Experiences of Dietetic Interns Taking a Trauma-Informed Care Educational Intervention

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Trauma Informed Care (TIC) approaches recognize the impact of trauma on patients’ health and their ability to engage in therapeutic relationships. TIC training should follow the same principles as students may have a trauma history. This educational intervention explored the experiences and attitude changes among dietetic interns (DIs) taking TIC training and developed recommendations for trauma-informed teaching practices. A multi-method interpretative phenomenological design was employed for this educational intervention. Semi-structured interviews were conducted with nine Hispanic female DIs completing their supervised practice at Veterans Affairs Caribbean Healthcare System (VACHS) dietetic internship program. The intervention consisted of three modules, and pre-and post-intervention surveys were administered. According to statistical analysis, four out of the eight statements showed significant changes in attitude with a large effect size. The analysis revealed five main themes: 1) Change of attitude, where interns became more aware of implicit bias and personal identity; 2) The teaching approach was comfortable enough to share and discuss complex topics; 3) Inquiry-based learning, highlighting the value of topics for dietetic practice and self-reflection; 4) Emotionally engaged, with interns experiencing various emotions and recognizing the importance of trigger warnings; 5) Recommendations for future training. This educational project contributes to the literature on TIC education among DIs. The findings emphasize the need for integrating TIC principles into TIC educational interventions and provide valuable insights into the safest methods for teaching TIC in dietetic internships. The recommendations derived from this project can guide the development of effective TIC teaching practices in healthcare education.

Abstract

Trauma Informed Care (TIC) approaches recognize the impact of trauma on patients’ health and their ability to engage in therapeutic relationships. TIC training should follow the same principles as students may have a trauma history. This educational intervention explored the experiences and attitude changes among dietetic interns (DIs) taking TIC training and developed recommendations for trauma-informed teaching practices. A multi-method interpretative phenomenological design was employed for this educational intervention. Semi-structured interviews were conducted with nine Hispanic female DIs completing their supervised practice at Veterans Affairs Caribbean Healthcare System (VACHS) dietetic internship program. The intervention consisted of three modules, and pre-and post-intervention surveys were administered. According to statistical analysis, four out of the eight statements showed significant changes in attitude with a large effect size. The analysis revealed five main themes: 1) Change of attitude, where interns became more aware of implicit bias and personal identity; 2) The teaching approach was comfortable enough to share and discuss complex topics; 3) Inquiry-based learning, highlighting the value of topics for dietetic practice and self-reflection; 4) Emotionally engaged, with interns experiencing various emotions and recognizing the importance of trigger warnings; 5) Recommendations for future training. This educational project contributes to the literature on TIC education among DIs. The findings emphasize the need for integrating TIC principles into TIC educational interventions and provide valuable insights into the safest methods for teaching TIC in dietetic internships. The recommendations derived from this project can guide the development of effective TIC teaching practices in healthcare education.

Background

A trauma-informed care (TIC) approach can potentially improve therapeutic relationships and patient health outcomes (Gokhale et al., 2020; Purtle, 2020; Wiss & Brewerton, 2020). A TIC approach recognizes how patients’ history of trauma affects their health and ability to change behavior and engage in patient-provider relationships (Hailes et al., 2019; M Merrick et al., 2019; TIC Implementation Resource Center, 2021). Trauma includes one or multiple events that affect emotionally or physically an individual’s mental, physical, social, emotional, or spiritual well-being (Substance Abuse and Mental Health Services Administration, 2014a). A “traumatic event” could be caused by nature (e.g., epidemics, hurricanes, earthquakes) or by people (e.g., accidents, sexual assaults, abuse, and war) (Center for Substance Abuse Treatment (US), 2014). Highly stressful and potentially traumatic experiences during childhood are known as Adverse Childhood Experiences (ACE); these include emotional, physical, and sexual abuse, household challenges (e.g., divorce, mental illness, substance abuse), and neglect (Kalmakis et al., 2020; Ortiz et al., 2022). Sixty percent of adults in the United States report having at least one type of ACE (Center for Disease Control and Prevention, 2021; Merrick et al., 2018).

The excessive or prolonged exposure to these experiences causes toxic stress that lead to physiologic and psychological effects on the body (National Scientific Council on the Developing Child, 2005-2014; Shonkoff, 2016). Many chronic diseases (e.g., obesity, liver disease, diabetes, cancer, chronic obstructive pulmonary disease, asthma, heart disease), mental health problems (e.g., depression, anxiety, post-traumatic stress disorder, suicide) and adult health risk behaviors (e.g., unintended pregnancy, alcohol and drug abuse, unsafe sex) have been associated to ACEs (Center for Youth Wellness, 2017; M Merrick et al., 2019; Wiss & Brewerton, 2020). Adults with traumatic experiences may struggle to engage in therapeutic alliances with their providers, avoid difficult topics, have diminished medication adherence, increase vigilance, and have strong emotional reactions (Brown et al., 2017; Cuca et al., 2019; Lawson et al., 2020). These experiences can impact a person’s ability to trust, feel secure, and create positive relationships with healthcare providers (Brown et al., 2017; Lawson et al., 2020). This can lead to interpersonal problems that affect their overall well-being. It is necessary for all dietitians, especially those working directly with patients, to understand how traumatic experiences could impact their intervention and how a TIC approach may help to create therapeutic relationships (Oral et al., 2020; Substance Abuse and Mental Health Services Administration, 2014a).

The value of this approach in patient care is evident in providing patient-centered care, empathic and compassionate interventions, and enhancing patient-provider therapeutic relationships (Lawson et al., 2020; Rienecce et al., 2021; Substance Abuse and Mental Health Services Administration, 2014a). TIC training is not usually integrated into the curriculum of nutrition and dietetics programs. However, it is essential to understand that ACEs and any traumatic event during adulthood may be related to binge eating, compulsive eating, eating disorders, reduced adherence to treatment plans, and chronic diseases (e.g., depression, chronic obstructive pulmonary disease, cardiovascular disease, diabetes, obesity) (Brustenghi et al., 2019; Center for Youth Wellness, 2017; Convertino et al., 2022; M Merrick et al., 2019; Rabito-Alcon et al., 2021). The integration of TIC in nutrition practice, especially in the clinical setting, has not been studied. Therefore, it is crucial that nutrition and dietetic students learn about how to use a TIC approach early in their careers.

While, it is important for all health profession training programs to incorporate TIC, educators should keep in mind that students may have their own trauma histories and use consistent TIC principles (Carello & Butler, 2014; Fallot & Harris, 2009). A study among college students reported that 56.3% of the sample had at least two ACEs (Kalmakis et al., 2020). In contrast, 51% of medical students in another study reported having at least one ACE, and 12% reported having more than four ACEs (Sciolla et al., 2019). A TIC training can evoke intense feelings, secondary trauma, or re-traumatization of learners, especially if these learners are not familiarized with these types of sensitive topics (Beverly et al., 2018; Carello & Butler, 2014; Cless & Nelson Goff, 2017). TIC educators must consider that any negative emotional response (i.e., sadness, fear, anxiety, shame, regret, intimidation) may impact the performance and ability to learn (Ortiz et al., 2022; Rowe & Fitness, 2018). A TIC educational intervention should prioritize the emotional safety of the learners and deliver these potentially difficult topics in an environment that promotes learning, trust, confidence, maximize choice and collaboration, and values the diversity and backgrounds of students (Butler et al., 2018; Carello & Butler, 2014; Felter et al., 2022; Kumar et al., 2019).

The main objective of this educational intervention was to assess and evaluate a Trauma-Informed Care education intervention and develop recommendations for teaching TIC to dietetic interns. This educational intervention for nutrition graduate students was adapted by Rothpletz-Puglia et al. from a TIC educational intervention for pediatric residents (Rothpletz-Puglia et al., 2022; Schiff et al., 2017). This intervention was developed following the Substance Abuse and Mental Health Services Administration (SAMHSA) TIC principles of safety, trustworthiness and transparency, peer support, collaboration and mutuality, empowerment and choice, and cultural, historical, and gender issues (Substance Abuse and Mental Health Services Administration, 2014a). We...
also explored changes in attitudes among dietetic interns pre- and post-TIC educational intervention. This study aimed to provide a better understanding of the safest methods to educate about TIC and support the development of recommendations for trauma-informed teaching practices.

Method

This educational intervention used a multi-method interpretative phenomenological design to examine how the attitudes of DIs changed before and after a TIC educational intervention. The intervention also aimed to gather the DIs’ perspectives about the teaching approach and educational experience and make recommendations for trauma-informed teaching practices. This educational intervention was conducted between March and April 2023 and was given in Spanish, the native language of most participants who were also fluent in English. The educational intervention evaluation consisted of semi-structured interviews and a pre and post assessment with dietetic interns completing the supervised practice at a dietetic internship program (n=9) at the Veterans Affairs Caribbean Healthcare System (VACHS) institution. The VACHS’ Dietetic Internship Program (DIP) is for nutrition students who have completed their didactic education requirements and need to complete a supervised practice learning experience.

The TIC education intervention (Figure 1) is an adaptation of a published educational approach for pediatric medical residents (Schiff et al., 2017). The intervention consisted of three main modules. These modules included live sessions, pre- and post-class readings, and activities. The modules and educational activities discussed patient-centered care topics, including self-awareness, implicit bias, cultural humility, health equity, the origins of the ACEs study, the rationale for practicing TIC, examples of TIC in nutrition, and an interactive neonatal abstinence syndrome case-based scenario. In module 3, a case-based scenario about a mother with a history of substance use disorder (SUD) and her child with neonatal abstinence syndrome was briefly discussed. Women who suffer from substance use disorders (SUDs) frequently encounter concurrent trauma (Schiff et al., 2017; Substance Abuse and Mental Health Services Administration, 2014b). For this group, trauma-informed care (TIC) is highly recommended. The case-based scenario presented the connection between trauma as an antecedent of substance use by discussing the Adverse Childhood Experiences study (Schiff et al., 2017; Substance Abuse and Mental Health Services Administration, 2014b).

The educational intervention modules were adapted to be culturally sensitive and included trauma-informed teaching practices. Modules one and three included pre-and post-tests to measure TIC attitudes among dietetic interns. Additionally, after module three, a phenomenological interview was conducted to gather feedback on the interns’ experiences with the educational intervention.

The project team comprised various perspectives and senior researchers and professors. Dr. Rothplez-Puglia is a senior researcher and professor with over 30 years of clinical and research experience. She has vast experience in qualitative and mixed methods research designs and with TIC. She led the team that developed the Trauma Informed Care training modules for nutrition graduate students. (Rothpletz-Puglia et al., 2022). Dr. Byham-Gray is a senior researcher and professor with an extensive experience in research, higher dietetics education, and studies using qualitative designs. Dr. Gonzalez-Pacheco is also a professor and investigator with previous experience in research and TIC training implementation. Roxana Torres is the Dietetic Internship Program Director at the VA Caribbean Healthcare System. She has experience with research projects and implementing educational activities in an accredited dietetic internship program.

Participants

This educational intervention was conducted in the dietetic internship program (DIP) at VACHS in San Juan, Puerto Rico. Participants were nine dietetic interns enrolled in the 2022-2023 DIP cohort. A small and homogeneous sample size is used for interpretive phenomenological analysis (IPA) projects due to the in-depth nature of the data and to examine participants’ experiences more deeply (Noon, 2018; J. A. Smith & I. E. Nizza, 2022). Participants had to meet the following inclusion criteria to participate: (1) be enrolled in the Dietetic Internship Program at VACHS; (2) be adults (at least 21 years of age); (3) engage through voluntary participation; and (4) participate in all components of the TIC educational intervention. The Rutgers’ Institutional Review Board (IRB) and VACHS’ Associate Chief of Staff for Education granted exempt status approval for this educational project.

Measures

Pretest-Posttest Survey

A pretest-posttest survey (Appendix 1) was used to explore the change of attitudes toward mothers and women with substance use disorder (SUD); the case was presented and discussed in module 3. The pretest-posttest survey statements are from Schiff et al (2017); which developed these statements from previous studies with scales on comfort, addiction and trauma, provider trust, and attitudes toward women and mothers with SUD. For this educational intervention, we used a portion of the Schiff et al. (2017) survey. In module three, a short case situation about a mother with a history of SUD and her child with Neonatal Abstinence Syndrome (NAS) was briefly discussed. The case situation describes a woman with an infant with NAS caused by in-utero poly-substance exposure. The pretest-posttest survey measured attitudes changed related to general statements about women and mothers with SUD (Schiff et al., 2017). The survey contained eight statements with a 5-point Likert scale (5= strongly disagree, 4= disagree, 3= neither agree nor disagree, 2= agree, 1= strongly agree; statements one, four and six included the scale in reverse), and had an overall Cronbach α =0.70 (Schiff et al., 2017). In this intervention, the pre-test was provided before the TIC education in module one, while the post-test was provided after module three (the last module).

Interview
Dietetic interns (DIs) were informed about the purpose of the interviews and were invited to participate. Interviews were audio-recorded and followed a semi-structured format (Miller et al., 2018). After module three, the interviews were conducted in person, in a private office, using an interview guide with open-ended questions. A panel of three research experts evaluated the guide to ensure that questions were appropriately developed and that all necessary topics were covered. The questions (Table 1) were also pilot tested for fluency and practicality, to refine follow-up questions, and to identify any possible interviewer bias (Kallio et al., 2016).

**Table 1**

**Interview Questions to Explore the Dietetic Interns’ Perspectives, Educational Experience and Recommendations for Trauma-Informed Teaching Practices**

<table>
<thead>
<tr>
<th>Main Question</th>
<th>Probes</th>
</tr>
</thead>
</table>
| 1. Tell me about your experience with module 1. How was your experience during this module? | • How did you feel about that?  
• Can you give me an example of when you felt that?  
• Can you tell me more about that? |
| 2. Tell me about your experience with module 2. How was your experience during this module? |
| 3. Tell me about your experience with module 3. How was your experience during this module? |
| 4. How did learning about health equity, cultural humility, and trauma issues in patient care make you feel during and after the session? | • How did you feel about that?  
• Can you give me an example of when you felt that? |
| 5. What suggestions do you have to improve the way we teach this content? | • Can you tell me more about that? |

The interviews were conducted in Spanish, the native language of the participants and interviewer. The transcriptions were done in Spanish and then translated into English. The translation model adapted by Lopez et al. (2008) was used to ensure the reliability and validity of the data. This model suggests several steps that include verbatim transcription, translation of the transcript, second translator collaborator revising the translated transcription, and corroboration of any inconsistency with the original transcription (Lopez et al., 2008). For this educational intervention, a bilingual assistant revised the transcriptions and met with the primary investigator to discuss any inconsistency or colloquial terms from the original transcription.

**Analysis**

Quantitative data collected in this project to explore attitude changes were analyzed using Statistical Package for Social Sciences (SPSS) version 26 (IBM Corp, 2019). The pretest-posttest survey scores for each survey item were compared using a Wilcoxon signed rank test as most data were not normally distributed. Given the small sample size, these data are reported as trends.

The audio-recorded interviews were transcribed verbatim and reviewed by the investigation team for accuracy. Any personal information in the recording, such as names or specific locations were transcribed with “XXX” to protect confidentiality. The transcriptions included all semantic information including literal words and non-verbal aspects such as any marked pause, length of pauses, or change in tone of voice (McGrath et al., 2019; J. Smith & I. Nizza, 2022). The transcriptions were loaded into NVivo™ software for interpretative phenomenological analysis (QSR International, 2022).

Interpretative phenomenological analysis (IPA) is a qualitative method that enables a close examination of a participant’s lived experiences (J. Smith & I. Nizza, 2022). This method is used to understand the participant’s interpretation of the experienced phenomenon and how they make sense of it, considering their personal views and social surroundings (J. Smith & I. Nizza, 2022). The main objective of IPA is to get closer to the lived experience through detailed participants’ experience information collected in, for example, the phenomenology interview (J. Smith & I. Nizza, 2022). Some benefits of using this method are that it provides a detailed, in-depth understanding of how participants interpret the experience, make sense of it and provide rich and refined analyses of constructs of interest (J. Smith & I. Nizza, 2022). This project used an idiographic approach, in which the analysis focused first on a single participant before combining or comparing the participants (J. Smith & I. Nizza, 2022). For this proposed project, we followed the steps described in Figure 1 (Miller et al., 2018; J. Smith & I. Nizza, 2022).

The transcriptions were analyzed using NVivo® software with an IPA approach. The audio recordings were played simultaneously while reading the transcriptions to gain a deeper understanding of the participants’ experiences. The examiner searched for similarities, differences, and contradictions in the text, moving from descriptive to linguistic to conceptual notes (i.e., sense of the data) (J. Smith & I. Nizza, 2022). The initial codes were developed by one examiner, and the project team later identified emerging themes or patterns. The themes were based on the project’s aims and variables described in meetings. During the meetings, the themes that arose from the transcriptions were discussed by the team. The project team created a list of these themes and formulated experiential statements. These statements were then compared between participants and organized into a table of personal experiential themes. All selected texts for each theme and participant were discussed during team meetings. If the analysts disagreed on certain sections of text, they fostered a discussion to reach a consensus, this process improved reliability.

After this, a cross-participant analysis was performed. This analysis is the process of comparing participants to identify common patterns and differences within similarities. The first step consisted of a first-pass review of each personal experiential table, in which the experiences can be reordered to facilitate...
comparison (J. Smith & I. Nizza, 2022). The second step was to organize all the tables and identify connections, similarities, and differences between participants, including pre to post attitudes changes. Finally, the table of group experiential themes was developed, which combines the rigorous screening across the individual tables of personal experiential themes (J. Smith & I. Nizza, 2022). This table contains keywords from participants that demonstrate the evidence supporting the analysis. A debriefing meeting with participants and a member checking after the analysis was also completed to ensure the accuracy of the experience interpretation. A debriefing meeting was conducted with the dietetic interns to ensure a comprehensive understanding of the group themes identified through the interpretative phenomenological analysis. During this meeting, the trainer shared the interpretations of the themes and facilitated a discussion to gather their perspectives and insights. This debriefing allowed for collaborative exploration of the findings, providing a deeper understanding.

Results

The educational intervention involved nine Hispanic female dietetic interns (DIs) who were part of the DIP at VACHS. They were between the ages of 23-32 and had spent seven months in the DIP, working principally with veteran patients. All DIs participated in the three modules and completed the pretest-posttest survey.

Out of the eight statements in the pretest-posttest survey, there were significant changes in attitude for four of them with a large effect size (Table 2). The pretest-posttest survey statements about mothers who use drugs during pregnancy should not be allowed to retain custody of their children (Z= -2.53, p= 0.011) and an individual is personally responsible for their substance abuse (Z= -2.71, p= 0.007), had a more significant change in attitude. Additionally, there was a statistically significant change in attitude towards pretest-posttest survey statements about women who use drugs can be good mothers (Z= -2.27, p=0.023) and adverse life circumstances are likely responsible for a woman's substance abuse (Z= -2.45, p= 0.014).

Table 2

Comparison of Dietetic Intern’s Pre- and Post-Test Scores for Self-Reported Attitudes

<table>
<thead>
<tr>
<th>Survey Statement (N=9)</th>
<th>Pre-survey Median (IQR)</th>
<th>Post-survey Median (IQR)</th>
<th>Z</th>
<th>P</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Women who use drugs can be good mothers.</td>
<td>3.00 (2.50-3.50)</td>
<td>4.00 (3.00-4.50)</td>
<td>-2.27</td>
<td>0.023</td>
<td>-0.535(^a)</td>
</tr>
<tr>
<td>2. Mothers who use drugs during pregnancy should not be allowed to retain custody of their children.</td>
<td>2.78 (2.00-3.00)</td>
<td>4.00 (3.00-4.00)</td>
<td>-2.53</td>
<td>0.011</td>
<td>-0.596(^a)</td>
</tr>
<tr>
<td>3. Mothers who use drugs and get treatment can successfully recover from their addiction.</td>
<td>2.00 (1.00-2.00)</td>
<td>1.00 (1.00-2.00)</td>
<td>-0.45</td>
<td>0.655</td>
<td>-0.105</td>
</tr>
<tr>
<td>4. I feel sympathetic toward women who use drugs while they are pregnant.</td>
<td>3.00 (3.00-4.00)</td>
<td>4.00 (2.50-4.00)</td>
<td>-0.51</td>
<td>0.608</td>
<td>-0.121</td>
</tr>
<tr>
<td>5. An individual is personally responsible for their substance abuse.</td>
<td>2.00 (2.00-3.50)</td>
<td>4.00 (4.00-5.00)</td>
<td>-2.71</td>
<td>0.007</td>
<td>-0.639(^a)</td>
</tr>
<tr>
<td>6. Adverse life circumstances are likely responsible for a woman’s substance abuse.</td>
<td>4.00 (3.00-4.50)</td>
<td>5.00 (5.00-5.00)</td>
<td>-2.45</td>
<td>0.014</td>
<td>-0.579(^a)</td>
</tr>
<tr>
<td>7. I feel angry toward women who use drugs while pregnant.</td>
<td>4.00 (3.00-4.00)</td>
<td>4.00 (3.00-5.00)</td>
<td>-0.90</td>
<td>0.366</td>
<td>-0.213</td>
</tr>
<tr>
<td>8. Women who use drugs overutilize healthcare resources.</td>
<td>3.00 (3.00-4.50)</td>
<td>4.00 (4.00-5.00)</td>
<td>-1.44</td>
<td>0.149</td>
<td>-0.340</td>
</tr>
</tbody>
</table>

Note: All statements use a 5-point Likert scale, and statements 1, 4 and 6 included the scale in reverse of the others; in the original study that tested these statements, the overall Cronbach \(\alpha = .70\); \(^a\)large effect size \(0.50\), \(^b\)moderate effect size \(0.30 – 0.49\), \(^c\)small effect size \(0.10 – 0.29\).

The interpretative phenomenological analysis revealed five main themes with sixteen sub-themes (Table 3).

Table 3

Themes and sub-themes associated with dietetic interns’ experiences during TIC educational intervention
Theme 1: Change of attitude

Many of the DIs stated that they had a shift in their attitude and perspective after completing the modules. They became more conscious of their implicit bias and how it affects their interactions with patients by acknowledging how their background and identity influence their personal and professional environment. They also specifically mentioned a change in attitude post TIC training during the interview.

Sub-theme 1: Acknowledging and becoming aware of implicit bias

The DIs acknowledged one’s bias as essential to reducing its impact on interactions with others. They mentioned the importance of recognizing one’s inherent bias. For example, after the modules, one realized that she had biases and expressed how hard it was not to be biased toward certain scenarios. Similarly, another described how difficult it was for her not to be biased, considering they thought they did not have any bias before the intervention. One participant stated,

“In other words, because that told me that I don’t have bias, it does not mean that I do not. We always have thoughts regarding certain things that we have experienced... but it is always good to take these thoughts into account when, in this case, one as a nutritionist makes the interventions, then to be able to do the best possible.”(P7)

They acknowledged the importance of reflecting on the importance of knowing our biases to not judge people or put a stigma on people. Also, the importance of being open to feedback and letting others challenge our assumptions:

“I think that allowed me to realize that maybe if I am talking to a patient and feeling like I am judging them for something, like, where is that judgment coming from? Is it because of something that I experienced or saw in my family or is it something that I kind of formulated based on, just my most recent experience like? Maybe this assignment, like maybe now I am more open to something because I had an education towards the topic.”(P8)

Sub-theme 2: Developing self-awareness by knowing your social and personal identity

The DIs described an increased awareness of identity as thinking more and reflecting on topics like religion, gender, how you grew up, especially family relationships, and how this influences how one behaves. They mentioned that this helps one understand better who they are personally and in society. For example, in module 1, one of them said they could better understand who they are personally and in society by learning about their interests and preferences.

“That, for me, was very reflective in terms of experiences; well, yes, that struck me because I was able to relate many of my own experiences and what we had talked about how those experiences become part of our personality and the things we do.”(P3)
Also, they identified as necessary the process of reflecting more about one's background and how it influenced who they are now, to write down one's identity and separate this by importance. They mentioned that understanding a person's identity is a way to understand humanity.

“...so all these little things kind of, fixed together who I am now. And then, I really, I really just like writing it down and looking at that piece of paper and kind of defining like who I am, what my views are on certain topics; because, you kind of see the whole picture, right there staring at you, and you are like woah it makes sense why I make certain decisions or make sense why I am a little bit shy towards certain topics.” (P8)

**Sub-theme 3: Realized a change of attitude**

The DIs referred to a change of attitude with a shift in one's perspective or opinion. They could describe a change in attitude towards the case from modules 1 to 3 and connect it to their previous experiences. They also referred to how their experiences and personal history impact how they see people and how, after the educational intervention, they understood this and how that affects interactions. One participant stated,

“But after this module, it was like it makes sense why... this is not the answer, so... it was like I still had a little bit of bias, but like, it was like my perspective had changed.” (P1)

Another stated,

“That was the module that changed my perspective the most because... At first, I was like, aha! what a super negligent mom... look how the baby came out... And I reacted like that from the first instance too ... But of course, she's negligent! Of course, I'm upset, how would she do that? But after seeing the data and how the intervention is... the correct one to have and not put that bias, well, it was like OMG! how sometimes we reach conclusions without having heard the whole story...” (P3)

Another mentioned,

“Yes, I noticed a change because obviously there was that stigma of a mother who used... I always answered that I disagreed with the part about how she can care for a child alone because it is what we see here. Obviously, not everyone, because not all women who use drug substances will react the same... But it was helpful to be able to use these themes and see that change like we're going to give it the opportunity, we're going to be a little more neutral on that point.” (P9)

**Theme 2: The teaching approach was comfortable enough to share and discuss complex topics**

Most DIs felt comfortable sharing their experiences related to the topic discussed and even sharing their personal histories. They emphasized the significance of feeling comfortable within the group and ensuring a secure and confidential space during the intervention. They also expressed the importance of openness to discuss past experiences connected to the topics while, at the same time, they felt vulnerable in front of the group.

**Sub-theme 1: Educational intervention environment was comfortable**

During the educational intervention, many DIs expressed comfort in discussing and hearing about identity, bias, social issues, racism, and the impact of trauma in life. While these topics are often overlooked, the interns believed they are crucial to address. A DI mentioned that to discuss topics like these; it was important to establish confidence and trust with the group beforehand. Another DI felt comfortable enough to talk about her disease and how this could be perceived as a weakness by others.

“...like, you enter a different room, a more comfortable room, more relaxed, in which you can feel... Ahh, ok, I can open up a little more and say things that I have never said in public or in a workplace, and I decided to open up and talk about myself, about my disease that I never have! In my life, I have talked about it at work.” (P8)

Two DIs mentioned that they are more reserved when it comes to discussing these topics, but they would have shared their thoughts according to their level of comfort in the educational intervention environment.

“I felt comfortable, as if I had had the opportunity to speak, I would have been okay talking about it (she laughs) because it is a very interesting topic”(P1)

**Sub-theme 2: Openness and vulnerability**

The DIs emphasized that being open can make one feel vulnerable in front of the group. However, one participant expressed that seeing others being open and vulnerable was both challenging and impressive. It was mentioned that sharing one's story and allowing others to be a part of it is essential, but not everyone is ready to do so. Some expressed that individuals may find it challenging to discuss about themselves, often describing themselves as "reserved." One intern stated,

“It was, it, was a little bit tough to kind of see how they felt, and for them to be that open to us and vulnerable, and that really, it was really cool to see, because is not something that I do personally, so.” (P1)

Another one mentioned,

“...I found it helpful. But if it is personal, I would not open up with the other persons yet. It's challenging and more when one is a bit reserved in the way one is, and perhaps exposing that, it's like a bit strong for me.”(P2)
However, they indicated that creating a safe and comfortable environment is crucial where individuals feel at ease sharing their personal experiences. Some of them mentioned that sharing one's story can serve as a means for reflection on how past experiences can impact one's behavior, inspire others to discuss their traumas or disabilities, and create a sense of openness and trust.

“I didn't necessarily feel judged, I felt that it was a place for me to say it like vocalizing, and maybe that helps me to accept my condition more and to be able to help others in the future who feel equally ashamed about what they have gone through in their life, with their traumas and also the condition they have.”(P8)

Some DIs also shared their personal stories and felt comfortable opening about sensitive information, hoping to inspire their fellow DI.

“It still affects me, and it has clearly been part of who I am, but maybe for them to listen to me and maybe for them to see that- look, she can express it, maybe they can relate to it or something…”(P3)

It was important for them that the trainer shared her story first. They mentioned that trainers should lead by example and share their experiences first to encourage their students to do the same. One stated,

“I shared my personal opinion, as you did, that was excellent. Everyone must start like this because you opened the room to make others feel more comfortable. But if you don't share as a teacher and you expect them to share, nobody is going to share, so I loved that you could open the room, say this is my story, this is my background…”(P8)

**Theme 3: Inquiry-based learning**

The DIs mentioned they found great value in the topics discussed during the educational intervention, recognizing their relevance for their practice as healthcare professionals and future dietitians. These topics provided valuable insights and encouraged self-reflection, enabling the interns to deepen their understanding and personal growth as dietitians.

**Sub-theme 1: Found value in the topics for dietetics practice**

They mentioned that the value of this educational intervention for dietetics practice is that it helps to understand patients better and not only see the superficial characteristics. They also said that learning about these topics helps DIIs understand themselves, their internship fellows, and their patients.

“And in the end, I felt that my perspective had changed a bit and... as now, when seeing patients, it's more like... thinking a little deeper, as it says in the iceberg effect.”(P1)

For them, it was also vital to understand differences and respect identity when working with patients. Understanding trauma and its implications was brought up as essential for clinicians.

“...we do not know what is behind it or what is the trigger... But in order not to take things personally and to be able to see the patient as a whole of different components that make that person react that way, then that topic really helps.”(P9)

The topic of health equity and systemic racism was crucial for the DIs as it made them think about social issues not usually discussed in professional development. They stated this topic makes a person think about how traumatic experiences impact how patients behave and their role as a dietitian. They found the knowledge from this intervention as valuable for future interventions as it helps provide better nutritional interventions.

One of the DI noted that the topics covered in module two helped her comprehend the various factors contributing to social determinants of health and disparities. They emphasized the significance of applying this knowledge by examining these factors and identifying issues such as food insecurity in patients/clients. Another DI also highlighted the importance of discussing the implementation of the TIC (Trauma-Informed Care) approach in nutrition practice. They emphasized the value of exploring and reflecting on these topics, particularly your own traumatic experiences, to prevent secondary trauma or retraumatization during interventions.

“...if an opportunity presents itself to do something and I have not sat down to analyze my emotions about it, how am I supposed to do something in front of the public or with someone? I have to internalize all my emotions to act appropriately and discuss the issues without having a mental breakdown and crying in front of them.”(P8)

**Sub-theme 2: Subjects that promote self-reflection**

During the modules, the DIs mentioned that they had the opportunity to reflect more on their identity, the impact of their experiences, and the significance of acknowledging their biases.

“It was a good opportunity to do a lot of internal reflection on where the thoughts I have had come from, if they are associated with my mother, how she raised me. What I learned in my childhood, or with my dad or with my grandmother. And as those thoughts have been formulated to see the things that I see.”(P8)

They emphasized the importance of discussing issues of inequality, racism, toxic stress, and TIC; and continued discussing these topics after the educational intervention.

“I liked this module because it opened our eyes to say, look, this does happen if it is being talked about because sometimes that is like a taboo like, they don't speak about these inequalities…”(P3)
Lastly, one DI mentioned that learning about toxic stress made her consider the factors that affect people's behavior and the importance of preventing toxic stress in their future families.

"It's not that no, they don't have the capacity, it's that maybe they could have it, but since they grew up, I don't know, they will necessarily be able to arrive and have that same brain development as a person who had, had the basic things of life, could have. So, that was very important for me to see, because I am also, also trying to have a family and for my future..." (P8)

**Sub-theme 3: Found these topics relevant for healthcare professionals**

Many DIs found the educational intervention and its topics to be valuable for healthcare professionals, including those in management positions. They believe it is crucial to address essential topics that are often overlooked. Additionally, they emphasized the importance of discussing experiences with inequalities, racism, and disparities, as this helps others to consider these issues more deeply.

"I think the first module overall was really eye-opening, and I really loved that; I feel like everybody who is in health care and even in management needs this type of discussion. Because the way that we perceive life can come up in work and the way we talk to each other, and the way we treat people, and so, if we don't do that reflection within ourselves, then we're not going to be able to see. Where are our thoughts coming from? We are not going to be as mindful as we want to be or we should be." (P8)

**Theme 4: Emotionally engaged**

The educational intervention evoked some emotional responses from the DIs. They mentioned feeling sad, frustrated, and uncomfortable, while empathy was one of the most noted. They said instances where they could connect with the other interns’ experiences sharing their histories and the case scenarios discussed during the videos. They also acknowledged the importance of trigger warnings.

**Sub-theme 1: Evoked an emotional response**

Many of the DIs experienced various emotions throughout and after the modules. Specifically, modules one and three were described as evoking feelings of sadness, discomfort, frustration, and anger. During module one, some DI reported feeling sad, empathetic, and uncomfortable as the trainer and fellow interns shared personal experiences and truths. Additionally, some DIs felt overwhelmed as their knowledge of these topics increased.

"During, well, for me, it was like... like a strong shaking, and well, taking things out, like, facing reality, which is what, really, one has to do (she laughs) and well, after that, well, one is already more aware..."(P2)

A few DIs expressed feeling overwhelmed, angry, and frustrated by the topics covered in module two. Specifically, the discussions about social injustices, health disparities, and social determinants of health seemed to have provoked these emotions.

"...a little overwhelmed with those things, because as you mentioned, one is going to want to do many things, maybe, but many things are not in our hands. So, now what applies to me the most would be to focus on the things I can work on so I can put those in practice..."(P5)

Two DIs mentioned feeling overwhelmed and frustrated also as they recognized the complexity of these social issues and felt powerless to address them at the present moment. Module three also brought up some feelings described as hard, sadness, uncomfortable; mostly related to the cases discussed, and the videos of persons sharing their personal experiences with trauma.

"That was the module that touched me the most, specifically because of the video of the Puerto Rican veteran who was in Vietnam with an alcohol problem and all this. Well, because I had a relative who was a veteran and, well, he had big problems with alcohol, and in his case, he died because of that, so well, I felt touched by that video." (P6)

While some acknowledged experiencing negative emotions, they believed it was crucial to do so to comprehend and contemplate these topics fully.

"I think that if I had not had that emotional response, maybe it would be like, well, it is good to know more information for interventions, but perhaps I would not take it as seriously as it is and that it deserves." (P3)

"Even if the emotion is uncomfortable, it is important to have it and... And it helps me to accept that it's okay to feel the emotion in these moments if you have the right space. It's okay to feel it, and I felt that I could feel many emotions, and I didn't necessarily feel overwhelmed by the emotion."(P8)

**Sub-theme 2: Empathy**

During the educational intervention, the students showed empathy towards their fellow interns by understanding their emotions and expressing their empathetic feelings towards them. Witnessing other interns cry during the educational intervention was difficult for them, and they expressed a desire to continue learning and discussing these important topics in their work as dietitians.

"...and it can be a bit frustrating, right. Definitely, I don't like that they had to go through those things."(P7)

They discussed the significance of empathy in clinical practice and how it can be used to connect with patients and explore well-being options. The DIs emphasized the importance of empathy and acknowledged that it is not their responsibility to solve other people’s traumatic experiences but consider these in their interventions.
"That we have to be aware of the situations that our patient has had and that all those experiences that they have lived before affects them in what they live right now and that we have to also, um, I don't know, approach them in a way that they don't go to feel as if they were judged or that they are going to have negative memories of those experiences and that they simply feel that we are there to support them." (P6)

**Sub-theme 3: Trigger warnings are important to set expectation about the topics to be discussed**

During the educational intervention, the DIs stressed the significance of incorporating trigger warnings. They highlighted the need for a secure educational intervention environment with a secluded and peaceful area to manage emotions. By providing a trigger warning at the beginning of each presentation, the DIs could prepare themselves for the content and discussions of the modules. One intern shared that having trigger warnings before the educational intervention helped her remain composed when experiencing an emotional reaction and encouraged her to reflect on why she felt that way about the topic. One stated, "Before starting the class, the message was, if you feel bad it's okay to take a break, you can walk away... Since you already put the expectation there, like, you let it out, like it's ok you can expect to feel something and now with that preliminary instruction it gives you thoughts like oh ok, well if I feel something it's normal, I'm not judged and it's okay to feel it and it's ok to explore how I feel in the feeling as if I feel angry, why I feel angry? Like, and feel it and analyze it" (P8)

**Sub-theme 4: Felt empowered after the educational intervention**

Some DIs felt a sense of empowerment after completing the modules. They recognized both their professional and social responsibility as health professionals to improve health equity. One mentioned, "But I feel empowered, that I have that training that now I'm not blind,... and I can somehow connect." (P1)

They also mentioned that this knowledge gained from the intervention prepared them to provide better patient care, as they now had a deeper understanding of the various factors that can impact patients' health. One DI mentioned that understanding the complexity of social factors and inequities, motivated her to work with the tools and skills they had now to address these issues. Some of the interns expressed a strong desire to continue learning and engaging in discussions about these topics, as well as taking concrete actions as dietitians. As illustrated by one participant,

"...a little overwhelmed with those things, because as you mentioned, one is going to want to do many things, maybe, but many things are not in our hands. So, now what applies to me the most would be to focus on the things I can work on..." (P5)

**Theme 5: Recommendations for future educational interventions**

All the DIs said they liked the intervention, educational format, and strategies. They defined the intervention as holistic, dynamic, and safe. They even mentioned additional recommendations for improvement, such as the addition of practice case studies, a private area to be in case of intense emotions, and the importance of cultural adaptation.

**Sub-theme 1: Holistic teaching approach**

The use of multiple strategies was brought up as important to enhance learning, especially if these were real experiences. The videos used and the parts of sharing our experiences and story was also mentioned as vital. As mentioned by one intern,

"So, it works for me; I liked it, I learned from myself and from others, and I learned from an intervention. So, it was holistic." (P3)

**Sub-theme 2: Interactive activities**

All the dietetic interns mentioned that it was important for them to have interactive activities in the modules. They mentioned these types of activities helped them to understand and internalize more the topics while providing an engaging learning approach. Some suggested to add more interactive activities such as case studies discussions, more real-life testimonials.

"I would do like... like a mini case study at the end of nutrition... And practice how to have those conversations, in a group, to be able to verbalize and so that you feel more natural when you are going to do it with the patient." (P8)

**Sub-theme 3: Safe environment**

The dietetic interns mentioned that to ensure a safe educational intervention environment; participants must feel comfortable with the trainer and other participants. A private space should also be provided for those needing time alone to process their emotions. One stated,

"I felt in a safe environment like I know that the girls, uh, they create an environment in which... if something happens to you, they respond or they are... (she paused) That buffer; we were talking about..." (P3)

Another one stated,

"...when the triggering message appears, well, if one can really go out, if there is a recommendation, it would be that the moment in which one can go out, well, he can go out to a place where they don't see you if you are falling apart." (P2)

**Sub-theme 4: Importance of cultural adaptation**
The DIs emphasized the significance of incorporating culturally relevant and real-life examples. They believe there should be an increase in culturally adapted videos and examples.

“The video of the Puerto Rican veteran, like for us, I understand that it was super good because someone from our country, right, with whom we can identify...”

(P5)

Discussion

This educational intervention aimed to investigate the experiences of dietetic interns (DIs) who participated in a Trauma-Informed Care educational intervention. It aimed to examine changes in their attitudes and identify recommendations for future interventions using trauma-informed teaching practices. The educational intervention documented changes in the DIs’ attitudes, increased awareness of implicit bias, and social and personal identity. Although some found the material discussed overwhelming, sad, and frustrating, the DIs acknowledged the importance of discussing these topics. They recognized the value of these topics for professional and personal development. They felt comfortable and safe during the intervention and recommended several educational strategies for future interventions.

The Mezirow's Transformative Learning Theory provides a framework for understanding the results observed in this project (Kitchenham, 2008; Rojo et al., 2023). In adult education, transformative learning theory is the process where learners actively engage with complex ideas, challenge their assumptions, and adopt a reflective mindset (Abdulrazaq & Taylor, 2018; Van Schalkwyk et al., 2019). This can shift their perspectives and attitudes, leading to a more inclusive and open-minded approach to learning. Throughout the three modules, the DIs engaged in a transformative learning process that challenged their existing assumptions and perspectives on the topics discussed. The DIs underwent a cognitive and emotional transformation by learning about the significance of adopting a TIC approach and cultivating positive therapeutic relationships. The difference in their attitudes between modules one and three was noticeable, as shown by the results of the pretest-posttest survey and the interpretative phenomenological interview. These findings align with previous educational interventions that has shown the positive impact on attitudes of educational interventions focused on comprehending the effects of toxic stress, ACE, and other social and behavioral factors influencing our ability to understand and form assumptions about individuals (Cannon et al., 2020; Chokshi & Goldman, 2021; Ramadurai et al., 2022). The DIs’ shift in attitude may reflect their deeper understanding and increased sensitivity toward the complex interactions of personal experiences and trauma, eventually enhancing their ability to provide patients with more effective and empathetic care.

The DIs expressed positive perspectives about the teaching approach and educational experience, highlighting various aspects contributing to their learning and growth. They found the teaching approach and environment to be comfortable enough to share and discuss complex topics, creating an environment conducive to open dialogue. The safe and inclusive educational intervention environment enabled them to explore sensitive subjects related to the topics, creating a space for personal and professional growth. These described experiences are similar to what is described in Person-Centered Learning Theory (Kunze, 2013; Swan et al., 2020; Wurdinger & Carlson, 2010). According to this theory, learning occurs when individuals actively engage in a supportive and non-judgmental learning environment that promotes personal growth and self-discovery (Kunze, 2013; Swan et al., 2020). The inclusive educational intervention environment described also reflects the person-centered approach by creating a space for interns to explore sensitive subjects related to health inequity, disparity, structural racism, unconscious bias, and trauma-informed care (Goldman & Eiduson, 2021). This environment encouraged the interns to reflect on their own beliefs and biases, leading to increased self-awareness and a deeper understanding of the topic. The person-centered learning theory emphasizes the importance of creating a supportive and respectful environment, which describes the positive perspectives expressed by the interns.

The positive outcomes observed can also be attributed to the utilization of a trauma-informed teaching approach, which played a crucial role in developing and delivering the educational intervention (Clark, 2023; Cless & Nelson Goff, 2017; Sherwood et al., 2021). This approach was guided by several principles that acknowledged and addressed the impact of trauma on the DIs learning experiences. The intervention integrated trauma-informed practices, such as creating a safe and supportive learning environment, acknowledging the DIs’ diverse backgrounds and experiences, and promoting self-reflection (Clark, 2023; Cless & Nelson Goff, 2017; Sherwood et al., 2021). As a result, the educational intervention met the DIs’ specific requirements, enhancing their engagement, understanding, and application of the topics covered.

The affective domain of learning aligns well with the described emotions experienced by the dietetic interns with the educational intervention (Green & Batool, 2017; Hoque, 2016; McGrew, 2021). The content evoked emotional responses, noticed by their described empathy and compassion for patients and peers who have experienced trauma or other adversity. In addition, the interns expressed interest, curiosity, and a feeling of empowerment after the intervention. These emotional responses influenced their understanding and consideration of the trauma-informed care approach. In line with the principles of social and emotional learning, when learners are emotionally engaged and motivated, they are more likely to invest effort, retain information, and effectively apply their knowledge and skills (Brackett et al., 2019; Jones et al., 2019). The emotional aspect of the educational intervention not only enhanced the interns’ understanding but also fostered a commitment to providing compassionate and patient-centered care, which was noticed by the interns providing specific examples of how to use this knowledge in professional practice. The emotional experience of the dietetic interns in this educational intervention aligns with other studies that use a similar curriculum for teaching TIC (Bosse et al., 2021; Pfeiffer & Grabbe, 2022). The curriculum emphasizes the learner's emotional aspect, which aligns with the TIC principle of safety (Brown et al., 2021; Carello & Butler, 2014).

However, during the educational intervention, the dietetic interns also felt overwhelmed, frustrated, and sad. Despite this, they recognized the importance of these topics in gaining a deeper understanding of patients and improving their professional practice. The interns valued the intervention as it allowed them to establish connections and better understand individuals. Additionally, the educational intervention served as a source of motivation, empowering them to think about ways to impact society and implement trauma-informed care. This experience can be explained by some learning theories, where learners are motivated to reduce discomfort by either changing their beliefs or resolving conflicting thoughts or emotions (McGrath, 2020; Rowe & Fitness, 2018). For example, some scenarios observed in this intervention were the interns seeking additional resources to understand the topics, increased self-reflection, and active participation
in the discussions to gain a deeper understanding. These observed practices could have been the interns’ attempts to align their feelings of overwhelm or sadness with their belief in the importance of the topics, trying to reduce the dissonance between their emotions and attitudes (McGrath, 2020).

The educational intervention was received positively, with feedback describing it as holistic, safe, and interactive. The interns expressed a desire for more engaging learning opportunities, particularly real cases, discussions, and case studies where they can apply a TIC approach in nutrition practice. By prioritizing dynamic and active learning opportunities, learners are more engaged and can develop critical thinking skills to help them navigate complex scenarios in real-world practice. The results are consistent with previous studies that indicate healthcare students prefer more learning activities, such as role-playing, discussing topics using a TIC approach, and practicing in real-life scenarios (Chokshi et al., 2020; Pletcher et al., 2019; Ramadurai et al., 2022).

Furthermore, the interns emphasized the importance of cultural adaptations within the intervention. Recognizing the significance of cultural competence, incorporating diverse narratives and stories that align with the DIs’ cultural backgrounds can enhance their engagement and enable them to relate more deeply to the topics discussed (Parkhouse et al., 2019; Thomas & Quinlan, 2022). This cultural adaptation can foster a stronger connection and understanding of the subject matter, ultimately facilitating more meaningful learning experiences (Parkhouse et al., 2019; Thomas & Quinlan, 2022).

**Strengths and Limitations**

This educational intervention provided valuable insights into the experiences of dietetic interns who received TIC education adapted for nutrition graduate students. The findings will aid in improving and refining educational strategies and content. This project has been executed with great rigor to ensure trustworthiness and validity. It followed Nowell et al. (2017) six-phased process, which included several iterative steps such as conducting debriefing meetings with member-checking and achieving team consensus on coding to establish credibility. The project also provided a detailed description of the DI to ensure transferability and maintained a research journal to ensure dependability. Furthermore, the project confirmed translation with another bilingual assistant and followed a strict process suggested by Lopez et al. (2008) to ensure reliability and validity of this process. Another strength of this project is that our modules are culturally sensitive to the DI's background. This allowed the DIs to connect and reflect on their similarities and backgrounds.

It is essential to note some limitations regarding this educational intervention. One limitation is that doing the interviews in the same educational intervention setting could limit the openness and increase the social desirability of their responses. Future work could identify more neutral spaces to conduct the interviews. Another limitation is that some in-depth phenomenological interviews were relatively short due to some dietetic interns’ difficulty in reflecting on their experiences during the modules. In this project, we were focused on capturing the experience of the dietetic interns and identifying a change in attitude. In future projects, it would be worthwhile to investigate if these experiences and attitude shifts can be applied and used effectively in their supervised practice.

**Conclusions**

In conclusion, this educational intervention on TIC for dietetic interns yielded positive outcomes, valuable changes in the interns’ attitudes, and increased awareness of implicit bias and social and personal identity. The utilization of a trauma-informed teaching approach, guided by trauma-informed principles, played a crucial role in the interns’ engagement, understanding, and application of the topics covered. While the interns experienced negative emotions during the intervention, they recognized the topics’ significance. They actively sought resources, engaged in self-reflection, and participated in discussions to align their emotions with their attitudes. The intervention was received positively overall, with interns wanting more engaging learning opportunities and cultural adaptations to enhance their learning experiences.

Overall, this TIC educational intervention demonstrated the effectiveness of a trauma-informed teaching approach in promoting attitude changes, fostering empathy, and empowering dietetic interns to provide compassionate and patient-centered care. With the incorporation of transformative and person-centered learning theories and trauma-informed teaching principles, future educational interventions can continue to enhance dietetic students’ learning experiences and professional development in TIC.

**Declarations**

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**Conflict of interest** The authors declare no conflict of interest.

**References**


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**Figures**

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**Supplementary Files**

This is a list of supplementary files associated with this preprint. Click to download.