



ORIGINAL ARTICLE OPEN ACCESS

Working With Patients Who Self-Injure: An Open Label Study of an Educational Intervention to Upskill Emergency Nurses on Non-Suicidal Self-Injury

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Received: 28 January 2025 | **Revised:** 9 April 2025 | **Accepted:** 29 April 2025

Funding: This work was supported by East Metro Health Service.

Keywords: NSSI | nurses | self-harm | self-injury | training

ABSTRACT

Non-suicidal self-injury (NSSI), deliberate damage to body tissue with no intent to die, is not engaged with suicidal intent but is the most reliable predictor of later suicidal behaviour. This makes efforts to reduce self-injury critical. Emergency departments can be the gateways to care for many people who have self-injured and optimal sites for interventions that promote recovery. However, emergency nurses have anecdotally reported that they lack training and feel ill-equipped to provide care for patients who self-injure. In this open label trial (where both participants and researchers were aware who received the intervention), all nurses in a metropolitan emergency department were invited to complete a multi-modal training programme designed to improve their knowledge, attitudes, confidence, and resilience, and reduce burnout related to caring for patients who self-injure. We also invited nurses to provide feedback in one-on-one interviews. Sixty nurses completed self-report measures at pre, post (immediately following training), and 1-month following training. Gains were seen immediately post-training in knowledge, empathy, self-compassion, and resilience, while reductions were seen in negative attitudes and burnout. In all cases these changes were maintained at 1-month follow-up. Eighteen nurses participated in interviews, who reported on the impact of the training on improving understanding of NSSI and confidence in working with patients who self-injure at both a personal and institutional level. They also identified barriers to implementing training, many of which require system-level changes within the health system. Findings suggest that training integrated within emergency settings can have a significant impact, not only on knowledge and confidence but on the wellbeing of emergency staff working with patients who self-injure.

Our paper reports a mixed methods study and as such conforms to both TREND and COREQ criteria.

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Non-suicidal self-injury (NSSI), deliberate damage to body tissue with no intent to die and for purposes that are not socially sanctioned (International Society for the Study of Self-injury 2024), is a growing public health concern that has attracted significant empirical interest over the last 20 years (Lurigio et al. 2023). Often emerging during adolescence and early adulthood (Denton and Álvarez 2024) NSSI is not uncommon among adults aged over 25 years, of whom approximately 5% report self-injury (Lui, 2023; Swannell et al. 2014). Primarily used to cope with intense or unwanted emotions (Taylor et al. 2018), NSSI is associated with an array of mental health difficulties (e.g., bullying, adverse childhood experiences; Wang et al. 2022) and mental disorders (e.g., panic disorder, post-traumatic stress disorder; Bentley et al. 2015). Of concern, although not engaged in with an intent to die, NSSI is the most reliable predictor of later suicidal behaviour (Franklin et al. 2017; Kiekens et al. 2023). On average, NSSI is observed 3 years before a suicide attempt (Kiekens et al. 2018) providing a critical window for early intervention.

Not everyone who self-injures requires medical attention for their injuries, but the last 10 years have seen an increase in the number of people, particularly females, presenting to emergency departments (ED) because of injuries associated with NSSI (Australian Institute of Health and Welfare 2024). This makes EDs a gateway to care for many people who have self-injured, and optimal sites for interventions that promote recovery, and potentially reduce the likelihood of later suicidal behaviour. The attitudes of nurses towards people who self-injure are relatively positive, reflecting some shift in the stigma associated with the behaviour (Pintar Babič et al. 2020; Conlon and O'Tuathail 2012; Ngune et al. 2021a). However, emergency nurses also say that they lack training and feel ill-equipped to provide care for patients who self-injure (Rayner et al. 2018). In a recent study, knowledge of NSSI was relatively high among a sample of emergency nurses and mental health nurses. However, mental health nurses were more confident in their ability to work with patients who self-injure than emergency nurses. Further, nurses who were more knowledgeable about NSSI were more empathic towards patients who self-injured (Ngune et al. 2021a). A qualitative study with emergency nurses identified a lack of knowledge about NSSI as a barrier to providing effective care and spoke about the need for education and training (Ngune et al. 2021b).

Ngune et al.'s work in Australia is similar to international work, where nurses who are not working in a psychiatric setting reported the lowest level of empathy and the highest level of negative attitudes towards people who self-injure compared to psychiatric nurses (Pintar Babič et al. 2020; Muehlenkamp et al. 2013). Among the barriers to care identified by nurses are a lack of time to engage with patients, a lack of understanding about why people self-injure, lack of leadership within the emergency setting (Ngune et al. 2021b) and a divided healthcare system where physical health and mental health are considered separate (Roed et al. 2023). Nurses also report powerlessness and uncertainty (Pintar Babič et al. 2020; Roed et al. 2023), and both a lack of compassion satisfaction and high burnout is associated with more negative attitudes towards patients who self-injure (Streeto and Phillips 2024). Fortunately, nurses who receive NSSI training report greater empathy, self-confidence, and improved quality of patient care (McAllister et al. 2009; Muehlenkamp et al. 2013; Thornicroft et al. 2016). Education

and training in situ is also a factor in increasing resilience among nurses (Cooper et al. 2022). Improving nurses' knowledge, skills, confidence, and resilience has the potential to reduce self-injury and subsequent suicide risk for people who self-injure.

1 | Study Aim

The aim of this study was to evaluate a training program designed to upskill emergency nurses in working with patients who self-injure. We assessed knowledge and attitudes, self-compassion, compassion fatigue, resilience, and confidence in skills pre-, post-, and 1 month after training. We expected training to be related to increased knowledge and more positive attitudes towards patients who self-injure, reductions in compassion fatigue, increased self-compassion (self-care skills), increased resilience, and increased self-confidence and skills to care for patients who self-injure. We also invited nurses to participate in an interview reflecting on their experiences of the training.

2 | Phase 1: Evaluation of the Training

2.1 | Method

2.1.1 | Design

We employed an explanatory sequential mixed methods design. We collected self-report quantitative data pre-post and 1-month after training. The trial protocol was pre-registered with the Open Science Framework (<https://doi.org/10.17605/OSF.IO/JYFT5>). We subsequently invited nurses to participate in an interview about their experience of the training.

2.1.2 | The Training Program

The training modules were based on the identified needs of emergency nurses in responding to patients who self-injure (Ngune et al. 2021b) and the SOARS model. The SOARS model is a brief assessment of NSSI initially developed for medical providers in the United States; it stands for Suicidal ideation, Onset, frequency, and methods, Aftercare, Reasons, and Stage of change (Westers et al. 2016). The modules were developed by a team including an expert in NSSI, mental health nurses, emergency nurses, and individuals with lived experience of both NSSI and attendance at EDs. Learning objectives were aligned with the Registered Nurse Standards of Practice (Nursing and Midwifery Board 2016) and the College of Emergency Nurses Practice Standards (College of Emergency Nursing Australasia 2020). The four modules were: (1) Psychoeducation in NSSI; (2) Working therapeutically with patients who self-injure; (3) Assessment of NSSI; and (4) Self-care (Table 1). The training was multi-modal, comprising both self-paced online modules and face-to-face coaching delivered by two trained clinical nurses embedded within the ED. The nurses were trained in the research evaluation process, the content and delivery of the modules, and the on-the-floor approach to coaching. Modules included written text, videos, end-of-module quizzes, and self-reflection exercises to encourage nurses to implement their learning into practice. Each online module took approximately 10 min to complete.

Over 12 months, the trained research nurses delivered the program to emergency nurses through a coaching model. Two nurses were employed to deliver this coaching over consecutive periods, throughout the 12 months. This included planned educational opportunities and brief information sessions at clinical

handover. In addition, the research nurses had the opportunity to provide 'live' coaching, facilitating implementation of the learnings as nurses worked with patients who self-injured. An individual with lived experience also facilitated face-to-face workshops with emergency nurses, sharing their experience in ED and helpful tips for how to increase compassionate care. Additional resources were developed to support the training, including an 'NSSI Toolkit' that included infographics in lay language for quick reference by nurses. Nurses took approximately 1 month to complete the online training, with coaching, lived experience sessions, and the toolkit available for the one-year duration of the project.

TABLE 1 | Training modules.

Module	Description
Psychoeducation in NSSI	<ul style="list-style-type: none"> • Appropriate language to use when discussing NSSI • Risk factors for NSSI • Reasons people self-injure • Relationship to suicide
Working therapeutically with patients who self-injure	<ul style="list-style-type: none"> • NSSI stigma • Inclusive and person-centred language • Unconditional positive regard • Partnering with support people
Assessment of NSSI	<ul style="list-style-type: none"> • Based on the SOARS model (Wester et al., 2016) • Suicidal ideation • Onset, frequency, methods • Aftercare • Reasons for NSSI • Steps towards change • Understanding recovery
Self-care	<ul style="list-style-type: none"> • Compassion fatigue & satisfaction • Burnout • Maintaining professional boundaries • Self-compassion

2.1.3 | Participants

All nurses working in the ED of a large public hospital ($N = \sim 150$) were invited to participate in the training and the evaluation. Nurses were sent the project information sheet and questionnaire via their staff email. They were also informed about the evaluation through internal communications and the research nurses conducting the training. Nurses could access the training modules without opting into the research project. In total, 138 nurses completed the training, with 127 commencing the research. The final sample comprised 60 nurses who completed surveys before training, immediately after training, and 1-month after training (see Figure 1). Of these, most were female (75%) and under 35 years of age (80%). Most had completed their nursing registration in the last 10 years (68.3%) and had worked in two or fewer EDs (73.3%).

2.1.4 | Measures

Nurses who participated in the research project completed the following psychometrically valid self-report questionnaires (all

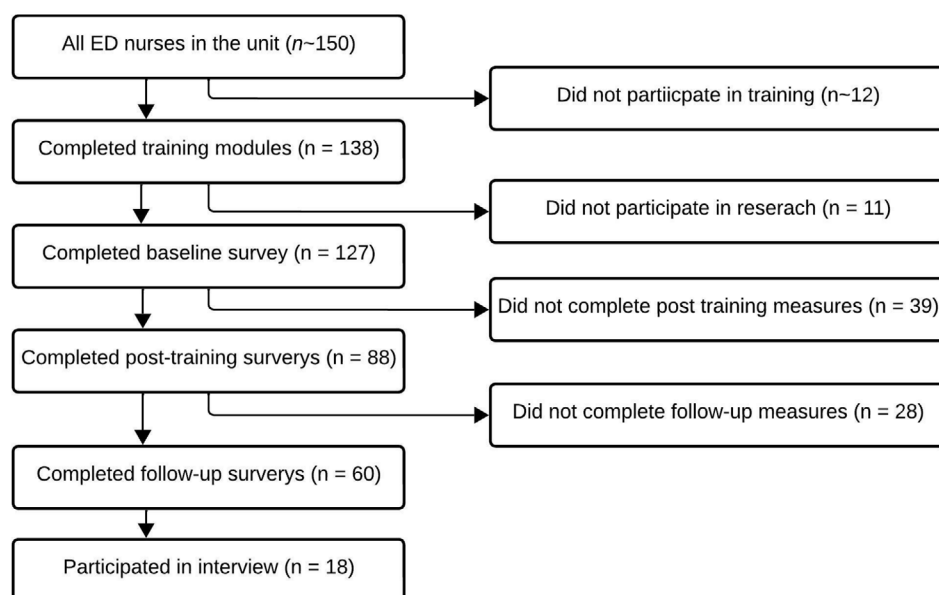


FIGURE 1 | Participant flow diagram. Total number of nurses employed in the ED is an approximation, as this is a dynamic population that changes during the research period. Self-directed learning modules were available to all staff whether they participated in the research or not.

$\alpha > 0.75$) prior to, following, and 1 month after completion of the training programme.

Knowledge and Attitudes were assessed with 20 items from established measures of NSSI attitudes (Muehlenkamp et al. 2013) covering empathy, negative attitudes, and a respondent's knowledge/perceived competence in addressing NSSI. Each item is rated on a 5-point Likert scale from strongly disagree to strongly agree. This scale effectively differentiates the knowledge and attitudes of various healthcare professionals, including social workers, psychologists, and nurses (Muehlenkamp et al. 2013).

The *Self-Compassion Scale* (Neff 2003) short form, comprising 12 items, evaluates self-kindness, self-judgment, common humanity, mindfulness, and over-identification on a 5-point Likert scale (almost never—almost always). The short form closely correlates with the long form (Raes et al. 2011) and is associated with better mental health outcomes, with established discriminant validity from self-esteem measures (Neff 2003).

The *Concise ProQol Manual* (Stamm 2010) a 30-item measure, assesses compassion satisfaction, burnout, and secondary traumatic stress, using a 5-point scale (never to very often). This tool has demonstrated good construct and discriminant validity, particularly when compared with measures of negative affect and fear (Stamm 2010).

The *Brief Resilience Scale* (Smith et al. 2008) includes six items rated on a 5-point scale (strongly disagree to strongly agree) to assess an individual's ability to bounce back from adversity. This unidimensional scale is negatively correlated with anxiety, depression, and negative affect and demonstrates adequate criterion validity with the Connor-Davidson Resilience Scale (Fong and Loi 2016).

Self-confidence (Groschwitz et al. 2017) was assessed with five items developed for evaluating school-based training on non-suicidal self-injury. This tool assesses appropriate responses to NSSI, perceived competence, confidence in one's reactions, and knowledge of when to refer cases. The scale was modified to focus on nurses' responses to patients who self-injure.

2.1.5 | Procedure

After receiving ethical approval from both Royal Perth Hospital and Curtin University, all nurses in the ED were directed to an online learning platform to complete the online modules. Prior to the first module, nurses were provided with the opportunity to participate in the baseline assessment and directed to an online information sheet that explained the study aims, participation requirements, confidentiality, and secure data handling. Participants either completed the above measures at work while the research nurse covered their clinical care or in their own time outside of work. Upon completion of the online training modules, participants were again directed to a survey to complete the same measures. Participants were also prompted by the research nurse in the ED to complete the survey. One month after completion of the modules, participants were invited to complete the survey a third time. To maximise completion, participants were offered numerous options for responding,

including being offered a quiet space in the ED while the research nurses provided clinical cover, completing the survey on their phones, or at another time and place of their choosing outside of the work setting. No incentives were offered for participating in the evaluation of the training.

2.1.6 | Data Analysis

The main study variables were screened, and parametric assumptions were met. Given the amount of attrition across study phases (Figure 1), we implemented per protocol analyses rather than intention to treat. No variable had more than 9% missing data; multiple imputation by chained equations (MICE) method was used to impute these data (Raghunathan et al. 2001). A total of five imputations were performed with 20 iterations each. Diagnostic plots of the imputation process demonstrated stable convergence, with means and standard deviations stabilising across iterations. All analyses were conducted in SPSS v29 (IBM Corp).

First, we examined whether there were significant differences in demographic variables (age, gender, year of initial nursing registration, years of experience in ED, and the number of EDs in which each nurse had previously worked) between those who completed the study ($n = 60$) and non-completers ($n = 67$). Next, we investigated whether demographic factors were related to any of the outcome variables at baseline to determine whether any should be statistically controlled in analyses. Our combined outcome variables for the multivariate analyses of variance (MANOVA) were: Knowledge & Attitudes (Empathy, Negative Attitude, Knowledge/Competence; Muehlenkamp et al. 2013); Self-compassion (comprising each subscale of the Self-Compassion Scale; Neff 2003); and Compassion Satisfaction (compassion satisfaction, burnout, secondary trauma; Stamm 2010). Resilience (Smith et al. 2008) and confidence in own skills (Groschwitz et al. 2017) were also included in a single MANOVA. Finally, repeated measures MANOVAs were conducted to investigate whether there were significant training effects on the outcome variables across baseline, post-training, and at follow-up.

2.2 | Results

Nurses with fewer years of ED experience (4 years or less) were significantly more likely to complete the training ($\chi^2 = 10.61$, $p < 0.005$). There were no other significant differences between completers and non-completers (all p 's > 0.05). None of the demographic variables were related to the outcome variables (all $p > 0.05$) and hence were not entered as covariates in the analyses. Most variables were correlated in the expected direction (Table 2).

2.2.1 | Knowledge and Attitudes

Repeated measures MANOVA showed a main effect of training on the combined attitude variables, $\lambda = 0.164$, $F(6, 54) = 45.89$, $p < 0.001$, $\eta^2 = 0.84$. Examination of univariate results revealed main effects on all three subscales: empathy, $F(2, 118) = 94.39$, $p < 0.001$, $\eta^2 = 0.62$; negative attitudes, $F(2, 118) = 8.72$,

TABLE 2 | Correlations among main study variables.

	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Empathy	0.38**	0.50***	0.37**	-0.36**	0.32*	-0.13	0.05	-0.31*	0.40**	0.15	0.39**	0.35**	-0.46***
2. Negative attitudes	—	0.38**	0.19	-0.26*	0.21	-0.11	0.12	-0.14	0.24	0.03	0.37**	0.17	-0.06
3. Knowledge/competence		—	0.12	-0.23	0.13	-0.16	0.10	-0.19	0.18	-0.01	0.42***	0.30*	-0.48***
4. Self-kindness			—	-0.18	0.12	-0.12	0.02	-0.13	0.04	0.11	-0.04	-0.03	-0.08
5. Self-judgement				—	-0.66***	0.50***	0.13	0.52***	-0.23	0.46***	-0.47***	-0.52***	0.45***
6. Common humanity					—	-0.45***	-0.05	-0.44***	0.35**	0.10	0.18	0.25	-0.38**
7. Isolation						—	0.07	0.65***	0.33**	-0.27*	-0.10	-0.38**	0.33**
8. Mindfulness							—	0.05	0.06	-0.13	-0.05	-0.37**	0.13
9. Over-identified								—	-0.05	-0.15	-0.20	-0.39**	0.13
10. Compassion satisfaction scale									—	0.07	0.36**	0.29*	-0.14
11. Burn out scale										—	0.33**	0.45**	-0.16
12. Secondary trauma scale											—	0.69***	-0.47***
13. Brief resilience scale												—	-0.56***
14. Confidence in own skills													—

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

TABLE 3 | Means and standard deviations of the psychological measures at baseline, post-training, and follow-up.

Variable	Baseline mean (sd)	Post mean (sd)	Follow-up mean (sd)
Empathy	15.58 (3.12)	25.75 (4.53)	25.40 (5.73)
Negative attitude	14.92 (2.66)	13.18 (3.07)	12.88 (3.71)
Knowledge/competence	17.72 (3.82)	25.5 (4.13)	25.07 (5.48)
Self-kindness	2.28 (0.67)	3.18 (0.65)	3.16 (0.77)
Self-judgement	3.47 (1.12)	2.87 (0.84)	2.89 (0.84)
Common humanity	2.53 (0.86)	3.15 (0.77)	3.15 (0.80)
Isolation	3.27 (1.15)	2.89 (0.93)	2.90 (0.99)
Mindfulness	2.61 (0.57)	3.70 (0.57)	3.82 (0.55)
Over-identified	3.38 (1.21)	2.75 (1.07)	2.79 (1.04)
Overall self-compassion	2.92 (0.43)	3.09 (0.60)	3.12 (0.62)
Compassion satisfaction scale	20.70 (4.09)	35.73 (8.64)	34.80 (9.86)
Burn out scale	29.87 (3.44)	23.60 (7.02)	23.80 (7.71)
Secondary trauma scale	24.43 (6.07)	22.67 (7.68)	22.93 (7.91)
Brief resilience scale	2.01 (0.87)	2.95 (0.37)	2.99 (0.29)
Confidence in own skills	3.70 (0.88)	4.28 (0.66)	4.29 (0.55)

$p < 0.001$, $\eta^2 = 0.13$; knowledge/competence, $F(2, 118) = 60.82$, $p < 0.001$, $\eta^2 = 0.51$. Scores for empathy, $t = -11.01$, $p < 0.001$, and knowledge/competence, $t = -9.51$, $p < 0.001$, increased from baseline to post-training and were maintained at follow-up. Negative attitudes decreased from baseline to post-training, $t = 3.79$, $p < 0.001$, and were maintained at follow-up, $t = 0.57$, $p = 0.57$ (Table 3).

2.2.2 | Self-Compassion

A significant effect of training was seen on the combined self-compassion variables, $\lambda = 0.165$, $F(12, 42) = 17.74$, $p < 0.001$, $\eta^2 = 0.84$. Univariate analysis revealed effects on all subscales except isolation. Scores for kindness, $t = -7.35$, $p < 0.001$, common humanity, $t = -3.56$, $p < 0.001$, and mindfulness, $t = -12.29$, $p < 0.001$, all increased from baseline to post-training and were maintained at follow-up. Scores for self-judgement, $t = 2.95$, $p = 0.005$, and over-identification, $t = 2.31$, $p = 0.07$, decreased from baseline to post-training and were also maintained at follow-up.

2.2.3 | Compassion Satisfaction

Training had a significant effect on the combined compassion satisfaction scales, $\lambda = 0.228$, $F(6, 54) = 30.42$, $p < 0.001$, $\eta^2 = 0.77$, with univariate effects on compassion satisfaction, $F(2, 118) = 72.63$, $p < 0.001$, $\eta^2 = 0.55$, and burnout, $F(2, 118) = 21.76$, $p < 0.001$, $\eta^2 = 0.27$. Satisfaction scores increased from baseline to post-training, $t = -10.22$, $p < 0.001$, and were maintained at follow-up, $t = 0.64$, $p = 0.52$. Burnout scores decreased from baseline to post-training, $t = 5.13$, $p < 0.001$, and were maintained at follow-up, $t = 0.19$, $p = 0.84$.

2.2.4 | Resilience and Self-Confidence

There was a significant effect of training on the combined outcome variables, $\lambda = 0.251$, $F(4, 50) = 37.32$, $p < 0.001$, $\eta^2 = 0.75$, with univariate effects on both resilience, $F(2, 106) = 69.32$, $p < 0.001$, $\eta^2 = 0.57$, and confidence, $F(2, 106) = 12.48$, $p < 0.001$, $\eta^2 = 0.19$. In both cases, scores increased from baseline to post-training: resilience, $t = 8.96$, $p < 0.001$; confidence, $t = 4.13$, $p < 0.001$; and were maintained at follow-up.

3 | Phase 2: Feedback From Nurses

3.1 | Participants

Upon completion of the follow-up survey, all nurses were invited to participate in a brief structured interview about their experience of the training. Of nurses who completed the program and the evaluation measures, 18 agreed to be interviewed. Of these (mean age = 28.06, $sd = 4.39$), five identified as male and 13 identified as female. Nurses had spent an average of 3.94 years ($sd = 2.81$) working in ED, with almost all ($n = 15$) working in just one ED. Eleven of the nurses personally knew someone with a history of self-injury.

3.2 | Method & Procedure

Interviews were conducted online with Microsoft Teams and transcribed verbatim within the app. A trained research assistant with an undergraduate degree in psychology conducted the interviews and checked each transcript against the recordings. The structured interview guide began with

questions about the nurses' role in caring for patients who self-injure, as well as their experience with the training program. Participants were asked to reflect on the impact the training may have had on the care provided to patients who self-injure, the effect (if any) on professional development and knowledge about self-injury, and any changes that would benefit the training in future. Interviews took approximately 10 min to complete, and nurses were offered an AUD\$20 voucher as reimbursement for their time. The duration of the interviews was influenced by their structured format, which was necessary to accommodate the nurses' limited availability. This structured approach has been successfully utilised with healthcare professionals in previous studies that evaluated training programmes (Felderman-Taylor and Valverde 2007). After coding, interview recordings were deleted, and de-identified transcripts were stored on a secure research drive accessible only to the research team.

3.3 | Reflexive Thematic Analysis

One of the authors used reflexive thematic analysis to code the interview transcripts (Braun and Clarke 2020). Given the structured questions, we used a deductive analysis for coding and theme development. The author coding the data was not involved in developing the interview guide or in conducting the interviews and was considered an outsider both with respect to experience of NSSI and the ED setting. This author read and re-read the transcripts to develop familiarity with the data. Data were then analysed in NVivo, with codes assigned to each transcript. This was an iterative process that was refined as each transcript was analysed. The generation of themes was also an iterative process, as themes were developed and reviewed. A second author, familiar with NSSI, also reviewed the themes to enhance rigour. This led to refining and naming themes and collapsing across themes where appropriate. For each theme, a summary is provided with quotes from participants provided as exemplars. Exemplar quotes are provided in Table 4. Gender neutral pseudonyms have been used.

3.4 | Findings

Three overarching themes were developed: 1. The impact of the program on nurses; 2. Satisfaction with the program; 3. Barriers to implementation.

3.4.1 | The Impact of the Program on Nurses

This theme describes the effect nurses perceived the training to have on their understanding of NSSI, how confident they felt in working with patients who self-injure, and the resulting shift in culture and practice within the ED.

I got more competent. I felt more.... I felt like I was confident, competent going into patients room and really engage with the patients and also maybe I can

so and then also sometimes I could advocate for the patients.—

Shannon

Consistent with the quantitative data, nurses reported feeling more knowledgeable about NSSI and better equipped to work with patients who self-injure.

...that increase in knowledge just I feel like you know, I can better support patients you know... specific to their needs. And so I think I think overall it's probably just made it a, just a much more comfortable thing, which I'm sure the patients themselves feel as well.—

Cameron

In addition to nurses feeling more comfortable working with patients who self-injure, some expressed a change in the way they viewed the patients themselves. This included reducing the fear nurses felt towards patients who self-injure, reducing stigma, and no longer viewing patients as attention-seeking.

You know, we staple people up, we suture them and we, you know, send them to see someone in the community. I think that's been really positive in trying to reduce the stigma around these patients as potentially attention seeking and actually understanding that there's a greater psychological issue—

Chris

You know, if anyone used to self-injure anything, like I said, they're more looking for attention and, and things like that. But since this model has come along like it's made me understand more about the, I guess, the emotional effects behind it and why they're doing what they're doing. It's not necessarily because they're not getting their own way and things like that. It's because they're expressing how they're feeling—

Riley

Extending from this, nurses reported a change in their practices where assessments were conducted more systematically and more thoroughly. Some nurses also spoke of a shift in culture within the ED, where talking about NSSI was more accepted and nurses were passing their new knowledge to others. Others spoke of adopting a more person-centred approach to working with patients who self-injure, viewing the patient as a whole person beyond just their physical injuries.

Yeah, I think it just like definitely changed the way that I think about the patient and I can give more trauma focussed care.—

Chris

TABLE 4 | Themes and exemplar quotes.

Theme	Code	Example quotes
The impact of the program on nurses	Improved understanding and confidence	I think that it's allowed a lot of staff to feel like they're able to have conversations with patients who self-injure, instead of it being something that we kind of just don't talk about.—Chris And I guess people aren't so scared to ask the questions now, especially the people that have done this particular course.—Aiden
	Shifting views of patients	I didn't really know how to interact with people that are coming with NSSI, but now it's kind of just like interacting with any other patients.—Shannon It's made me take a step back from looking at nursing as like just providing physical care and really realising that like this is yeah, you have to actually have those hard conversations sometimes and yeah.—Quinn I think that's been really positive in trying to reduce the stigma around these patients as potentially attention seeking and actually understanding that there's a greater psychological issue.—Chris
	Change in practice	And developing a better understanding of um, you know, their motivations and how they would like better to be talked to and. you know, have their issues, I don't know. Like explore little bit more when they're in the department and maybe like um being able to develop that rapport a bit better with those patients.—Dylan I think that it means that emergency nurses are able to do more detailed assessments of patients and just have conversations with patients that allows them to, uh, recognise when people are more at risk of suicide, when they are more at risk of coming in, you know, into contact with misadventure because of deliberate self-injury. And then we're able to safeguard these patients by escalating that to the appropriate medical team.—Chris
	Culture shift	I think it's um, I think it is definitely changed a little bit of culture, like people are triaging and using the term ... NSSI as trying to identify the self-harm or not and like people are more open to asking the questions now.—Aiden Sometimes I I'm in a semi senior position ... so I had to teach one of my students, grad students, nursing students and I was able to, you know, provide education with my improved knowledge.—Shannon Umm, it's being able to like sort of provide that information to other nurses as well. And when I pod lead, if I have a look through someone's notes and I'm kind of like, oh, like, do we actually, like, have we asked this, this, this?—Quinn
	Person centred approaches	Umm it's it helped me to think ohh for this patient she...they would need this sort of management. What about this that other...otherwise, that patient with suicide ideation with self-injury, then it will be on the different pathway that got me into critical thinking.—Shannon So, I think this is definitely helped people move away from that kind of care and that way of thinking and more towards the, you know, that part of the person, we treat the whole person and how, how do we help the person with that, you know, much safer way.—Rowan

(Continues)

TABLE 4 | (Continued)

Theme	Code	Example quotes
Satisfaction with the program	Changing attitudes	Because I used to, obviously, when I worked in a, the children's ED, you used to see massive amounts of self-injury um, and it always, always used to get put down to the attention side of things and um it was more like a stigmatism [sic].—Riley I think because of the education, I think that I always thought that these people were quite histrionic and, you know, personality disorders, and that was the stigma around it.—Chris
	Flexible delivery	So there's like so many different modules and so many different ways of delivering the education, which I found really handy.—Aiden I think it's definitely more individualised to the person that you're giving the coaching model to.—Wren I think it's because at the time like you're, you're in there in person, there's, you know. The classical model of just getting the theory and then applying it to practice at a later stage. That's good, but sometimes you may have forgotten knowledge, whereas on the ground, you get the knowledge, but then you actually get to apply it at the same time.—Wren
	Extensions to other staff	I don't know how much time... but I know like the registrars and things like that they do have um... likes training days like every Thursday and stuff like that, I don't know. Maybe it could be integrated into one of them days like.—Blake
Barriers to implementation	Already knowledgeable	Umm, I don't think much changed in like how I work with people just because it was like I was like was already quite comfortable.—Ash I, I felt like I was doing the right things before anyway. But like the, the way I approach asking people about like NSSI and things is, I was sort of like ohh I was doing it right.—Ash I think I'm doing the same thing that I am now, that I was before the training, but I think it's kind of just, uh, backed up my opinions on why people do these things and when they might not need help.—Robin
	ED environment	It's just so challenging to have these conversations with people in an environment we're so understaffed, so like, so busy and it's noisy and it's... yeah.—Avery I think it still can be challenging considering... the time and amount of patient that we actually, that I've actually met can comes with this constitution, you know?—Aiden
	Entrenched attitudes	Some people are a bit more... I don't want to say stuck in the ways, but like, like have strong feelings about it, probably aren't gonna change those feelings based on like a bit of learning.—Jamie
	Suggested improvements	I feel like I could have done with another. That's what I mean by I'm sad it's over. I just had, I haven't done education on it in a little while and I, I think I would have benefited from another one maybe before it ended.—Dylan So like one more before it ends or last, the last one that we have not so far away from the other one, yeah.—Rowan Really just a, um maybe like a micro summary for the end you kind of have to be reminded of what you learned last time in order to press the next stage because it is quite a gap between them and also like even possibly just having it as like a single day workshop.—Rory But I guess, so if we have like a day just dedicated for a study day for it, I think that would be more beneficial rather than having a different course that's you know distributed across a month.—Kerry

it's made me a bit more holistic around just my like approach to care.—

Quinn

3.4.2 | Satisfaction With the Program

Satisfaction with the program included the identified need for the training and the flexibility afforded through multiple delivery modes.

Uhm, it was also good how, I like, I think I was sometimes if my roster doesn't match up with when the sessions were, they would go through them like back to back and let me just do all the quizzes and all the modules back to back as well. Even if I was like running behind on the thing.—

Harper

I quite enjoyed it. Actually, it was quite eye opening. Umm, it was good to learn like the languages used to try and help people open up as well.—

Jamie

Nurses noted a lack of knowledge and training prior to the inception of the training program, as well as negative and stigmatising attitudes, and noted shifts in these both within themselves and the ED. Nurses appreciated the multiple modes of delivery, allowing them to learn the material at their own pace and in their own time. Nurses also saw a need for the training to be extended to other staff, particularly doctors.

3.4.3 | Barriers to Implementation

Barriers to implementing the program included practical barriers to implementation, as well as suggestions for improvement. Some nurses reported a perceived lack of need for the program, especially for nurses who felt sufficiently knowledgeable prior to the program. For some, the training provided reassurance that they had already been working appropriately. Practical barriers included the ED environment not being conducive to having conversations about NSSI. Some nurses also expressed concern that training is not sufficient to shift attitudes. In terms of suggested improvements, these included simulation training or additional on-the-floor training.

Yeah, I think the only thing I would say is probably like an education day that we could just have these scenarios and be in a safe space and... chat about different ways we could approach... you know the situations and stuff like that—

Avery

Nurses expressed a need for ongoing training, or a refresher that would allow them to consolidate their newfound knowledge. Nurses also felt the sessions were quite spread out, with some suggesting dedicated time for the training would be beneficial.

4 | Discussion

Although not all people who self-injure require medical attention for their injuries, there has been a steady increase in the number of people who are receiving emergency care (Australian Institute of Health and Welfare 2024). Emergency nurses can play a vital role in offering compassionate care to people who self-injure, fostering recovery, and potentially reducing subsequent suicide risk (Larkin and Beautrais 2010). Yet, many report a lack of knowledge and/or confidence in working with patients who self-injure. In this study, we evaluated a trial of a training program focused on: 1. Increasing nurses' knowledge about NSSI; 2. Working therapeutically with patients who self-injure; 3. Assessing self-injury; and 4. Self-care. Overall, we saw positive gains on almost all our outcome measures immediately after training, all of which were maintained at one-month follow-up. In interviews, nurses were positive about the program, expressing the need for training and welcoming the opportunities it provided.

Previous NSSI training has demonstrated significant gains in knowledge and confidence in working with people who self-injure (Cooper et al. 2022; Muehlenkamp et al. 2013; Thornicroft et al. 2016), so it is not surprising to find that replicated here, when we developed the training with the specific needs of emergency nurses in mind. Scores across all knowledge and attitude subscales at baseline were notably lower than in previous studies (Muehlenkamp et al. 2013), suggesting both less empathy and less negative attitudes towards people who self-injure. This also suggests more room to demonstrate an effect of a knowledge-based training program. Gains in empathy and confidence may also have been boosted by the active involvement of an individual with lived experience in the training. In interviews, nurses noted they embraced this aspect of the training, and that this led to them 'humanising' people who self-injure. Such responses further highlight the value of consumer involvement in research.

Gains were also seen in all aspects of self-compassion, except a sense of isolation. We specifically designed one module to focus exclusively on self-care, including information on practicing self-compassion. Nurses commented that this was one of their favourite modules, reporting that it was a good time to reflect on their own self-care and to realise it is okay to be compassionate towards themselves. Consistent with this, we also saw reductions in burnout over the course of the study. This could have been due to unmeasured confounders or an artefact of the time of year the study was conducted; however, data collection continued through an entire calendar year, with nurses taking up and completing the training at different times. Arguably, gains in knowledge and confidence could underpin a more relaxed and compassionate approach not just to the patients but also to themselves. However, while gains in knowledge were associated with reductions in negative attitudes and improvements in empathy, they were not related to changes for any other outcome variable. Similarly, increased confidence was related to reduced trauma and increased resilience but not to change in any other outcome (see Table S1). Ongoing work to explore mechanisms of change associated with the training is required.

Finally, improvements were seen in compassion satisfaction, burnout, and resilience. Burnout is a significant issue for emergency nurses (Phillips et al. 2022) and an outcome

we thought may be difficult to shift with a training program focused specifically on NSSI. Recent modelling suggests that hospitals spend US\$16736 per nurse in burnout-related staff turnover (Muir et al. 2022). Review studies suggest that while systemic factors (e.g., shift work, lack of managerial support) contribute to burnout, self-discipline and optimism may be protective against burnout (Phillips et al. 2022). In this study, a change in negative attitudes and the 'cold' elements of self-compassion (self-judgement, isolation, overidentification) were related to improvements in burnout (Table S1). This suggests that self-compassion interventions may have utility in building resilience and addressing burnout among emergency nurses.

In interviews, nurses were generally positive about the training. Consistent with the survey data, nurses reported increased knowledge and confidence, as well as a shift in attitudes towards patients who self-injure. Importantly, there were changes in actual nursing practice as well as positive shifts in the culture of the ED towards a more accepting and person-centred view of patients who self-injure. This is a significant achievement, as cultural shift is incredibly difficult to achieve (Alvesson and Sveningsson 2016) as competing values can impede organisational change (Wiewiora et al. 2013) in a complex environment. While the move seen in this project is a positive one, it remains to be seen whether the change is sustained, with committed organisational investment over time.

Nurses valued the multi-modal delivery of the training, which facilitated engagement. The flexibility afforded by offering numerous ways of learning seemed critical to the success of the training, particularly in busy EDs where nurses were not often afforded dedicated time to participate. In future, we recommend nurses are provided dedicated time for training or incorporating the training into existing time for professional development. Catering to multiple learning styles also enhances the uptake of such education. Finally, the nurses did identify barriers to implementing new knowledge into practice yet also expressed wanting more of the training. While some nurses gained reassurance that they were already 'doing the right thing' others expressed concern about the ability to change what they perceived to be entrenched attitudes of other staff. For a sustained change, we recommend that the organisation commits to embedding routine and ongoing professional development to support ED nurses in delivering compassionate and person-centred care to people who self-injure. To foster a whole-of-service shift, this will also require training to be extended to additional staff (e.g., doctors, mental health teams).

Given that NSSI typically onsets 3 years before suicidal behaviour (Kiekens et al. 2018), intervening early provides a critical opportunity to prevent subsequent suicide. A compassionate response to self-injury can foster early help-seeking (Hasking et al. 2015), helping to address concerns underlying self-injury (Lewis and Hasking 2021). In particular, validating a person's experience can instil self-compassion which is associated with reductions in suicide ideation (Hasking et al. 2019). Likewise, reductions in stigma are associated with greater intentions to seek help (Calear et al. 2014). As such, emergency nurses play a critical role in supporting people who

self-injure, with the potential to reduce the risk of suicidal behaviour.

4.1 | Limitations and Suggestions for Future Research

This study has several limitations which should be considered when interpreting the results. First, this was an open-label study, with no blinding or randomisation, in a single centre. In conducting clinical research within an emergency setting, we wanted to ensure as many nurses as possible received the training and embed this as standard practice within the ED. This approach was successful; although a small percentage participated in the research, over 90% of the nurses completed the training. However, randomised controlled trials will be needed to ensure the outcomes we observed were a direct result of the training. In particular, cluster randomised controlled trials across hospital settings, and with different groups of health professionals would be welcomed. Second, although nurses were keen to complete the training, we had challenges recruiting participants into the study, and significant attrition among those who did complete baseline measures. Some of this attrition was due to staff turnover. However, additional efforts need to be made to attract staff to participate in the study (e.g., reimbursement) including the provision of dedicated time to complete research measures. Consistent with this, only 18 nurses agreed to be interviewed, and interviews only lasted 10 min on average. This may be due in part to the structured format of the interview, insufficient training of the interviewer, or may reflect that nurses were satisfied with the program and had little to say. This may also suggest the need for further in-depth qualitative work to gain richer data into the impact of the program.

Third, this work was conducted at one large metropolitan hospital, with a demographically homogenous sample. Replication with more diverse participants, across geographic regions, including regional and remote hospitals, is warranted. Finally, longer-term follow-up beyond 1 month, and assessment of systemic change is needed to determine the sustainability of offering NSSI training in EDs and other medical settings.

5 | Conclusion

The results of this single centre open-label study suggest that training provided for emergency nurses is associated with significant potential to facilitate not only knowledge and confidence regarding NSSI, but also to foster self-compassion and reduce burnout at 1 month. Future work scaling this intervention to multiple sites, multiple health professionals, and with longer follow up has merit, and randomised trials should be the focus of future research.

6 | Relevance for Clinical Practice

Emergency nurses have anecdotally suggested that they lack knowledge and confidence in working with patients who self-injure, which undermines their patient care. Our findings suggest that training integrated within emergency settings

can have a significant impact, not only on knowledge and confidence, but on the wellbeing of emergency nurses working with patients who self-injure. Including other medical professionals in the training has the potential to widely impact clinical care.

Author Contributions

All authors listed meet the authorship criteria according to the latest guidelines of the International Committee of Medical Journal Editors, and all authors are in agreement with the manuscript.

Acknowledgements

This work was supported by a grant from the East Metropolitan Health Service Mental Health Research Fund. Open access publishing facilitated by Curtin University, as part of the Wiley - Curtin University agreement via the Council of Australian University Librarians.

Ethics Statement

This work was approved by the Royal Perth Hospital Human Research Ethics Committee, Curtin University Human Research Ethics Committee, and the Edith Cowan University Human Research Ethics Committee.

Consent

All participants provided consent to publish the findings in a de-identified format.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.