

ORIGINAL ARTICLE

Effect of video-based trauma-informed care training for psychiatric nurses: A nonrandomized controlled trial

Risa Kotake RN, MSc¹  | Emiko Otsu MSN, RN, PHN, CNS²  |
 Hiroki Asaoka RN, PhD^{1,3}  | Utako Sawada RN, PhD^{1,4}  |
 Yuki Miyamoto RN, PHN, PhD^{1,5}  | Daisuke Nishi MD, PhD³ 

¹Department of Psychiatric Nursing, Graduate School of Medicine, The University of Tokyo, Bunkyo-Ku, Tokyo, Japan

²Kichijoji Hospital, Chofu, Tokyo, Japan

³Department of Mental Health, Graduate School of Medicine, The University of Tokyo, Bunkyo-Ku, Tokyo, Japan

⁴Department of Nursing, School of Health and Social Services, Saitama Prefectural University, Koshigaya-shi, Saitama, Japan

⁵The Center for Diversity in Medical Education and Research, The University of Tokyo, Bunkyo-Ku, Tokyo, Japan

Correspondence

Daisuke Nishi, MD, PhD, Department of Mental Health, Graduate School of Medicine, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan.
 Email: d-nishi@m.u-tokyo.ac.jp

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Abstract

Aim: To examine the effect of short-time video-based trauma-informed care (TIC) training in improving attitudes related to TIC and mental health among psychiatric nurses.

Methods: A nonrandomized controlled trial was conducted to investigate the effectiveness of a 60-min TIC training video. The primary outcome measure was the Attitudes Related to Trauma-Informed Care Scale 35 (ARTIC-35). The secondary outcome measures were the TIC Provider Survey, Kessler 6 (K6) scale, the Japanese Burnout Scale, and the Japanese Psychological Safety Scale.

Results: The main analysis included 100 psychiatric nurses (58 in the intervention group and 42 in the control group). The intention-to-treat (ITT) analysis showed that the increase in scores on ARTIC-35 was not statistically significant due to calculating the sample size based on an overestimated effect, but the effect size (ES) was moderate (ES = 0.39) at the 4–6-week follow-up. Although there were no significant differences in the TIC Provider Survey, K6, or Japanese Burnout Scale, a significant effect of the intervention was observed in the Japanese Psychological Safety Scale. A per-protocol analysis, which compared the 30 intervention group participants who had watched all four videos to the control group, showed that the ES (= 0.48) was larger for the ARTIC-35 than for the ITT.

Conclusion: The intervention led to moderate improvement in attitudes related to TIC, psychological safety, and burnout.

KEYWORDS

trauma-informed care (TIC), mental health, psychological safety, burnout, psychological, video-based training

INTRODUCTION

Many patients in psychiatric settings are likely to experience re-traumatization during typical medical practice. A previous study revealed that 94% of the inpatients in psychiatric hospitals had experienced at least a one-time traumatic event in their life.¹ Typical

medical practice can elicit retraumatization for such patients.^{2,3} Re-traumatization can worsen psychiatric symptoms and patient well-being. Moreover, the retraumatization of psychiatric inpatients can affect health professionals' mental health and job performance. Previous studies have shown that health professionals caring for patients who experience retraumatization are likely to suffer from

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secondary traumatic stress or burnout.⁴ These symptoms can lead to increased turnover⁵ and a risk to patient safety, therefore it is essential to prevent retraumatization in psychiatric inpatients.

Trauma-informed care (TIC) has garnered attention due to its effectiveness in precluding retraumatization in psychiatric settings. TIC is an approach in which service providers provide care that is safe and promotes recovery while considering the impact of traumatic experiences on an individual's behavior and emotions, based on their knowledge and understanding of trauma.⁶ TIC encourages service providers to understand trauma and to build safe interpersonal relationships.⁶ It also emphasizes ensuring the physical and psychological safety of service providers as well as patients,⁴ therefore fully understanding TIC can improve service providers' attitudes, practices, and psychological outcomes. Previous studies showed that TIC training improved knowledge about TIC, confidence using the TIC approach, attitudes toward TIC implementation, and support for adopting TIC among health professionals.^{7–11} Moreover, TIC training contributed to reduced medical practice that causes a retraumatization of patients (e.g., ability to avoid re-traumatizing patients),¹² seclusion and restraint,^{13–15} and improved safety for professionals¹⁶ and the perceived ability to recover among patients.¹⁷ However, a previous study reported that, as of 2020, only 15.8% of mental health and welfare center directors were familiar with TIC, and TIC was supposed not to be widespread among healthcare professionals in Japan.¹⁸

Previous studies also pointed out that the implementation climate of an organization played the most central role in facilitating TIC implementation.^{19,20} Another study has emphasized that TIC training for all staff members is essential for developing a trauma-informed organization.²¹ There are barriers to introducing TIC practices in organizations after training in the case when participants in the training are invited from various institutions and only one or several participants from one institution participate in the training,⁹ therefore it is vital to develop a training approach that allows most staff in the organization to participate. In face-to-face training, it is impossible for all staff to participate, as staff who are on the wards and seeing patients must remain there while the training is taking place. For example, if the training is held during the day, night-shift nurses cannot attend. There is also the problem of securing lecturers. On the other hand, with video-based training, there is no need to secure lecturers, and it is possible to have all staff attend TIC training, regardless of their working hours. A previous pilot randomized controlled trial that investigated the effect of a 15-min video-based TIC training among emergency department staff showed that the training group had more significant knowledge of TIC following training than the control group.²² However, the effect of video-based TIC training on attitudes and behavior related to TIC was not fully investigated. Furthermore, the effect on the mental health of health professionals was also not investigated, although one of the core principles of TIC includes their psychological safety.⁶

We hypothesized that video-based TIC training would improve attitudes to TIC, TIC-related practice, mental health, and psychological safety among healthcare professionals. This study aimed to explore the effect of a short-time video-based TIC training program for improving knowledge, attitude, and behavior related to TIC and

mental health among nurses in psychiatric settings using a non-randomized controlled trial (non-RCT) design.

METHODS

Study design

This study was a non-RCT design. The study protocol was registered at the University Hospital Medical Information Network Clinical Trials Registry (UMIN000044407). The participants were allocated according to their wards. Specifically, staff from three of the hospital's six wards were allocated to the intervention group, and staff from the remaining three wards were allocated to the control group.

Setting and participants

Study participants were recruited from a private psychiatric hospital in June 2021. We sent them documents about the purpose and the content of this study, along with anonymous format questionnaires. The documents clearly stated that participation was not mandatory and was not a work requirement, and enclosed an envelope to return each written questionnaire. We sent a cash point card (1000 JPY) for each response to participants who returned filled questionnaires (T1 at baseline, T2 at 4- to 6-week follow-up, and T3 at 3-month follow-up). The inclusion criterion of this study was nurses 18 years of age or older. Before watching the video, no formal TIC training had been conducted in any ward and most of the nurses at this hospital were unaware of TIC.

Intervention program: TIC video training for psychiatric nurses

The TIC video training for psychiatric nurses is a newly developed video training program based on the principles of TIC. This program provides essential knowledge to help psychiatric nurses apply TIC at their workplace. The program consists of four video modules with illustrations and audio narration (Module 1: Description of TIC; Module 2: Description of posttraumatic stress disorder symptoms or symptoms caused by traumatic experiences; Module 3: Case studies that include trauma perspectives; Module 4: Practice of TIC). Each video is about 15 min long (the complete program is about 60 min long). The authors developed all of the programs based on the Substance Abuse and Mental Health Services Administration guidance.²³ Details of the program are listed in Table 1.

Intervention group

After the baseline survey, participants in the intervention group were invited to access TIC video training on the website. We requested

TABLE 1 Overview of trauma-informed care program.

Modules	Time	Contents
1 Introduction to trauma-informed care	(19 min 15 s)	• What is trauma-informed care? • Difference between trauma and “<i>kokoro no kega</i>” (psychological injuries) • Case study • Putting on the “<i>trauma no megane</i>” (trauma lens) of the case • Six key principles of trauma-informed care
2 Symptoms caused by trauma	(14 min 11 s)	• Review of the first module • Prevalence of trauma experience • Three stages of trauma-informed care • Symptoms of post-traumatic stress disorder and reacting to fear
3 Get your trauma lens	(15 min)	• Review of second module • Three stages of trauma-informed care • Triggers for trauma and “<i>kokoro no kega</i>” (psychological injuries) in the healthcare field • Putting on the “<i>trauma no megane</i>” (trauma lens) to further understand the case
4 Rediscovering trauma-informed care	(18 min 27 s)	• Practical examples of trauma-informed care - for individual patient • Talks that may be helpful • Recognizing your own stress • Becoming flexible to stress as a team • Practical examples of trauma-informed care - environment/team • Six key principles of a trauma-informed care

that participants watch the four training videos within 6 weeks. We used the T2 questionnaire to confirm whether or not the research participants had watched each video.

Control group

After the 3-month follow-up, participants in the control group were provided with a link to the website where they could watch the TIC video training if they wanted to.

Outcome measures

All outcomes were measured using a self-administered questionnaire at T1, T2, and T3.

Primary outcome

Attitudes Related to Trauma-Informed Care Scale

The Japanese version of the Attitudes Related to Trauma-Informed Care Scale (ARTIC-35) is a 35-item self-administered questionnaire measuring attitudes toward TIC implementation. The ARTIC-35 is one of the most commonly used scales for evaluating the effectiveness of TIC training, and a Japanese version has also been used.⁹ The tool consists of five core subscales: (a) underlying causes of problem behavior and symptoms; (b) responses to problem behavior and symptoms; (c) on-the-job behavior; (d) self-efficacy at work; and (e) reactions to work. The total scores for each subscale

and overall items were divided by the number of items and mean scores were calculated. The mean ARTIC-35 scores range from 1 to 7. Higher scores indicate a more favorable attitude towards TIC. The internal consistency and test–retest reliability of the original version were confirmed.²⁴

Secondary outcomes

Trauma-Informed Care Provider Survey

The Japanese version of the TIC Provider Survey is a 39-item self-administered questionnaire measuring the key elements and practices of TIC, consisting of the following five categories about TIC: (1) Knowledge, (2) Opinions, (3) Self-rated competence, (4) Recent practice (Practice), and (5) Perceived barriers to implementation (Barriers).²⁵ Knowledge and Opinions are rated on a four-point Likert scale and Self-rated competence and Barriers on a three-point Likert scale. Practice is a binary variable with yes¹ or no (0). Higher scores indicate more excellent knowledge, more favorable opinions, greater self-rated competence, and more frequent practice of TIC. The reliability and validity of the Japanese version of the TIC Provider Survey have been examined previously.²⁶

Psychological distress

Psychological distress was measured using the Kessler 6 (K6) scale.²⁷ It consists of six items assessing the frequency of psychological distress occurring in the last 30 days. The response choices are from 0 (none of the time) to 4 (all of the time), and the total score ranges from 0 to 24. The screening performance of the Japanese version was confirmed as equivalent to that of the original versions.²⁸

Burnout

Burnout was measured using the Japanese Burnout Scale. It consists of 17 items assessing three significant domains of burnout as follows: (1) emotional exhaustion, (2) depersonalization, and (3) personal accomplishment. The response choices are from 1 (never) to 5 (every day), and the total scores for each subscale were divided by the number of items for the subscale. Higher scores indicate a greater level of burnout. Reliability and validity were confirmed in a previous study.²⁹

Psychological safety

Psychological safety was measured using the Japanese Psychological Safety Scale.³⁰ It consists of 12 items assessing four domains of psychological safety in the organization as follows: (1) ease in talking, (2) cooperation, (3) challenge, and (4) welcoming novelty. The response choices are from 1 (not at all) to 7 (extremely). Higher scores in each domain indicate a greater level of psychological safety. Reliability and validity were confirmed in a previous study.³⁰

Demographic characteristics

Demographic data, such as age, sex, work status (full-time or part-time), occupation (nurse or associate nurse), years of work experience, years of work experience in the department of psychiatry, and years of work experience in the current ward were collected in the baseline survey.

Sample size calculation

The required sample size was calculated for TIC ability using ARTIC-35. A previous pre-post study evaluating the effect of face-to-face TIC training on improving nurses' attitudes toward TIC implementation yielded an effect size (ES) of 0.8.⁹ To detect an ES of 0.8 or more at an α error of 0.05 and a β error rate of 0.10, the estimated sample size was 19 participants in each group. The statistical power was calculated using the G*Power 3.1 program.³¹

Allocation

Participants were allocated to one of two arms (intervention or control group) according to their ward. Study participants were not masked due to the nature of the intervention.

Statistical analyses

First, to investigate the differences in baseline variables for each group, the χ^2 test was used for categorical variables, the t-test was used for continuous variables, and Fisher's exact probability test was used when there were cells with values of 5 or less.

In the main analysis, we conducted a mixed model for repeated measures (MMRM) analysis of variance model using a group

(intervention and control) $\times$ time (T1, T2, and T3) interaction as an indicator of the intervention effect and adjusted for age and sex. An intention-to-treat (ITT) analysis was applied. We excluded participants who had missing values for age and sex ($n = 3$) at baseline. The level of statistical significance for all analyses was set at 0.05 (two-tailed). There was no adjustment for multiple comparisons among secondary outcomes. We used SPSS version 26.0 (IBM) for all analyses.

We also conducted the per-protocol analysis using only participants who watched four training videos in the intervention group and all participants in the control group.

The ES was calculated by estimating the regression coefficient for the interaction of group (each of the two intervention groups vs. the control group) $\times$ time (baseline and two follow-ups) using the mixed procedure, and then dividing it by the pooled standard deviation at baseline and follow-up.

Ethical consideration

The Research Ethics Review Board of the Graduate School of Medicine, University of Tokyo, approved this study (2020237NI-(1)). All participants provided written informed consent for their data to be used in the research.

RESULTS

Participant recruitment

A participant flowchart is shown in Figure 1. Participants were recruited from a private psychiatric hospital ($n = 133$) and were allocated to an intervention ($n = 73$) or a control ($n = 60$) group according to the ward in which they worked. Of the 133, 103 (77.4%) agreed to participate in the study (59 in the intervention group and 44 in the control group) and were given a baseline survey. We excluded participants who had missing values for age and sex ($n = 3$) at baseline. Finally, 100 participants (58 in the intervention group and 42 in the control group) were included in the main analysis.

Baseline characteristics

Table 2 shows the participants' demographic characteristics. Most participants were female and full-time workers. About half of the participants in each group had psychological distress (K6 score ≥ 5). There were no significant differences between the groups.

Process evaluation

Of the 42 respondents in the intervention group at the 6-week follow-up, 30 had seen all four videos, three had seen three

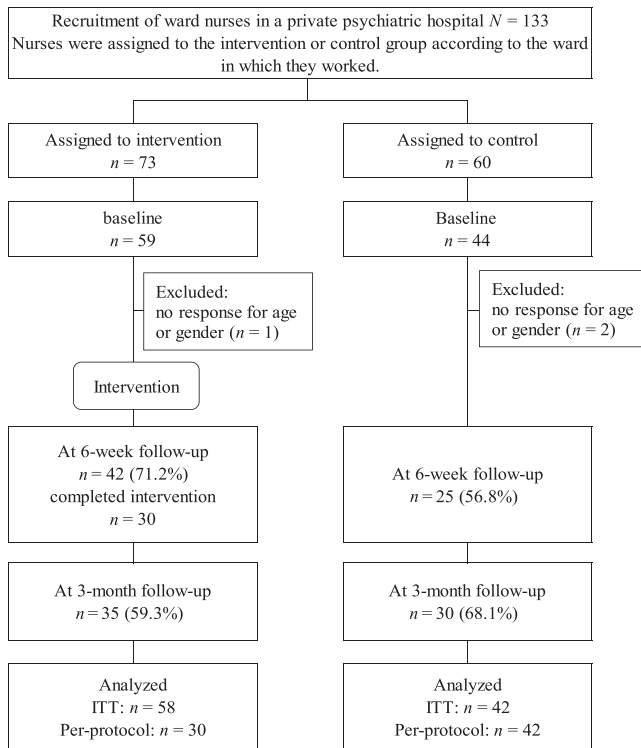


FIGURE 1 Study flow. ITT, intention to treat.

videos, one had seen two videos, three had seen one video, and five had seen zero videos.

Effect of TIC video training for psychiatric nurses

Tables 3 and 4 show the estimated effects of TIC video training for psychiatric nurses on the primary and secondary outcome measures based on MMRM analysis. In the ITT analysis (Table 3), TIC video training did not significantly increase the overall and subscale scores of the ARTIC-35 at either T2 or T3. On the other hand, the ES at T2 was moderate (ES = 0.39) and the ES at T3 was small (ES = 0.17). In terms of secondary outcomes, the TIC Provider Survey, burnout, and psychological distress were not significant at either T2 or T3, while psychological safety was not significant at T2 but was significant at T3.

In the analysis by protocol (Table 4), the overall score on the ARTIC-35 did not increase significantly at either T2 or T3, but the ES was 0.48 at T2 and 0.36 at T3, which were larger than in the ITT analysis. In addition, significant increases were observed in three of the five subscales at either T2 or T3. In the secondary outcomes, significant improvements were observed at T2 or T3 in one of the three subscales of the TIC Provider Survey, two of the three subscales of burnout, and in the total and three of the four subscales of

TABLE 2 Baseline participant characteristics of intervention and control groups (n = 100).

Variables	Intervention (n = 58)		Control (n = 42)		p-value
Sex, n (%)					
Male	19	(32.8)	17	(40.5)	0.43
Female	39	(67.2)	25	(59.5)	
Age (years), n (%)					
20–29	17	(29.3)	9	(21.4)	0.14
30–39	15	(25.9)	12	(28.6)	
40–49	14	(24.1)	15	(35.7)	
49<	12	(20.7)	6	(14.3)	
Work status, n (%)					
Full-time	52	(89.7)	39	(92.9)	0.73*
Part-time	6	(10.3)	3	(7.1)	
Occupation, n (%)					
Nurse	56	(96.6)	37	(88.1)	0.23*
Associate nurse	2	(3.4)	4	(9.5)	
Years of work experience (years), mean (SD)	9.0	(7.2)	12.5	(11.5)	0.11
Years of work experience in the department of psychiatry (years), mean (SD)	7.0	(6.4)	9.6	(7.2)	0.12
Years of work experience in the current ward (years), mean (SD)	4.4	(3.2)	5.5	(3.8)	0.47
K6					
≥5	32	(55.2)	19	(45.2)	0.42
<5	26	(44.8)	23	(54.8)	

Abbreviation: SD, standard deviation.

*Fisher's exact test.

TABLE 3 Estimated intervention effects for each endpoint in intervention and control groups adjusted for age and sex ($n = 100$): repeated measures analysis with mixed models and effect sizes.

Outcome variables	Intervention <i>n</i> = 58		Control <i>n</i> = 42		Estimates of fixed effect							Effect size ^a
	Estimated mean	SE	Estimated mean	SE	Estimate	95% CI	SE	<i>t</i>	<i>p</i> -value			
Attitudes Related to Trauma-Informed Care Scale 35												
Baseline	4.83	0.09	4.66	0.11								
After intervention	4.91	0.10	4.61	0.11	0.14	−0.05 to 0.33	0.09	1.49	0.14			0.39
3-month follow-up	4.88	0.10	4.64	0.12	0.08	−0.16 to 0.32	0.12	0.64	0.53			0.17
Attitudes Related to Trauma-Informed Care subscales												
Underlying causes of problem behavior and symptoms												
Baseline	4.55	0.11	4.23	0.13								
After intervention	4.73	0.12	4.37	0.15	0.04	−0.25 to 0.34	0.15	0.28	0.78			0.07
3-month follow-up	4.61	0.13	4.39	0.16	−0.10	−0.45 to 0.25	0.17	−0.57	0.57			−0.15
Responses to problem behavior and symptoms												
Baseline	4.85	0.09	4.94	0.11								
After intervention	5.02	0.10	4.85	0.13	0.26	−0.02 to 0.54	0.14	1.86	0.07			0.43
3-month follow-up	4.96	0.11	4.90	0.13	0.15	−0.16 to 0.47	0.16	0.98	0.33			0.25
On the-job behavior												
Baseline	5.60	0.12	5.24	0.14								
After intervention	5.46	0.13	5.12	0.16	−0.02	−0.33 to 0.29	0.16	−0.14	0.89			−0.03
3-month follow-up	5.53	0.14	5.06	0.16	0.11	−0.22 to 0.44	0.17	0.66	0.51			0.17
Self-efficacy at work												
Baseline	4.75	0.14	4.56	0.16								
After intervention	4.86	0.14	4.50	0.18	0.17	−0.13 to 0.46	0.15	1.12	0.26			0.26
3-month follow-up	4.92	0.15	4.54	0.18	0.19	−0.14 to 0.52	0.16	1.17	0.25			0.29
Reactions to the work												
Baseline	4.75	0.12	4.68	0.14								
After intervention	4.92	0.12	4.58	0.15	0.27	0.00 to 0.54	0.14	1.95	0.05			0.47
3-month follow-up	4.92	0.13	4.69	0.16	0.16	−0.17 to 0.49	0.16	0.97	0.33			0.24
TIC Provider Survey												
Knowledge												
Baseline	30.07	0.27	30.33	0.32								
After intervention	30.08	0.31	29.74	0.40	0.60	−0.43 to 1.63	0.52	1.16	0.25			0.27
3-month follow-up	30.24	0.34	30.18	0.40	0.32	−0.75 to 1.39	0.54	0.59	0.55			0.15
Opinion												
Baseline	17.66	0.27	17.72	0.32								
After intervention	18.00	0.30	17.75	0.38	0.31	−0.57 to 1.19	0.45	0.70	0.49			0.18
3-month follow-up	18.10	0.34	17.51	0.40	0.66	−0.39 to 1.71	0.53	1.26	0.21			0.32
Self-rated competence												
Baseline	18.21	0.49	18.35	0.59								
After intervention	19.08	0.55	17.95	0.69	1.27	−0.22 to 2.77	0.75	1.69	0.09			0.36
3-month follow-up	18.82	0.60	18.29	0.71	0.68	−1.08 to 2.44	0.88	0.77	0.45			0.19

Burnout

Emotional exhaustion

Baseline	2.91	0.14	3.04	0.16								
After intervention	2.73	0.15	2.91	0.18	-0.06	-0.36	to	0.25	0.16	-0.36	0.72	-0.09
3-month follow-up	2.74	0.16	3.07	0.18	-0.21	-0.56	to	0.15	0.18	-1.14	0.26	-0.29

Depersonalization

Baseline	2.15	0.13	2.14	0.15								
After intervention	2.16	0.14	2.29	0.17	-0.13	-0.42	to	0.16	0.15	-0.90	0.37	-0.24
3-month follow-up	2.06	0.14	2.22	0.17	-0.16	-0.47	to	0.15	0.15	-1.05	0.30	-0.27

Personal accomplishment

Baseline	3.65	0.11	3.50	0.13								
After intervention	3.68	0.12	3.57	0.14	-0.03	-0.27	to	0.21	0.12	-0.27	0.79	-0.07
3-month follow-up	3.74	0.12	3.67	0.14	-0.08	-0.33	to	0.16	0.12	-0.68	0.50	-0.17

Psychological safety

Baseline	54.37	1.86	51.34	2.19								
After intervention	55.46	1.94	49.83	2.35	2.60	-0.72	to	5.92	1.68	1.55	0.12	0.38
3-month follow-up	56.50	2.06	48.11	2.45	5.36	1.00	to	9.71	2.19	2.45	0.02*	0.58

Psychological safety subscales

Easiness to talk

Baseline	14.73	0.47	14.44	0.55								
After intervention	15.37	0.50	13.71	0.61	1.37	0.32	to	2.43	0.53	2.57	0.01*	0.58
3-month follow-up	15.55	0.54	13.59	0.65	1.68	0.29	to	3.07	0.70	2.41	0.02*	0.58

Cooperation

Baseline	13.54	0.51	12.20	0.60								
After intervention	13.67	0.54	11.58	0.67	0.75	-0.42	to	1.91	0.59	1.27	0.21	0.28
3-month follow-up	14.34	0.59	11.48	0.70	1.53	0.03	to	3.03	0.75	2.02	0.046*	0.48

Challenge

Baseline	12.61	0.56	11.73	0.66								
After intervention	12.60	0.59	11.66	0.72	0.07	-1.12	to	1.25	0.60	0.11	0.91	0.03
3-month follow-up	12.54	0.62	11.45	0.73	0.21	-1.09	to	1.51	0.65	0.32	0.75	0.08

Welcome novelty

Baseline	13.49	0.56	12.97	0.66								
After intervention	13.80	0.59	12.92	0.72	0.36	-0.81	to	1.53	0.59	0.60	0.55	0.16
3-month follow-up	14.11	0.64	11.83	0.75	1.75	0.24	to	3.27	0.76	2.31	0.02*	0.55

Psychological distress

Baseline	5.84	0.78	6.57	0.92								
After intervention	5.81	0.83	6.90	1.03	-0.36	-2.20	to	1.49	0.93	-0.38	0.70	-0.09
3-month follow-up	6.06	0.88	7.04	1.04	-0.26	-2.26	to	1.75	1.00	-0.25	0.80	-0.07

Abbreviation: CI, confidence interval; SD, standard deviation; SE, standard error.

^aThe effect size was calculated by estimating the regression coefficient for the interaction of group (each of the two intervention groups vs. the control group) × time (baseline and two follow-ups) using the mixed procedure, then dividing it by the pooled SD at baseline and follow-up.

* $p < 0.05$.

TABLE 4 Estimated intervention effects for each endpoint in the intervention completed group (viewers of all four videos) and control group adjusted for gender and age ($n = 72$): repeated measures analysis with mixed models and effect sizes.

Outcome variables	Intervention n = 30		Control n = 42		Estimates of fixed effect							Effect size ^a
	Estimated mean	SE	Estimated mean	SE	Estimate	95% CI	SE	t	p-value			
Attitudes Related to Trauma-Informed Care Scale 35												
Baseline	4.87	0.13	4.66	0.11								
After intervention	5.00	0.13	4.60	0.12	0.18	-0.40 to 0.03	0.11	-1.74	0.09		0.48	
3-month follow-up	5.01	0.14	4.64	0.12	0.16	-0.44 to 0.12	0.14	-1.16	0.25		0.36	
Attitudes Related to Trauma-Informed Care subscales												
Underlying causes of problem behavior and symptoms												
Baseline	4.58	0.16	4.23	0.14								
After intervention	4.78	0.16	4.37	0.15	0.06	-0.37 to 0.26	0.16	-0.36	0.72		0.10	
3-month follow-up	4.82	0.17	4.40	0.16	0.06	-0.47 to 0.34	0.20	-0.32	0.75		0.10	
Responses to problem behavior and symptoms												
Baseline	4.92	0.13	4.95	0.11								
After intervention	5.13	0.13	4.85	0.13	0.31	-0.61 to -0.02	0.15	-2.14	0.03*		0.53	
3-month follow-up	5.12	0.15	4.90	0.14	0.25	-0.59 to 0.09	0.17	-1.49	0.14		0.41	
On the-job behavior												
Baseline	5.60	0.18	5.21	0.15								
After intervention	5.53	0.18	5.09	0.17	0.05	-0.41 to 0.30	0.18	-0.29	0.77		0.07	
3-month follow-up	5.62	0.19	5.01	0.17	0.22	-0.59 to 0.16	0.19	-1.17	0.25		0.33	
Self-efficacy at work												
Baseline	4.79	0.18	4.54	0.15								
After intervention	5.00	0.18	4.49	0.17	0.26	-0.58 to 0.05	0.16	-1.67	0.10		0.42	
3-month follow-up	5.16	0.19	4.52	0.17	0.39	-0.74 to -0.04	0.17	-2.25	0.03*		0.61	
Reactions to the work												
Baseline	4.76	0.16	4.66	0.14								
After intervention	4.99	0.16	4.56	0.16	0.34	-0.64 to -0.03	0.15	-2.21	0.03*		0.58	
3-month follow-up	4.94	0.18	4.66	0.16	0.18	-0.55 to 0.19	0.18	-0.95	0.35		0.26	
TIC Provider Survey												
Knowledge												
Baseline	29.87	0.40	30.32	0.34								
After intervention	30.12	0.40	29.72	0.42	0.85	-1.93 to 0.24	0.55	-1.55	0.12		0.39	
3-month follow-up	30.86	0.44	30.17	0.42	1.13	-2.28 to 0.01	0.57	-1.99	0.05		0.58	
Opinion												
Baseline	17.61	0.41	17.77	0.36								
After intervention	18.20	0.41	17.78	0.42	0.58	-1.56 to 0.41	0.50	-1.17	0.25		0.33	
3-month follow-up	18.30	0.45	17.56	0.44	0.89	-2.13 to 0.35	0.62	-1.44	0.15		0.51	
Self-rated competence												
Baseline	18.20	0.72	18.39	0.63								
After intervention	19.59	0.72	18.00	0.73	1.77	-3.46 to -0.09	0.85	-2.09	0.04*		0.47	
3-month follow-up	19.59	0.79	18.35	0.75	1.43	-3.45 to 0.60	1.01	-1.41	0.16		0.39	

Burnout

Emotional exhaustion

Baseline	2.86	0.19	3.01	0.16								
After intervention	2.60	0.19	2.88	0.17	-0.13	-0.18	to	0.44	0.16	0.85	0.40	-0.22
3-month follow-up	2.51	0.20	3.05	0.18	-0.39	0.02	to	0.75	0.18	2.13	0.04*	-0.60

Depersonalization

Baseline	2.23	0.18	2.18	0.15								
After intervention	2.19	0.18	2.34	0.17	-0.20	-0.09	to	0.49	0.15	1.35	0.18	-0.38
3-month follow-up	1.96	0.19	2.27	0.17	-0.35	0.01	to	0.69	0.17	2.07	0.04*	-0.61

Personal accomplishment

Baseline	3.63	0.17	3.52	0.14								
After intervention	3.70	0.17	3.59	0.15	0.00	-0.26	to	0.26	0.13	-0.02	0.98	0.01
3-month follow-up	3.67	0.17	3.69	0.15	-0.13	-0.15	to	0.41	0.14	0.94	0.35	-0.26

Psychological safety

Baseline	54.48	2.54	51.38	2.16								
After intervention	57.68	2.54	49.82	2.31	4.76	-8.23	to	-1.28	1.75	-2.72	0.01*	0.68
3-month follow-up	59.50	2.64	48.05	2.40	8.36	-12.94	to	-3.77	2.29	-3.65	0.001*	0.91

Psychological safety subscales

Easiness to talk

Baseline	14.59	0.62	14.44	0.53								
After intervention	15.75	0.62	13.71	0.59	1.90	-3.04	to	-0.76	0.58	-3.30	0.001*	0.76
3-month follow-up	16.60	0.66	13.59	0.62	2.86	-4.27	to	-1.46	0.70	-4.09	0.0001*	1.03

Cooperation

Baseline	13.11	0.69	12.12	0.59								
After intervention	14.01	0.69	11.49	0.65	1.54	-2.78	to	-0.30	0.62	-2.46	0.02*	0.58
3-month follow-up	14.79	0.74	11.36	0.69	2.46	-4.09	to	-0.83	0.82	-3.01	0.004*	0.75

Challenge

Baseline	12.97	0.77	11.82	0.66								
After intervention	13.40	0.77	11.73	0.73	0.52	-1.87	to	0.82	0.68	-0.77	0.44	0.23
3-month follow-up	13.42	0.81	11.52	0.74	0.75	-2.23	to	0.73	0.74	-1.01	0.32	0.28

Welcome novelty

Baseline	13.81	0.76	13.01	0.65								
After intervention	14.51	0.76	12.93	0.71	0.78	-1.99	to	0.43	0.61	-1.28	0.20	0.35
3-month follow-up	14.82	0.80	11.84	0.75	2.18	-3.87	to	-0.50	0.84	-2.59	0.01*	0.68

Psychological distress

Baseline	5.33	1.09	6.47	0.92								
After intervention	4.90	1.09	6.78	1.04	-0.74	-1.30	to	2.79	1.02	0.73	0.47	-0.20
3-month follow-up	4.74	1.14	6.91	1.02	-1.04	-0.90	to	2.97	0.96	1.08	0.29	-0.32

Abbreviation: CI, confidence interval; SD, standard deviation; SE, standard error.

^aThe effect size was calculated by estimating the regression coefficient for the interaction of group (each of the two intervention groups vs. the control group) × time (baseline and two follow-ups) using the mixed procedure, then dividing it by the pooled SD at baseline and follow-ups.

* $p < 0.05$.

psychological safety. No significant changes were observed in psychological distress at T2 or T3.

DISCUSSION

This study aimed to examine the effect of video-based TIC training on psychiatric ward nurses. The ITT analysis showed that the increase in scores on the primary outcome, ARTIC-35, was not statistically significant due to calculating the sample size based on an overestimated effect, but a moderate ES was found at T2. Although there were no significant differences in the TIC Provider Survey, K6, or Japanese Burnout Scale, a significant effect of the intervention was observed in the Japanese Psychological Safety Scale. Per protocol analyses showed significant results and a larger ES for ARTIC-35 than for the ITT. The results of this study suggest the effectiveness of the developed TIC video training.

No statistically significant results were found for ARTIC-35, but moderate ESs were found, and larger effects were found for those who viewed all of the videos. As the previous study involved 3.5 h of face-to-face training, while the program in this study was ~60 min of video training. The intervention intensity in this study was lower than in the previous one, therefore the sample size may have been insufficient. However, lengthy face-to-face training is difficult to provide for all nurses on the wards. The method used in this study would allow all nurses on the wards to receive training, making it practical given the importance of TIC training throughout the organization. Thus, the program developed in this study could be considered as having advantages.

With regard to psychological safety, there was a significant increase with the intervention in both the ITT and per protocol analyses. Psychological safety means being able to believe that the team you are part of is safe in terms of interpersonal risk-taking (i.e., engaging in learning behaviors that you might consider putting yourself at risk, such as asking for feedback, sharing information, asking for help, talking about errors, experimenting³²). In this study, approximately half of the participants in the intervention group watched all the videos. Knowing that a significant number of nurses in the same ward had attended the TIC program emphasizing safety might have contributed to the psychological safety of each individual.

This is the first study to demonstrate the effectiveness of TIC training using video. Training using video may have an advantage over face-to-face training in that staff can take the training at a time that is convenient for them. The video training used in this study was made available to the public on a website³³ after the study was completed, so it can be implemented by any organization, even if they cannot secure an instructor. On the other hand, key challenges of video-based training will be retention rates and program adherence.³⁴ If an instructor can be secured, it may also be effective to record face-to-face training and have staff who were unable to attend the group training watch it. As no studies have examined the effectiveness of training conducted this way, further research is needed.

With regard to burnout, the intervention had some effect on reducing feelings of emotional exhaustion and depersonalization in the per protocol analysis. It has been suggested that staff treating patients with TIC-based attitudes may reduce violence from patients towards staff.⁴ Although this study did not assess patient speech and behavior, if there was a reduction in aggressive speech and behavior from patients towards nurses, this could lead to a reduction in burnout. On the other hand, the ES was lower for psychological distress than for burnout. This may be due to the fact that psychological distress is also influenced by stressors outside the workplace.

The present study has several limitations. First, it is not a randomized controlled trial, so it has not been fully adjusted for confounding factors. For example, although there were no differences between the groups in the baseline variables, the participants in the intervention group might feel more time constraints at work compared to the control group. In that case, even if they understood the concept of TIC, it might be difficult to lead to changes in attitudes and practices. The sample size is modest and may have been insufficient. Furthermore, the generalizability of the results is not ensured because the study participants were limited to nurses in one psychiatric hospital.

CONCLUSION

The video-based TIC training for psychiatric nurses suggested a certain level of effectiveness. The program could contribute to the dissemination of TIC when many wards and hospitals will adopt it throughout an organization.

AUTHOR CONTRIBUTIONS

Risa Kotake: Conceptualization; methodology; investigation; formal analysis; data curation; result interpretation and discussion; writing—original draft. **Emiko Otsu:** Conceptualization; methodology; investigation; resources; review. **Hiroki Asaoka:** Writing—review and editing. **Utako Sawada:** Methodology; investigation; review. **Yuki Miyamoto:** Conceptualization; methodology; investigation; result interpretation and discussion; writing—review and editing. **Daisuke Nishi:** Conceptualization; methodology; investigation; formal analysis; result interpretation and discussion; supervision; project administration; funding acquisition.

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CONFLICT OF INTEREST STATEMENT

Risa Kotake, Emiko Otsu, Hiroki Asaoka, Utako Sawada, and Yuki Miyamoto report there are no competing interests to declare. Daisuke Nishi reports personal fees from Startia, Inc., MD.net, and an honorarium from Takeda Pharmaceutical Co., Ltd and Otsuka Medical Devices Co., Ltd outside the submitted work.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS APPROVAL STATEMENT

The Research Ethics Review Board of the Graduate School of Medicine, University of Tokyo, approved this study (2020237NI-(1)).

PATIENT CONSENT STATEMENT

All participants provided written informed consent for their data to be used in the research.

CLINICAL TRIAL REGISTRATION

The study protocol was registered at the University Hospital Medical Information Network Clinical Trials Registry (UMIN000044407) https://center6.umin.ac.jp/cgi-open-bin/ctr_e/ctr_view.cgi?recptno=R000050722.

ORCID

Risa Kotake  <http://orcid.org/0000-0001-5308-4293>

Emiko Otsu  <http://orcid.org/0009-0006-5228-4908>

Hiroki Asaoka  <http://orcid.org/0000-0001-6731-482X>

Utako Sawada  <http://orcid.org/0000-0003-0492-2523>

Yuki Miyamoto  <http://orcid.org/0000-0002-2192-0469>

Daisuke Nishi  <http://orcid.org/0000-0001-9349-3294>

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