

Development and evaluation of an online training module for health professionals to address fear of cancer recurrence in clinical practice

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Abstract

Purpose

Fear of cancer recurrence (FCR) is the most common unmet supportive care need among people affected by cancer. The FCR Clinical Pathway provides a structured, stepped-care approach for health professionals to identify, assess, and manage FCR. This study evaluated the acceptability of an FCR eLearning module, and its impact on knowledge, confidence, and perceived pathway implementation feasibility.

Methods

An interdisciplinary team developed the training module. Australian oncology health professionals completed online questionnaires pre-training (T0), immediately post-training (T1), and at 3-month follow-up (T2). Outcomes included acceptability, knowledge and confidence addressing FCR, pathway implementation feasibility and barriers. Quantitative data were analysed descriptively and using linear regression models. Qualitative data were content analysed.

Results

Ninety-one participants (97% female, 71% nurses) completed T0, 67 completed the training, 61 completed T1, and 52 completed T2. Immediate post-training acceptability was high (mean 4.5/5, SD = 0.5). Participants described the module as relevant, practical, and useful. Compared with T0, participants demonstrated significant improvements in knowledge (MD = 4.09/35, $p < 0.01$), confidence (MD = 1.12/4, $p < 0.01$), and pathway implementation feasibility (MD = 0.40/4, $p < 0.01$) at T1. These effects were slightly attenuated at T2 but remained significantly greater than T0. Pathway implementation barriers included limited access to specialist psychology services and culturally appropriate interventions.

Conclusions

The module demonstrated high acceptability, and improved knowledge and confidence to address FCR. It may support scalable implementation of pathway-aligned FCR care in routine practice.

Implications for Cancer Survivors:

Improving health professionals' ability to identify and respond to FCR may enhance access to timely, evidence-based psychosocial support and promote consistent survivorship care.

1. Background

Many people living with and beyond cancer will experience fear, worries or concern about their cancer coming back or getting worse, known as fear of cancer recurrence (FCR) [1, 2]. Evidence suggests that FCR is widespread across cancer types and time since diagnosis [3], and that close to two-thirds of survivors experience FCR at moderate-to-high (i.e., clinically significant) levels [3]. The key characteristics of clinical FCR experienced by cancer survivors include persistent preoccupation and worry, as well as hypervigilance to bodily symptoms [4]. Clinically significant FCR is associated with poorer quality of life, heightened psychological distress, intrusive thoughts, anxiety, and depression [5]. Cancer survivors with high FCR experience more distress which can disrupt daily functioning and contribute to increased health service use [6, 7]. Getting help with FCR is the most reported unmet supportive care need among cancer survivors [8]. Additionally, evidence highlights differences in the experience and management of FCR across cultures and contexts, reinforcing the need for culturally specific approaches to care [9, 10].

Despite its prevalence and impact, FCR is often not routinely identified or addressed in cancer care [2], meaning many survivors do not receive timely, evidence-based support. This gap is particularly concerning given the growing number of people living with and beyond cancer [11]. Although international survivorship guidelines increasingly recognise psychosocial care, including FCR management, as a core element of high-quality survivorship care, FCR remains under-recognised and inconsistently addressed in routine cancer care. Lack of routine screening means that FCR may often be missed in practice, and many cancer survivors are reluctant to raise concerns due to fears of appearing ungrateful or questioning treatment efficacy [12]. Health professionals may also hesitate to initiate conversations about FCR due to concerns about inducing worries [13], and may otherwise struggle to identify patients with FCR [3].

While effective treatments for FCR exist [12, 14], and guidelines advocate for their delivery within a stepped care model [15], these approaches are not consistently integrated into routine cancer care. As a result, many health professionals report challenges managing FCR [13], and survivors miss out on appropriate, evidence-based interventions [14]. Survivorship care models increasingly emphasise risk-stratified, needs-based approaches, whereby individuals with lower levels of FCR may benefit from psychoeducation, reassurance, and self-management strategies, while those with more severe symptoms require structured psychological interventions [15, 16]. Improving care delivery therefore requires not only the availability of effective treatments, but also clear, pragmatic guidance to support health professionals in identifying FCR, triaging survivors by severity, and matching them to appropriate levels of care within existing service constraints.

In response to this, a world-first clinical pathway for FCR was recently developed [17]. Clinical pathways provide standardised, evidence-based, and context-specific recommendations for multidisciplinary care, which have been shown to facilitate implementation of evidence in clinical practice [18]. The clinical pathway for stepped care management of FCR provides clear evidence- and consensus-based recommendations for health professionals to optimally identify cancer survivors with FCR, assess severity, and determine appropriate treatments. The pathway provides a structured, implementation-

oriented framework for the management of FCR in early-stage cancer survivors, designed to support consistent identification and management of FCR in routine settings [17]. The pathway is intended to reduce variation in practice, improve timely access to appropriate support, and help services use specialist resources more efficiently. However, developing the pathway is only the first step. Successful implementation within survivorship care settings requires healthcare professionals to have the knowledge, confidence, and practical skills necessary to identify and respond to FCR.

Training of healthcare professionals is needed to implement the pathway into clinical practice, as access to appropriate information and building multidisciplinary team capabilities are key enablers of implementation [19]. Currently, training to assess and manage FCR through specific interventions – such as ConquerFear, Fear of Cancer Recurrence Therapy (FORT) and Survivors' Worries of Recurrent Disease (SWORD) – is available for mental health specialists; however, options are limited for other cancer care professionals. Previous studies have evaluated an FCR training program for primary care providers [20], or a brief oncologist-led intervention to reduce FCR in breast cancer survivors, Clinician-led Intervention to Address Fear of Cancer Recurrence (ClFeR) [16]. While these interventions have demonstrated acceptability, feasibility and preliminary efficacy, they are targeted at specific healthcare professionals and do not cover all aspects of the FCR clinical pathway or guidelines. Developing a brief online training module may provide a scalable mechanism to build clinicians' knowledge, confidence and skills required to operationalise the pathway [19], thereby reducing unwarranted variation in care and improving access to evidence-informed support for survivors experiencing FCR.

The current study aimed to evaluate whether a FCR eLearning module is a useful tool for helping health professionals implement FCR clinical pathway recommendations in routine practice, specifically to address FCR in people with early-stage, curatively treated cancer. The primary aim of this pilot study was to assess the acceptability of the eLearning module with healthcare professionals working in cancer care in Australia. Secondary aims were to determine its impact on healthcare professionals' knowledge and confidence in addressing FCR, and perceived barriers to FCR clinical pathway implementation.

2. Methods

2.1. FCR eLearning module development

The module was designed to enhance health professionals' knowledge and equip them with tools and resources to address FCR from mild to severe levels in clinical practice. The content was collaboratively developed with an expert group comprising subject matter experts, cancer care professionals, psycho-oncology specialists, education and digital technology experts, and people with lived experience. Figure 1 provides an overview of the module's structure and the FCR Clinical Pathway content. Two case studies were presented in the module, each guiding through the pathway steps: Identify, Assess, Manage, and Reassess. The first case study presented mild FCR from the perspective of a Chinese man with bowel cancer, while the second case study presented moderate to severe FCR from the perspective of an Aboriginal woman with breast cancer. Cultural considerations were woven throughout the module,

with cultural content co-created and reviewed by advisors from each cultural group. Each case study incorporated short videos featuring actors, alongside written information and interactive elements. The module ended with an eight-question knowledge check, in which learners had to achieve 100% to obtain a certificate of completion. The module can be accessed at: [EviQ link to be inserted upon acceptance for publication]

2.2. Evaluation study design

A mixed-methods pre- and post-test survey design was used. The University of Sydney Human Research Ethics Committee provided approval (reference number 2024/HE001621).

2.3. Participants

Participants were healthcare professionals working in hospital or community settings across Australia, who provide oncology care to adult cancer survivors, including nurses, oncologists, general practitioners, palliative care providers, and allied health professionals. Eligible participants were required to be able to read and write in English; have access to a computer with an internet connection; and be willing to provide an email address to receive links to the online questionnaires. Healthcare professionals were excluded if they were mental health specialists (i.e., mental health is the focus of their role). Participants completed an eligibility survey as part of the study consent process.

2.4. Recruitment

Healthcare professionals were recruited through leading peak bodies and non-government organisations for cancer care professionals in Australia including the Clinical Oncology Society of Australia (COSA), Cancer Nurses Society of Australia (CNSA) and McGrath Foundation. E-newsletter advertisements were promoted to the COSA and CNSA membership, and McGrath Foundation Cancer Care Nurses. All eligible participants provided informed consent and contact information through an online consent form. Consenting participants were then sent study questionnaires.

2.5. Measures

Questionnaires were collected through the Qualtrics (Provo, UT) platform at three timepoints (T0 – baseline prior to online module completion; T1 – immediately after online module completion; T2–3-months after online module completion. Questionnaires included quantitative measures of health professional satisfaction with the module, knowledge and confidence addressing FCR, and FCR clinical pathway implementation feasibility and barriers. Measures for satisfaction and confidence were adapted from purpose-designed measures used in a previous study [16], which were informed by Proctor's implementation outcomes [21] and Shepherd's conceptual approach [22]. The Feasibility Implementation Measure was used to assess clinical pathway implementation feasibility and has good internal consistency and validity [23]. The questionnaires were reviewed by the research team and refined through team discussion and consensus prior to dissemination to participants. Open-ended questions within the T1 and T2 post-training questionnaires captured learners' perspectives on additional perceived

barriers to implementing the clinical pathway in practice, and recommendations for improvement. See Table 1 for all outcomes and measures used.

Table 1
Pilot evaluation outcomes and measures used for data collection

Outcome	Measure	Total score range	Assessment timepoint(s)
Demographic and professional characteristics			T0
Acceptability of eLearning module <i>Eg. 'Information was relevant'</i>	7 statements adapted from Liu et al [16] Rated from 1 = Strongly disagree to 5 = Strongly agree	7–35	T1
	2 statements adapted from Liu et al [16] Rated from 1 = Strongly disagree to 5 = Strongly agree	2–10	T2
Knowledge of FCR <i>Eg. 'What proportion of patients report experiencing moderate to severe FCR?'</i>	14 statements purpose-designed by the research team Multiple choice correct or incorrect responses		T0, T1, T2
Confidence addressing FCR clinical pathway elements <i>Eg. 'I feel confident addressing this'</i>	12 statements adapted from Liu et al [16] Rated from 0 = Not at all confident to 4 = Very confident	0–48	T0, T1, T2
Perceived likelihood of implementing FCR clinical pathway in practice <i>Eg. 'I will be able to implement this in my practice'</i>	12 statements adapted from Liu et al [16] Rated from 1 = Not likely at all to 4 = Very likely	12–48	T1, T2
Feasibility of implementing FCR clinical pathway recommendations <i>Eg. 'The FCR Clinical Pathway seems practical'</i>	12 statements (4 per pathway component: screen, assess, refer) adapted from Weiner et al. Feasibility Implementation Measure [23] Rated from 1 = Completely disagree to 5 = Strongly agree	12–60	T0, T1, T2
Barriers to FCR identification and management <i>Eg. 'Please indicate how much you agree or disagree that the following barriers will apply to screening patients for FCR.'</i>	19 statements purpose-designed by the research team assessing the extent to which barriers will apply for Screening, Assessment, and Referral Rated from 1 = Completely disagree to 5 = Strongly agree	19–95	T0, T1, T2

Outcome	Measure	Total score range	Assessment timepoint(s)
Facilitators to implementation of FCR clinical pathway	Optional open-ended responses		T0, T1, T2
Suggestions for improvement to the eLearning module	Optional open-ended responses		T1, T2

2.6. Data analysis

Descriptive statistics were used to summarise participant demographic and professional characteristics, training acceptability, and reported implementation barriers. Continuous variables were summarised using means and standard deviations (SDs), whereas categorical variables were summarised using frequencies and percentages. Repeated outcome measures collected at baseline (T0), immediately post-training (T1), and 3-month follow-up (T2) were analysed using mixed-effects linear models with time entered as a categorical predictor. Due to the small sample size and low cell counts, only two professionally relevant variables were selected as covariates a priori: primary work focus and years of experience working with cancer survivors. To improve model stability and avoid over parameterisation, both variables were recoded into binary categories (Primary Work Focus: Nursing vs Non-nursing; Years worked with cancer survivors: ≤ 10 years vs > 10 years). To account for within-participant correlation arising from repeated observations over time, cluster-robust standard errors were estimated using participant ID as the clustering variable. Separate models were fitted for knowledge, confidence, feasibility, perceived barriers to screening, assessment, and referral, and confidence in implementing FCR-related care. Adjusted predicted means and Bonferroni-corrected pairwise comparisons between timepoints were estimated using post-estimation marginal analyses. Figures displaying adjusted predicted means and their 95% confidence intervals across timepoints were also reported. All statistical tests were two-sided, with statistical significance set at $p < 0.05$. Analyses were conducted using Stata version 19.0 (StataCorp LLC, College Station, TX, USA).

Free-text comments were analysed in Microsoft Excel using the content analysis approach outlined by Elo & Kyngäs [24]. A mixed-methods approach incorporating both quantitative and qualitative results into reporting was used.

3. Results

3.1. Participants

One hundred and twenty-six participants consented to participate. Three participants subsequently withdrew due to capacity constraints, and 91 participants completed the baseline questionnaire (T0). Sixty-seven respondents completed the training module; one participant withdrew due to issues accessing the training. Sixty-two participants completed the immediate post-training questionnaire (T1),

one of whom did not complete the training module and whose T1 responses were excluded from the analysis. Fifty-two participants completed the three-months post-training questionnaire (T2) (see Fig. 2).

3.2. Sample characteristics

The baseline demographics of participants are shown in Table 2. Participants (n = 91) were on average 47.9 years old and predominantly female (97%). Most participants worked in nursing (71%), in metropolitan areas (59%), and in public settings (63%), and had worked with cancer survivors for over 10 years (52%).

Table 2
Baseline characteristics of study participants (n = 91)

Characteristic		N participants (%)
Age (Mean, SD)		47.9 (11.5)
Gender	Female	88 (96.7)
	Male	3 (3.3)
Country of birth	Australia	76 (83.5)
	Other	15 (16.5)
Language spoken at home	English	88 (96.7)
	Other	3 (3.3)
Geographic remoteness ^a	Metropolitan	54 (59.3)
	Regional centres	9 (9.9)
	Large rural towns	11 (12.1)
	Medium rural towns	4 (4.4)
	Small rural towns	10 (11.0)
Aboriginal and/or Torres Strait Islander origin ^b	No	90 (98.9)
	Prefer not to say	1 (1.1)
Primary work focus	Nursing	65 (71.4)
	Allied health	11 (12.1)
	Medical oncology	6 (6.6)
	Radiation oncology	1 (1.1)
	Surgery	1 (1.1)
	Other	7 (7.7)
Clinical setting ^b	Tertiary referral centre	29 (31.9)
	District/local hospital	29 (31.9)
	Non-inpatient cancer treatment centre	19 (20.9)
	Non-hospital based	8 (8.8)
	Primary care	4 (4.4)

Characteristic		N participants (%)
	Community centre	6 (6.6)
	Other	14 (15.4)
Clinical facility ^b	Public	57 (62.6)
	Private	10 (11)
	Public and private	10 (11)
	Public charitable organisation	3 (3.3)
	Private charitable organisation	8 (8.8)
	Other	4 (4.4)
Years worked with cancer survivors	0–2 years	14 (15.4)
	3–5 years	11 (12.1)
	6–10 years	19 (20.9)
	10 + years	47 (51.6)

^a Geographic remoteness was determined by classifications of postcodes using the Accessibility/Remoteness Index of Australia (ARIA).

^b Participants could select multiple responses.

3.3. Acceptability

3.3.1. Immediate post-training

Mean overall acceptability immediate post-training was 4.5/5 (SD = 0.5) indicating high acceptability. All participants who completed the eLearning module (n = 61) responded 'strongly agree/agree' that the training provided relevant, practical and useful information and skills (see Fig. 4). Almost all participants (98%) responded 'strongly agree/agree' that the training provided skills that were practical and useful, prompted reflection on communication with patients, and that the eLearning module format was appropriate. Over 90% of participants responded 'strongly agree/agree' that the length of time taken to complete the training was appropriate, and that the training met their expectations. Over 95% of participants indicated that they were likely to recommend the eLearning module to their colleagues.

Content analysis of qualitative feedback from 20 participants indicated that 14 (70%) had no suggestions for improvement due to being satisfied with the module. Participants appreciated the inclusion of case studies and videos that reinforced the learning content (n = 3) and considered the format and length acceptable (n = 1). Six participants shared suggestions for improvement which

included: additional training (n = 4) (e.g., communication strategies, psychological mechanisms of FCR, and scenario-based learning), clarification regarding the appropriate health professional to follow up symptoms (n = 1), and written scripts to accompany the learning materials (n = 1).

3.3.2. 3 months follow-up

At three months follow up, 44/52 (84.6%) participants responded 'strongly agree/agree' that since the training they have continued to reflect on their current ways of communicating, and 43/52 (82.7%) indicated 'strongly agree/agree' that the training module helped their practice. Thirty-two participants (61.5%) reported recommending the training to their colleagues. Of the 29 respondents who provided qualitative feedback, the main reasons for recommending the module were its usefulness for supporting patient care (n = 10), and its accessibility (n = 6). The main reasons for non-recommendation were that participants had forgotten (n = 8) or their colleagues were already aware of the training module (n = 5).

3.4. Change in knowledge and confidence scores

Significant improvements were observed in knowledge and confidence addressing FCR scores from pre-training to immediate post-training (knowledge: MD = 4.09/35, $p < 0.01$; confidence: MD = 1.12/4, $p < 0.01$). Improvements were significantly attenuated from immediate post-training to 3 months follow-up (knowledge: MD = -1.32, $p < 0.01$; confidence: MD = -0.21, $p < 0.01$), but remained significantly higher than pre-training (knowledge: MD = 2.78/35, $p < 0.01$; confidence: MD = 0.70/4, $p < 0.01$) (see Fig. 4).

3.5. Feasibility of implementing FCR clinical pathway recommendations

At baseline, participants reported having discussions with patients about FCR as the most frequent FCR-related activity, with 39.6% of participants reporting they did this with more than half their patients prior to the training. This was followed by provision of psychosocial support and/or treatment (23.1%), and FCR screening and/or assessment (22.0%).

Overall feasibility means assessed by the Feasibility of Implementation Measure [23] were 3.85/5 (SD = 0.47) at baseline, 4.26/5 (SD = 0.47) immediate post-training, and 4.10/5 (SD = 0.5) at 3 months follow-up. Significant improvements were observed in feasibility from baseline to immediate post-training (MD = 0.40/4, $p < 0.01$), and from baseline to 3 months follow-up (MD = 0.24/4, $p = 0.01$). Improvements between immediate post-training and 3 months follow-up were slightly attenuated, although this change was not significant (MD = -0.17, $p = 0.07$) (see Fig. 4). Regarding participants' perceived likelihood of implementing FCR screening, assessment, and referral in clinical practice assessed by the adapted purpose-designed measure [16], there were significant reductions from immediate post-training to 3 months follow-up (MD = -0.22/4, 95% CI [-0.41, -0.04], $p = 0.02$).

Participants were asked at 3 months follow-up to indicate resources they used following the training. Cancer Council NSW resources (e.g., Living Well After Cancer booklet, podcast) were the most frequently used (31/52, 59.6%), followed by the Cancer Nurses Society of Australia webinar on FCR (n = 25, 48.1%),

Cancer Australia's recommendation for FCR identification and management (n = 19, 36.5%), FCR clinical pathway (n = 15, 28.8%), Clinical Intervention to Reduce Fear of Cancer Recurrence (ClFeR) (n = 12, 23.1%), and the Supportive Care Needs Assessment Tool for Indigenous People (SCNAT-IP) (n = 11, 21.2%).

3.6. Facilitators and barriers for implementation

3.6.1. *Changes in perceived barriers over time*

Participants provided ratings on the extent to which barriers apply to FCR screening, assessment, and referral through a purpose-designed measure. Overall mean for screening barriers was 3.59/5 (SD = 0.50) at baseline, M = 2.96/5 (SD = 0.69) immediate post-training, and M = 3.24/5 (SD = 0.63) at 3 months follow-up. For assessment, overall mean was 3.48/5 (SD = 0.58) at baseline, 2.84/5 (SD = 0.60) immediate post-training, and 3.05/5 (SD = 0.65) at 3 months follow-up. For referral, overall mean was M = 3.67/5 (SD = 0.56) at baseline, M = 3.34/5 (SD = 0.64) immediate post-training, and M = 3.46/5 (SD = 0.67) at 3 months follow-up. There was a significant reduction in perceived barriers regarding FCR screening, assessment, and referral from pre-training to immediate post-training (screening and assessment: MD= -0.63/4, $p < 0.01$; referral: MD= -0.30/4, $p < 0.01$). There was attenuation in barriers from immediate post-training to 3 months follow-up for screening (MD = 0.34/4, $p < 0.01$), and assessment (MD = 0.23/4, $p = 0.04$). Perceived barriers reported at 3 months follow up remained significantly lower compared to pre-training for screening (MD = -0.29/4, $p = 0.01$), and assessment (MD= -0.39/4, $p < 0.01$) (see Fig. 5).

3.6.2. Facilitators and suggested strategies: immediate post-training

Twenty-seven participants shared open-ended responses post-training about facilitators that would enable them to better identify, assess, and/or manage FCR in their practice (see Table 3). Content analysis of responses indicated that integration with existing workflows was the most frequent suggestion (n = 7) which included recommendations to embed screening tools in clinical practice (e.g., patient admission, follow-up appointments) and existing assessments, or developing an online platform for which questionnaire responses generate recommendations for local specialist referral options based on FCR levels. The need for care co-ordination and designated staff was also recommended (n = 5) where suggestions included applying a multidisciplinary approach to identifying, assessing and managing FCR, and structured nurse-led survivorship to address FCR. Access to knowledge and information was suggested (n = 4) which included provision of the FCR clinical pathway, scripts and examples of how to initiate conversations, and further training, including training for cancer nurses specifically. Barriers included a need for more available resources including local support services and referrals (n = 4) including allied health services and culturally appropriate FCR management options, and more time and opportunities to practice skills learned from the training (n = 2).

3.6.3. Facilitators and suggested strategies: 3 months follow-up

Three months after completing the training, 49/52 respondents shared facilitators and barriers they encountered when identifying, assessing, or managing FCR in their practice. Workflow compatibility/integration remained the most frequently reported recommendation (n = 17), including integrating FCR screening tools into standard practice or electronic medical record systems. Respondents preferred additional knowledge and information (n = 8) spanning across various facets of FCR screening, assessment, and referral including guidelines for conducting these via telehealth, communication strategies when patients are reluctant to discuss FCR, and easier access to external resources. Ongoing reinforcement of knowledge (n = 7) was also emphasised, which included suggestions for regular in-services to provide clinicians with updated information, revisiting training module content, and accessing downloadable tools and applying them in practice. Insufficient time (n = 6) to assess or address FCR during consultations, and the need for more available support services and referrals remained as barriers (n = 4).

Fifteen respondents provided suggestions improving the training module, including additional face-to-face training to reinforce knowledge (n = 4), and greater awareness of local support, such as interpreters and psychological services (n = 2).

Table 3

Facilitators and suggested strategies for FCR screening, assessment, and referral (immediate post-training and 3 months follow-up)

Category	Illustrative quotes
Immediate post-training (N = 27)	
Integration with workflow (n = 7)	<i>An online webpage with an online version of the questionnaires (like many well used questionnaires) that auto generate a result and then also provide recommendations based on level of FCR and if triage and referral required ability to put in post code and generate a list of closest specialist referral options. Creates easy access and use plus ability to refer efficiently all in one go.</i>
Care co-ordination and designated staff (n = 5)	<i>As a social worker, it would be important for me to work closely with the Cancer Nurse Coordinator who could provide information on long term treatment side effects and signs of recurrence to be looked into. Having a list of local psychologists who would be suitable when FCR is severe as we only have one psychologist across our cancer services in the Area Health Service.</i>
Access to knowledge and information (n = 4)	<i>Provision of scripts alongside the FCR clinical care pathway - would help consolidate extensive education provided in the resources to routinely apply the new knowledge easily in busy clinical environments.</i>
Available resources: support and referrals (n = 4)	<i>Availability of psycho-social services including dieticians, and exercise physiologists at my hospital, as well as other culturally appropriate management options including easily accessible psychologists and psychiatrists would help. in person training and reproducible resources for patients.</i>
Available resources: time (n = 2)	<i>Having all the resources and time.</i>
Deliverer attitudes: awareness, patient-centredness and normalisation (n = 2)	<i>Awareness of FCR and listen actively to the cancer patient.</i>
Deliverer attitudes: confidence and motivation (n = 2)	<i>I am confident following this education.</i>
Patient education (n = 1)	<i>It would be great for senior nurses to run workshops for patients providing the extra support, if the consultation doesn't allow the needed time for discussion.</i>
3-months follow-up (N = 49)	
Integration with workflow (n = 17)	<i>Universal agreed standardised tool within cancer centres that can be used by ALL multidisciplinary teams and across departments.</i>
Additional knowledge and information (n = 8)	<i>Ongoing skills development in how to sensitively ask about FCR, respond without escalating anxiety, and provide evidence-based strategies would be valuable.</i>

Category	Illustrative quotes
Immediate post-training (N = 27)	
Ongoing reinforcement of knowledge (n = 7)	<i>Regular in-services to provide clinicians with updated information.</i>
Available resources: time (n = 6)	<i>More time to follow up with patients post treatment.</i>
Strategies to reinforce FCR pathway in clinical practice (n = 5)	<i>Routine screening, recognising common themes during screening will help novice clinicians to better identify FCR in the future.</i>
Familiarisation through doing (n = 4)	<i>Practice and regularly ask the right questions.</i>
Additional resources: support and referrals (n = 4)	<i>That we had more social worker support and a clinical psychologist within our unit that specialised in cancer.</i>
Patient education (n = 3)	<i>Learning and support resources to provide to patients to read prior to appointment to aid topic of conversation</i>
Wide-spread FCR training (n = 1)	<i>Training to all staff.</i>

* Some quotes shared at 3 months follow-up were coded to more than one category hence number of categories do not add up to N = 49.

4. Discussion

This study evaluated the acceptability and preliminary impact of an online training module designed to support health professionals, primarily cancer nurses, to implement a stepped care FCR clinical pathway in survivorship settings. The module was highly acceptable and was associated with improvements in health professionals' knowledge and confidence in addressing FCR, increased perceived feasibility of delivering the FCR clinical pathway, and reduced perceived barriers to FCR screening, assessment, and referral. While improvements in most outcomes attenuated from immediately post-training to three-month follow-up, gains remained evident, highlighting that training is a necessary, but not a sufficient, strategy for implementation of the FCR clinical pathway within routine survivorship care.

The observed improvements in participants' knowledge and confidence addressing FCR are consistent with previous evaluations of FCR training and non-mental health specialist-delivered interventions. Studies of the Clinician-led Intervention to address Fear of Cancer Recurrence (ClFeR) program for oncologists [16], as well as FCR training for interprofessional primary care providers [20], have similarly demonstrated favourable effects on clinician knowledge and confidence/self-efficacy to address FCR. Evaluation of the nurse-delivered Mini-AFTERc intervention training also found that nurses perceived it as positive, useful, and relevant for supporting patients with FCR [25]. The magnitude of improvements in

confidence observed in the current study is comparable to previously observed gains in self-efficacy, reinforcing the value of brief, skills-focused training approaches for strengthening workforce capacity to address FCR within survivorship care.

Beyond these similarities with previous training and clinician-delivered interventions, the current study offers several novel contributions relevant to survivorship care. Unlike existing programs which are typically discipline-specific and focused on a single intervention [16, 25] or setting [20], this training was explicitly designed to support multidisciplinary implementation of an FCR clinical pathway spanning screening, assessment, and triage to stepped care, across routine oncology and survivorship settings [17]. Importantly, the training content incorporated recent advancements in brief FCR screening [26] and assessment tools [27] and contemporary guideline recommendations [15] developed since the publication of earlier training programs, ensuring alignment with current best practice. By embedding these tools within pathway-aligned training and evaluating implementation-relevant outcomes such as feasibility and implementation barriers, this study extends prior work by demonstrating how updated evidence can be operationalised by health professionals in diverse survivorship care settings.

While these findings highlight the potential of pathway-aligned training to enhance clinician capability, the extent to which such gains are translated into routine practice depends on broader implementation factors within survivorship care settings. Although improvements in knowledge, confidence, feasibility, and perceived barriers attenuated at three months post-training, outcomes remained significantly higher than baseline, indicating meaningful but incomplete translation of training into practice. This pattern aligns with findings from our separate implementation study of the FCR clinical pathway, which identified building clinician knowledge and capability through training as a key enabler, but also highlighted persistent barriers relating to limited time, constrained access to psychological services, insufficient work infrastructure, and poor integration of FCR screening and triage into existing workflows [19]. Inadequate referral structures and limited staff capacity have also been noted as key barriers to implementation of specific FCR interventions [28, 29]. Limited resources, communication, and care coordination have been identified as key barriers to implementation of different models of survivorship care more broadly [30]. Qualitative feedback from the current evaluation suggests that attempts to apply training-derived knowledge and skills in FCR care may have heightened clinicians' awareness of these structural constraints, particularly when referral options were limited or when competing clinical demands reduced opportunities to enact screening and triage conversations. Taken together, these findings suggest that observed attenuation reflects the challenges of implementing stepped FCR care within survivorship systems where training may increase readiness to act, but opportunity and resources to do so remain limited.

The findings also have important implications for the delivery of more equitable care for FCR across diverse survivorship populations. Participants identified insufficient specialist psychological services and culturally appropriate interventions as limiting equitable implementation of FCR care, reflecting broader inequities in survivorship support, particularly for Aboriginal and Torres Strait Islander peoples [31, 32], culturally and linguistically diverse communities [33, 34], and those living outside metropolitan

centres [35]. Aboriginal and Torres Strait Islander peoples are affected disproportionately in particular, where approximately 79% report experiencing FCR [31] which can significantly disrupt social identity and belonging by affecting their capacity to meet family and cultural obligations. Previous research has indicated a lack of understanding from health professionals about Aboriginal and Torres Strait Islander peoples' perspectives about cancer and the importance of family and community involvement [32], and insufficient communication on how to manage the psychological and emotional aspects of wellbeing related to FCR [31]. Structural barriers further impede access to appropriate FCR support and cancer care more broadly, including lack of care co-ordination, lengthy waiting times, limited availability of cultural safe spaces (i.e., spaces for yarning – the telling and sharing of stories and information [36]), burden on Aboriginal and Torres Strait Islander staff, and insufficient resourcing in rural and remote areas [31, 37, 38].

While training alone cannot address these structural inequities, the improvements in clinician knowledge, confidence, and perceived feasibility observed in this study suggest that pathway-aligned training for health professionals, particularly nurses, who represent the largest single profession working in cancer care [39], may help mitigate some access gaps by strengthening capacity for early identification, normalisation of FCR, and supported triage to appropriate care. The inclusion of culturally diverse case studies within the training may also enhance clinicians' awareness of equity considerations, even where service options remain constrained. However, the partial attenuation of effects over time reinforces that equitable delivery of FCR care requires system-level investment, including improved referral infrastructure, development and dissemination of culturally appropriate resources [40], and integration of FCR screening and support into routine survivorship pathways [19] to ensure that increased clinician capability translates into equitable care for all cancer survivors.

Strengths and limitations

This study has several strengths. The training was collaboratively developed by a multidisciplinary group including psycho-oncology experts, cancer clinicians, education and digital learning specialists, and people with lived experience of cancer. This development process helped ensure the content was clinically relevant, evidence-informed, and appropriate for delivery within routine survivorship care. The evaluation also employed a mixed-methods approach, combining quantitative assessment of acceptability, knowledge, confidence, feasibility, and perceived barriers with qualitative participant feedback. This enabled a more comprehensive understanding of both the perceived impact of the training and contextual factors influencing its application in practice.

The training was developed for health professionals working within the Australian cancer care system and may not be directly transferable to other health system contexts. However, the core components of FCR screening, assessment, and triage to stepped care, are likely to be broadly applicable across survivorship settings. Although the training was intended for a multidisciplinary oncology workforce, most participants were nurses, and predominantly female, which limits certainty regarding its usefulness for other professional groups and populations. Nevertheless, this profile reflects the central role of a

largely female nursing workforce in key aspects of survivorship care delivery, including routine follow-up, care coordination, and psychosocial support, particularly in areas with limited psychological support services (e.g., regional, rural, and remote areas).

Several limitations warrant consideration. The non-randomised, single-arm design precludes causal attribution of the observed changes solely to training. Patient outcomes were not assessed, limiting conclusions about effects on clinical practice or survivor experiences. Although participant withdrawals at follow-up may have introduced bias, mixed-effects linear modelling was used to reduce the impact of incomplete follow-up by using all available repeated outcome measurements [41]. Additionally, a power analysis was not conducted to guide sample size. However, our sample size was deemed sufficient for our evaluation based on previous similar studies including a pilot evaluation of a training program for interprofessional primary care providers [20], and a single-arm implementation study evaluating a brief oncologist-led intervention to reduce fear of cancer recurrence (CIFeR) [16]. We were also unable to determine response rate given that participants were recruited from social media and professional networks. Future research should employ hybrid effectiveness-implementation designs to evaluate the impact of this training alongside complementary system-level strategies on implementation of the FCR clinical pathway and associated patient outcomes across diverse survivorship care contexts, while also using approaches such as mediation analysis to better understand the mechanisms underpinning observed changes.

Conclusion

In summary, the FCR training module was highly acceptable and demonstrated potential to improve multidisciplinary health professionals' knowledge and confidence in addressing FCR, while enhancing the perceived feasibility of delivering pathway-aligned FCR care by reducing implementation barriers related to screening, assessment, and referral. Considering these findings, the training will be made freely available via eviQ Education (Link to be provided upon acceptance for publication), supporting broad access to evidence-informed resources for addressing FCR in routine oncology and survivorship practice. Although barriers to implementation decreased from baseline to three-month follow-up, the partial rebound observed after immediate post-training highlights that training alone is unlikely to sustain practice change. These findings underscore the need for concurrent system-level implementation strategies, such as embedding FCR screening and assessment within clinical systems and workflows, to support the routine delivery of FCR care consistent with the clinical pathway.

Declarations

Competing Interests

Ben Smith has received honorarium from Novartis to participate in a podcast on fear of cancer recurrence. No other authors have any other conflicts of interest to declare.

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Conflicts of Interest

Ben Smith has received honorarium from Novartis to participate in a podcast on fear of cancer recurrence. No other authors have any other conflicts of interest to declare.

Author Contribution

All authors contributed to the study conception and design. Data collection and analysis were performed by VW, MD and BS. The first draft of the manuscript was written by VW, FCW and BS, and all authors provided feedback on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data Availability

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

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Figures

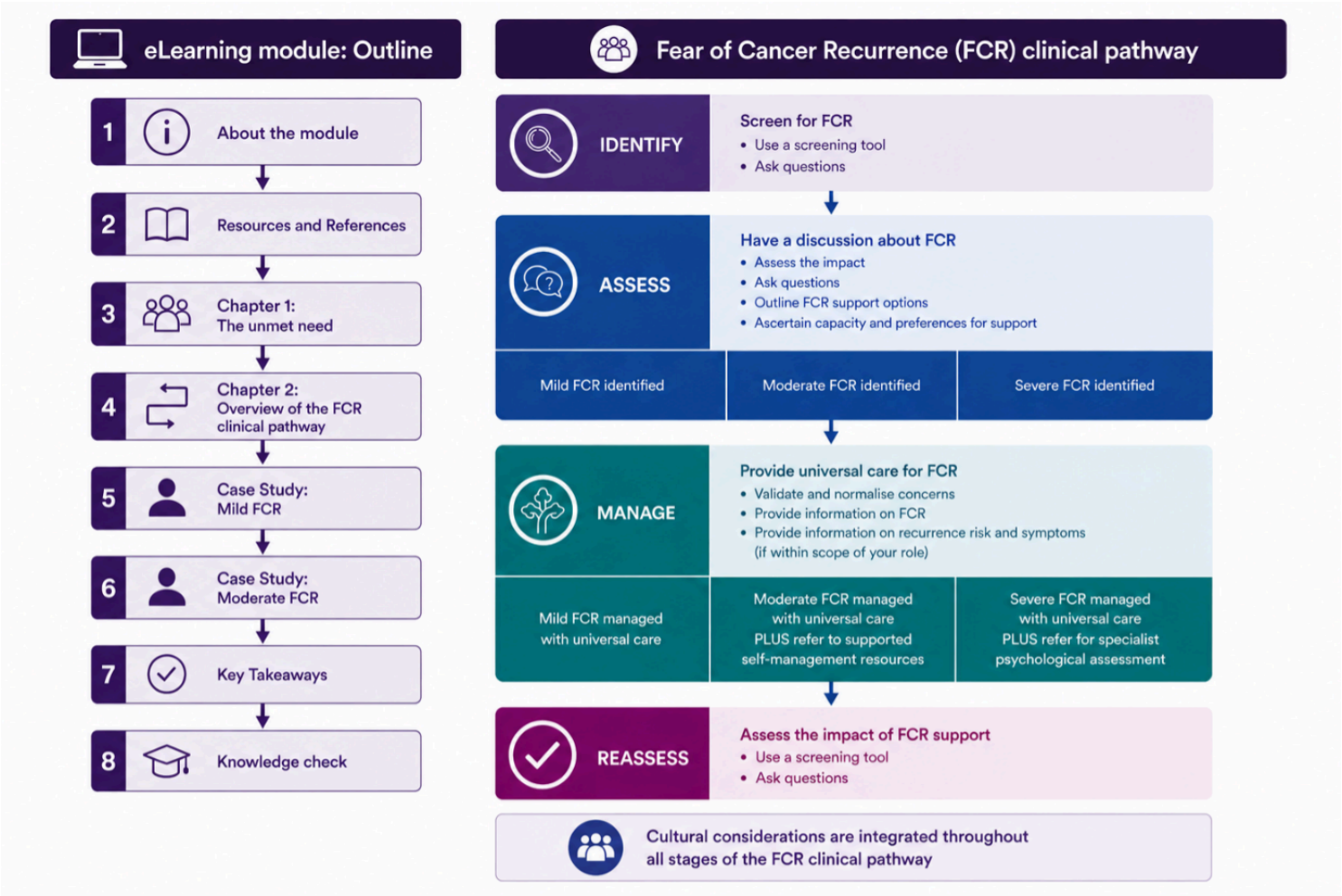


Figure 1

Outline of the eLearning module and FCR Clinical Pathway content

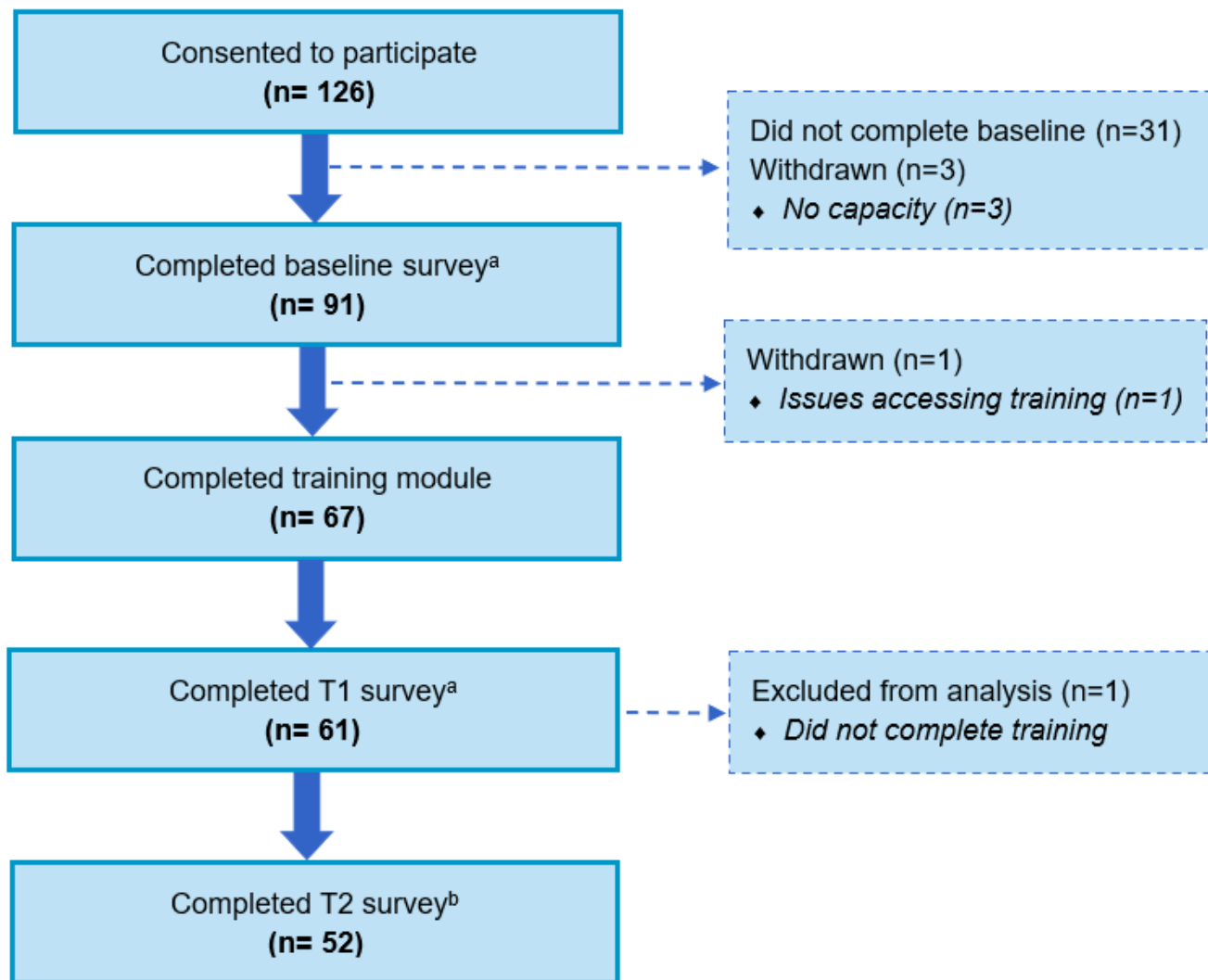


Figure 2

CONSORT participant recruitment flow diagram.

^a Some participants have missing data but were not considered lost to follow up due to providing survey responses at a later timepoint.

^b T2 surveys were only sent to participants who completed the training module.

Acceptability ratings (N=61)

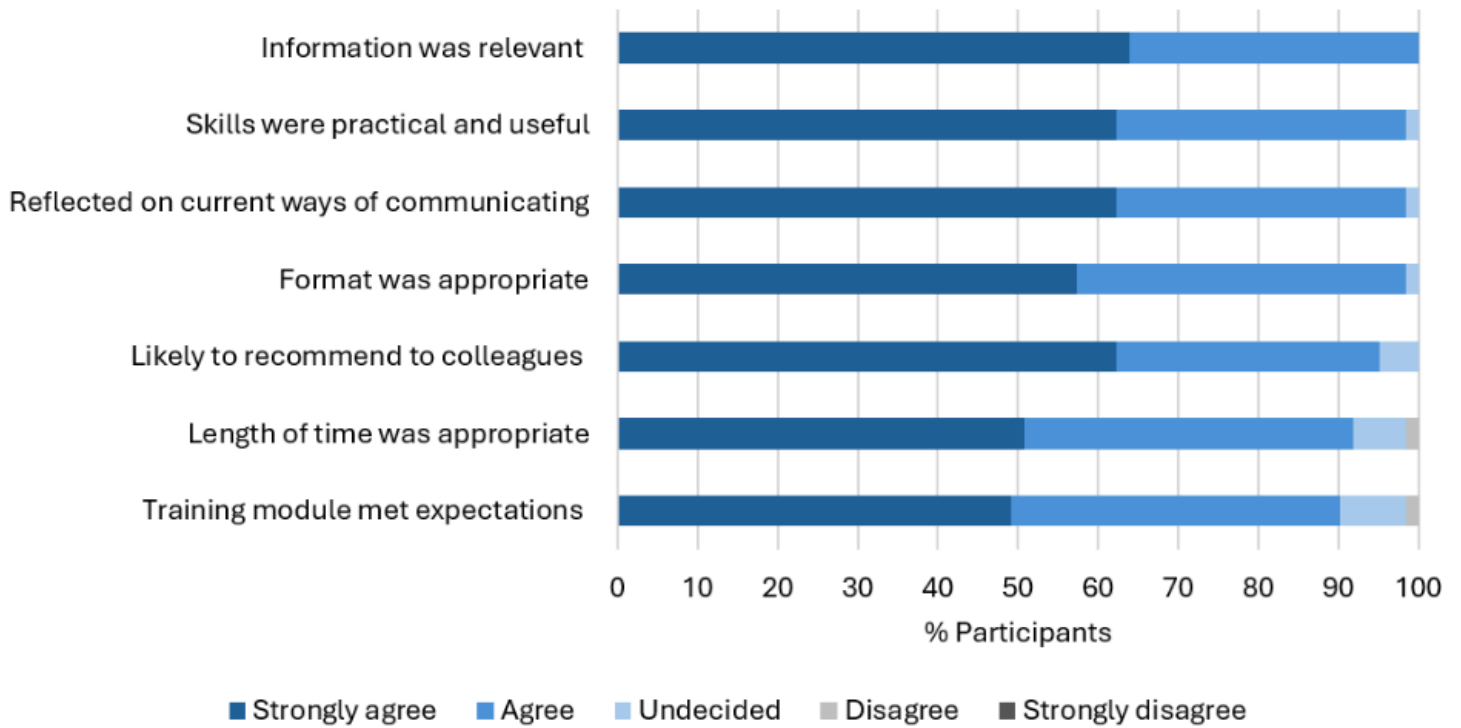


Figure 3

Participant ratings of training module acceptability (immediate post-training)

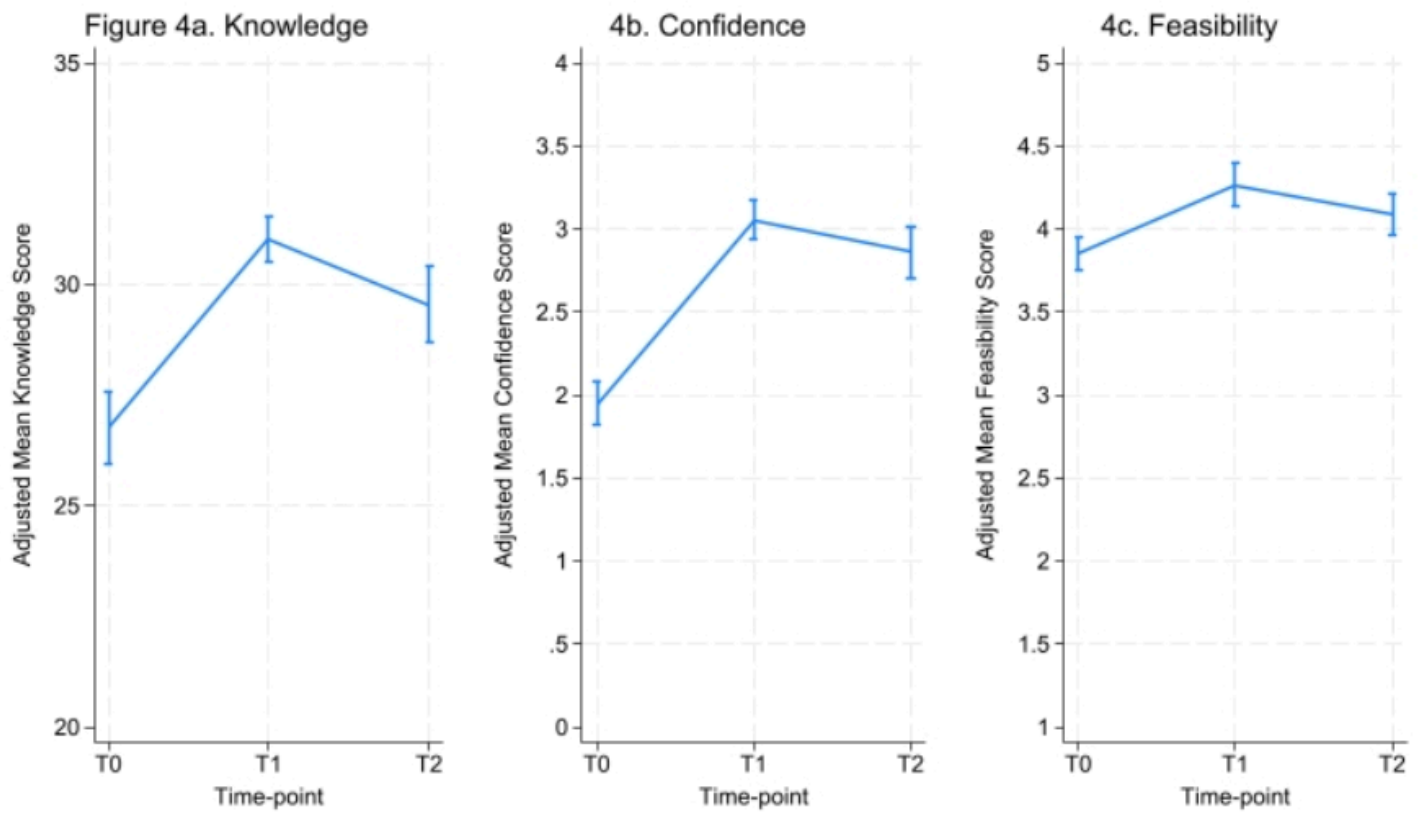


Figure 4

Mean differences in knowledge, confidence, and feasibility scores between pre-training (T0), immediately post-training (T1), and 3-months post-training (T2)

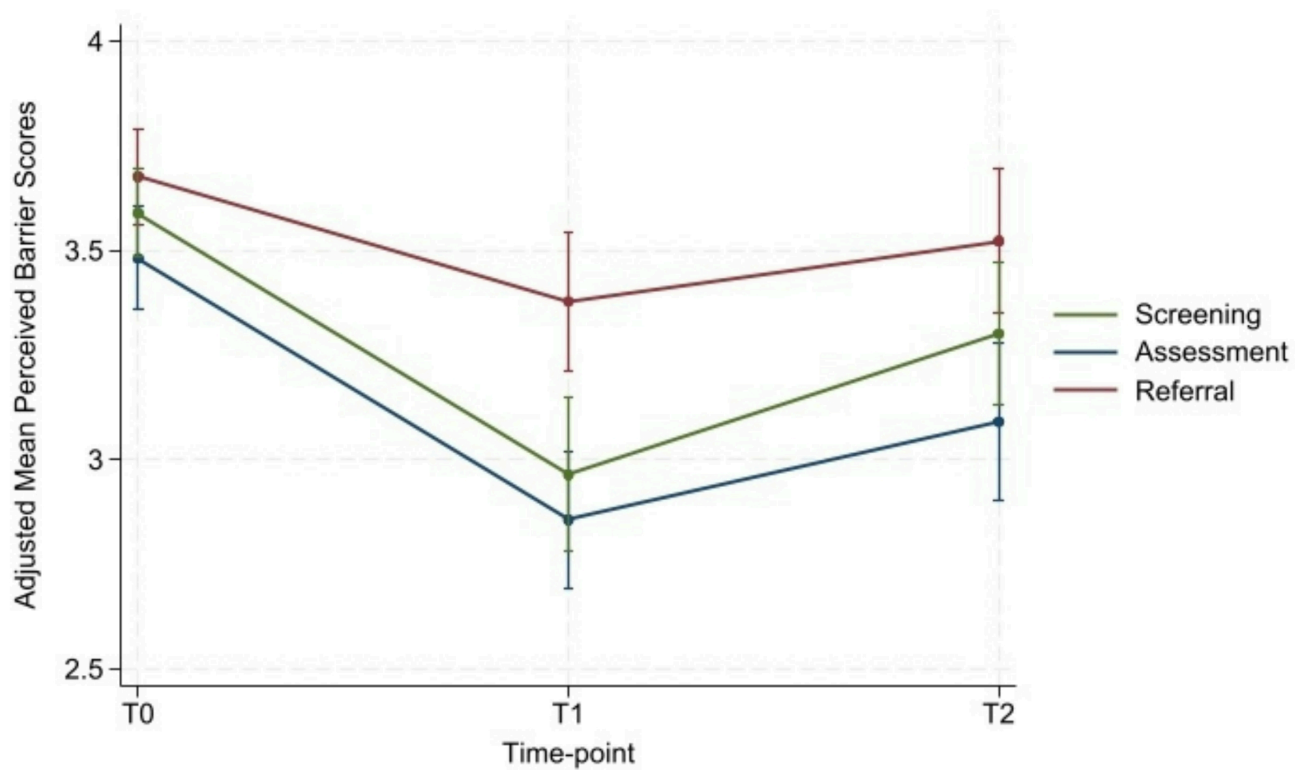


Figure 5

Mean differences in perceived barriers for FCR screening, assessment, and referral between pre-training (T0), immediately post-training (T1), and 3-months post-training (T2)