple-choice questions). IRT focuses on the pattern of responses and considers responses in probabilistic terms for the individual question and did not focus on composite variables and linear regression theory to measure all questions. A 2-parameter logistic (2PL) IRT model is fitted in this study, and called "goodness of fit" (i.e., the extent to which observed data match the values expected by theory). which accounts for item discrimination (i.e., the ability of an item to differentiate between respondents with different levels of TIC knowledge) and item difficulty (i.e., the likelihood of a correct response, expressed as the TIC knowledge level at which 50% of the participants is estimated to have a correct answer). The method excludes two items (item 7 and item 8) from the IRT model because all participants have the correct answers for these two questions. The model's goodness of fit is evaluated using M2 statistics and root mean square error of approximation (RMSEA) index. A visual depiction of the relationship between item parameters (discrimination and difficulty) and participants' TIC knowledge levels is presented in an *item characteristic curve* (ICC). An ICC is a function that shows the relationship between latent knowledge level (θ) and the probability of answering an item correctly. The latent knowledge level (θ) is expressed on a continuum that is much like a standard score, with a mean of zero and a standard deviation (SD) of 1. Figure 3 is an example of ICC.

Figure 3

Example of item characteristic curve (ICC) representing learning



In the ICC above, the item discrimination is represented by the steepness of the curve (i.e., the steeper the curve, the larger the item discrimination) and the difficulty is the locations of θ where there is a 50% chance of getting the item correct. All individual survey items were summarized as frequency and proportion using a statistical analysis software (SAS 9.4).

Results

Model fit: the results suggest a good model fit, e.g., model that is well-fitted produces more accurate outcomes, and is evidenced by the comparatively low and non-significant M2 statistic (M2=17.5, p=.85) and a very low RMSEA (close to 0).

Item discrimination: The values of the discrimination parameters ranged from -1.39 to 3.89. This parameter is a measure of how well an item differentiates individuals with different knowledge levels. Larger values, or steeper slopes, are better at differentiating people. A slope also can be interpreted as an indicator of the strength of a relationship between an item and latent knowledge level, with higher slope values corresponding to stronger relationships. The results suggest that items Q3, Q6, Q9, Q12, and Q13 have the high discrimination power (ordered) while items Q1, Q5, Q2, and Q10 have the low discrimination power. Interestingly, items Q4 and Q11 have negative discrimination against participants' TIC knowledge levels, indicating that participants with higher TIC knowledge level have a lower likelihood of answering correctly.

Item difficulty: The values of the difficulty parameters ranged from -6.29 to 1.99. Difficulty parameters are interpreted as the value of the data that corresponds to a .50 probability of answering correctly at or above that location on an item. The difficulty parameters show that the items cover a wide range of the latent knowledge level below 0, indicating most items have low difficulty.

The item parameters (discrimination and difficulty) estimates are shown in Table 1.

Table 1

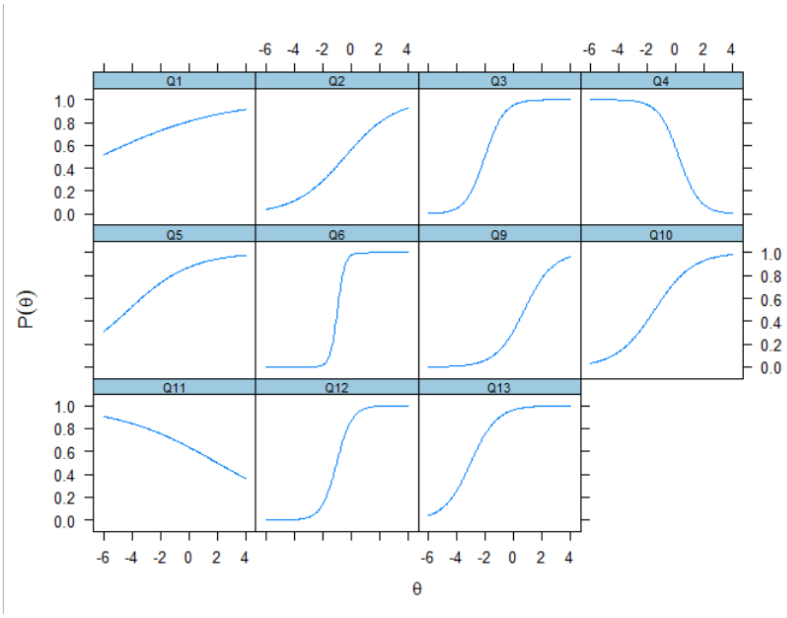
Item parameter estimates

Item	Discrimination	Difficulty
Q1	0.23	-6.29
Q2	0.57	-0.44
Q3	1.48	-2.01
Q4	-1.39	0.22
Q5	0.46	-4.24
Q6	3.89	-0.96
Q9	1.01	0.76
Q10	0.75	-1.49
Q11	-0.28	1.99
Q12	1.86	-1.01
Q13	1.08	-3.02

The relationships between item parameters (discrimination and difficulty) and participants' TIC knowledge levels are illustrated in question ICC curves that indicate levels of learning demonstrated in question answers and are visually depicted in Figure 4.

Figure 4

Participants' TIC knowledge levels and learning ICC



Study Participants

The pre-test survey was sent to nurses practicing in a forensic healthcare setting. Thirty-two (100%) received the pre-test and 22 (68.8%) healthcare providers finished the survey with two (0.9%) having partially completed the pre-test leaving a final sample of 20 (63%) having completed the pretest. Nineteen study participants attended the educational intervention and 10 (31%) completed the post-test immediately following the Zoom meeting. Five to eight months later, 21 received the post-post-test survey, which was administered via Survey Monkey™ and 14 nurses completed the post-post-test, accounting for the dropout during the Covid-19 pandemic and some variability in the results. The expectation for retention during the Covid-19 pandemic was realized with lower participation. Demographic characteristics are in Table 2.

Table 2

Description of the participant sample characteristics (N=20)

How many years have you been in Nursing practice?	3-5yr	6	30%
	6-10yr	2	10%
	>10	12	60%
Have you had TIC education?	0=no	4	20%
	1=yes	16	80%
How many years have you been practicing Forensic Nursing?	1=<1year	9	45%
	2=1-2yr	2	10%
	3=3-5yr	5	25%
	4=6-10yr	3	15%
	5=>10	1	5%

What is your highest level of education in nursing?	2=masters	4	20%
	3=baccalaureate	12	60%
	4=AD	4	20%
Are you a member of a professional Forensic Nursing organization?	1=None of the above	3	15.79%
	3=IAFN	11	57.89%
	6=AFN/IAFN	3	15.79%
	8=IAFN/ENA	2	10.53%
Have you had education about Trauma-Informed Care?	0=no	4	20%
	1=yes	16	80%
How much exposure have you had to trauma-informed care (continuing ed or classes)?	None=0	3	15%
	1-2 times=1	3	15%
	3 or more times=2	14	70%

The results of the pre and post survey questions were examined in relation to *nursing practice-experience* (Supplemental Table 2), *forensic nursing experience* (Supplemental Table 3), and *knowledge of trauma informed care* (Supplemental Table 4). Results were identified as contributory (green), non-contributory (yellow), and obvious knowledge or recognition (red). The researchers conducted a qualitative analysis of each question to determine themes as possible barriers to recognition post education, identifying the yellow coded questions to be non-contributory, using themes from the green questions as comparison. *A priori* themes were identified as barriers or contributors to learning knowledge and identification of new learning. Non-contributory or mixed data, as defined by learning in the post-test and coded as yellow, included questions: Q2, Q4, Q5, Q10, Q11. Questions that had contributory data, as defined by learning in the post-test, were coded as green (Q1, Q3, Q4, Q6, Q9, Q12, Q13).

Evaluation of each question resulted in elimination of two, coded red, where all participants answered correctly in all three surveys (Q7, Q8). Of the remaining questions (n=11), analysis of recognition knowledge as determined by the correct answer, keyed as 1 in data dictionary, appeared under three conditions – years in nursing, years as a forensic nurse, and previous trauma informed care education exposure.

For all groups and questions, except for Q7, Q8 and a few outliers, there was demonstration of new knowledge, remembering, and recognition on the immediate post-test survey. There was no discernable retention of new knowledge or recognition in the post- post-test survey when compared to years in nursing, years as a forensic nurse and in trauma informed care exposure. Familiar scenarios reflected old learning and no new knowledge acquisition, remembering or recognition. In participants with >10-years' practice-experience dropped from pre- to post-post-test on all questions except Q9, Q12, implying familiarity and previous knowledge and recognition. Thematic analysis of participant characteristics using Blooms Taxonomy as a framework for possible explanations is in Table 3.

Table 3

Thematic analysis of question results based on participant characteristics
(Refer to Figure 2. Bloom's Taxonomy)

Themes (Bloom's Levels)	Possible explanations
Implicit Beliefs and Bias (Remember, Recall)	When TIC information contradicts beliefs, there was little learning and sometimes outright rejection of new information by not remembering
Explicit Bias and Actions (Understand, Identify, Recognize)	Answers from previous learning that were not seeking permission with TIC were chosen frequently and created a barrier to full knowledge and recognition of new material
Person-centered care (Understand, Recognize)	Answers that addressed provider needs were chosen frequently, implying a lack of understanding about how to implement TIC in all environments and situations
Experience as RN <3 or > 3 years as nurse (Knowledge, Understand)	They did better on immediate post-test but not as well as post post-test, implying short memory is good for the post-test, but not retained over time in the post- post-test survey.
Clinical Scenario Familiarity (Knowledge, Understand, Retention)	Participants demonstrated comfort (DV, rape) with specific scenarios, demonstrated better learning outcomes, implying previous exposure. In addition, familiar scenarios among forensic nurses resulted in pre-test accuracy and no learning

Limitations

The small sample was a convenience sample of volunteers from one regional area in a Northeastern state. The design required a group with limited characteristics (forensic nurses) for data analysis. The main limitation of quasi-experimental pre-test–post-test design is the threat to internal validity (cannot determine cause) with *a priori* scenario and answer development. The development of case scenarios and TIC answers occurred *a priori* using subject matter experts to establish face validity. Internal and external construct validity was not established (due to a lack of sensitivity to the variable of *seeking permission* in repeated answers) and authors recommend further study. Surveyed during Covid-19, nurses experienced a significant stress, possibly contributing to a lack of retention of unfamiliar or new information in a single educational intervention. For any participant, online education may be limiting, and survey completion takes additional time away from other activities or has environmental distraction, resulting in extended post-post survey completion. Reduced reinforcement opportunities of the newest evidence-based information, e.g., practice simulation, is a limitation, which also may affect learning recall during post and post-post surveys.

Discussion

Research about TIC recognition in practice is lacking. The design of the study used educational pedological theories and frameworks to deconstruct learning to determine the foundational gaps in the earliest stages of remembering (Bloom's Stage 1) and understanding (Bloom's Stage 2). This study showed higher TIC knowledge levels have a lower likelihood of answering selected TIC questions correctly. As a knowledge-intensive profession, nursing defines one's capacity for effective action as application following critical analysis (Gaffney, 2021). Experienced forensic nurses in this study possess a mix of experiences, values, contextual information, and insights to enhance their decision-making skills and should show high knowledge attainment. To examine TIC knowledge (remembering) and recognition (understanding) in a sample of experienced forensic nurses, the study findings include: (1) participants with 5 or more years of nursing *did not demonstrate* new learning (remembering or understanding) , particularly in questions that have newer situations (e.g., pronouns or culture of systems [tribal law, child protection laws]); (2) learning about TIC occurred with variation among individuals, and as such, choosing ICC statistical analysis represents the single unique question only, not questions as a group, allowing for thematic discussions; (3) baseline knowledge with specific questions was good (Q1, Q2) possibly representing previous knowledge and education; (4) without experience with patient populations (incarcerated, elder) the learner choices reflected difficulty in transitioning knowledge from remembering and understanding to recognition of TIC (Q5, Q10); and (5) considering previous knowledge levels in individual participants resulted in higher learning levels because several questions involved females (Q3, Q6, Q9, Q12 and Q13), sexual assault situations (Q3, Q12), intimate partner violence (Q6, Q9), and situational management in an emergency (Q12), all associated with current and familiar participant practices.

Two questions contained existing knowledge, where all participants answered correctly (Q7, Q8), so the two questions were not included in the overall study results. The same familiarity reflects confidence in *or* failure to reflect new learning by choosing the wrong answer, regardless of experience level. Authors took note that one question with legal advocacy language, "It's not your fault," was persistently chosen as the correct answer by two participants. The answer is not person-centered (AACN, 2021) and is a nurse-centered directive that relieves the discomfort of the vicarious trauma when listening to a horrific lived experience. The authors question the moral conflict (e.g., feeling powerless to change the event occurrence) faced by forensic nurses caring for persons with trauma, which disconnects the person from the initial TIC delivery intervention while trying to establish safety. This suggests that nurses previous learning about victims or personal trauma experiences influences remembering and understanding of rationales for the individual nurse's behavior during the provision of TIC in person-centered care and is an area of future educational research. Given persons enter nursing with a strong desire to deliver compassionate care that relieves pain, whether emotional or physical, the authors also believe that adoption of behavioral changes requires practice using simulators and simulation (Barsalou, 2009). Trauma focused behavioral change is person-centered in nursing practice, meeting AACN *Essentials,* and reflective that nurses often need the same peer support, compassion, and caring offered with a TIC intervention.

Education strategies that are trauma-focused and person-centered employ connectiveness (Stange, 2009) and increase meta-cognitive creativity (i.e., intentional thinking about how you think and learn), and therefore how the nurse improves knowledge (recognition and understanding). Strategies based in connectiveness theory, where learning is experiential is best

influenced by a group of learners (e.g., called nodes in connectiveness theory), and reflects peer exchange and support. One supportive peer method is *Extension for Community Healthcare Outcomes* (ECHO) (McBain et al., 2019). In ECHO, to minimize barriers to learning, information exchanges are structured to challenge the individual learner with new and conflicting education and experiences through a socialization process. Evidence presented by experts, and not the self-promoting personalities, social movements, or organizational positions provide opportunities for repetitive information in different ways that connect with the lived experiences of the learner; and require distinct and unique methods for those with less experience, trauma experiences, and those with decades of experience. ECHO is necessary for consensus when best practices are absent. In this study, the unique learner experience without connectedness or ECHO's peer feedback is one explanation that recognizes a reason for the absence of new learning. Surprisingly, those not demonstrating new learning in this study were nurses with five or more years of experience. The authors believe that there are additional strategies to facilitate reduction of moral conflict and to use evidence to explain and promote understanding of the value of the TIC results in behavior change after years of practice. Consequently, TIC learning does not occur using an instructional power point or in one session, but rather a discussion about TIC evidence, theories, frameworks, and methods that promote person-centered care and support the individual nurse's reflection about their own learning, behaviors, and current need for change.

TIC, while not in the AACN *Essentials*, is necessary for the core competency, person-centered care delivery. The forensic nurse behavioral response includes a clear understanding of person-centered trauma-informed care and is essential to change explicit bias and remove judgement, thereby providing compassionate care. The development of the forensic nurse's expertise through competency demonstrations is developed over time through successful patient encounters in culturally diverse patient populations, where they are reviewing and revising their knowledge base. Outside of graduate programs, forensic nursing education is primarily found in continuing education. Universities and healthcare institutions must also be aware of nurses' roles and forensic responsibilities by developing and making TIC learning available. For nurses, that means empowering the nurse to recognize and understand that patient-centered care reveals autonomous patient decisions based on their lifetime of experiences, not nursing directives or actions. Acknowledging the person's autonomy is a notion easy to accept and verbalize, but harder to implement. For many people, including forensic nurses, behavior change(s) are often difficult when challenged with integration of new information. The recognition of TIC responses in this study's case scenarios found improved recognition of trauma-informed approaches post the educational intervention. The population of forensic nurses in this study did not maintain post-test scores on the post-post-test, suggesting that *additional learning strategies are needed.*

Implications for Practice in Education of Forensic Nurses

The implications for educators of TIC utilize theoretical and pedagogical methods. In nursing one method is clinical mentoring commonly is used to transfer knowledge from those with experience to those who are new to the role (Gaffney, 2021). Forensic nurses with more experience have an obligation to mentor and precept new or younger forensic nurses thereby providing them with the opportunity for peer validation with practice actions and to extrapolate key knowledge (Gaffney, 2021). Another method is when senior mentors who are educators provide the transition for newer forensic nurses through educational strategies that implement Blooms' levels of learning, from knowledge acquisition to meta-cognitive manipulation of

situations that differ from familiar populations. The core competencies for forensic nurses build on the AACN Essentials (AACN, 2021a) with further clarification of the domains of forensic nurse practices that include how to apply TIC principles, reframe issues, and identify alternative solutions to clinical and ethical dilemmas when practice populations present uniqueness unfamiliar to the forensic nurse. These methods proposed provide a framework for measuring growth in the specialty of forensic nursing (Speck et al., 2022).

The concept of connectiveness guides the learner of tomorrow and has implications for forensic nurses. The method of creating *nodes* of like learners begins to innovate and implement TIC principles. One place for learning application of TIC is in simulation spaces that are free from distractions, creating safe spaces for learners. To successfully transition knowledge from the mentor to the novice or naïve forensic nurse, learning requires repetitive, scheduled practice using the new understanding of information in the application of TIC principles in the clinical setting, such as using the CPR model of learning. Other strategies for nurses include distribution of new learning in shorter peer sessions that use the mentor in their leadership capacity to facilitate the conversation to build on existing knowledge when addressing unique populations or situations. Using the ECHO Model as a method to bring experts and mentors together assists new learning as nurses respond to situations where peers share support, guidance, and feedback in a safe learning environment (McBain et al., 2019). For example, forensic nurses avoid overwhelming the learner by discussing one TIC principle per educational session, with the group bringing a complex case, and the mentor shares professional experience and evidence-based knowledge from the literature, not opinions. Another model promotes simulator and simulation learning where educator mentors create the pedagogical approach to TIC scenarios where students have the opportunity to build on knowledge, and then practice sub-sets of learned skills in real-life situations to enhance memory (Barsalou, 2009; McBain et al., 2019). Each of these methods use connectiveness theory and science to enhance passive (absorption, assimilation, consideration, translation) and active (thinking, discussing, challenging, analyzing) learning (Barsalou, 2009). All the active learning methods encourage mentor guidance, exchange, and debate about unfamiliar population scenarios, which helps imprint new TIC knowledge into long term memory and creates a path for continuing learning in forensic nurse populations.

Conclusion

A trauma-informed approach to care uses a framework that realizes trauma exists, recognizes the effects of trauma, responds with trauma-informed knowledge, and resists traumatization on an organizational and personal interaction level (Substance Abuse and Mental Health Services Administration, 2014), and is a person-centered care approach for nurses. The conclusion is that the science of teaching and learning creates environments for behavior change. This article identified theories, frameworks, methods, and principles of TIC necessary for the forensic nurse. Forensic nurses with more experience understand, utilize their knowledge and clinical information to make decisions swiftly and efficiently (Gaffney, 2021). With changing generations, evidence to support traditional methods of teaching knowledge is essential. However, conventional methods do not demonstrate meta-cognitive thinking when applying new knowledge past critical thinking *application* levels of learning. Knowledge is essential and the initial application of knowledge is the “bread and butter” for educators. If forensic nurses are to change nurse-centric behaviors to person-centered TIC, they first must recognize the value of the specific behavior to adopt as new behavior and recognize that the traditional ways of teaching are not effective, and the implication for being ineffective is particularly necessary for forensic nurse

educators. Recognizing that change in behavior is based on personal values, teachers often turn to innovative conceptual designs to encourage metacognitive advanced practices. Often this means stripping away old knowledge and nurse-centric thought, followed by nurse-centric actions. The behavior changes require implementing TIC person-centered actions and TIC principles and nursing ethics that foster person-centered care. TIC requires acceptance of the person and respect without judgement to facilitate patient autonomy, through respect and genuine caring and compassion, and willingness to be transparent in support the person's choices by seeking permission and giving voice and choice to all.

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