



Impact of an Interprofessional Primary Care Training on Fear of Cancer Recurrence on Clinicians' Knowledge, Self-Efficacy, Anticipated Practice Behaviors, and Attitudes Toward Survivorship Care

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Abstract

There are an estimated 15.5 million cancer survivors in the United States, with numbers projected to increase. Many cancer survivors are receiving survivorship care in primary care settings, yet primary care providers report a need for additional training on addressing medical and psychosocial concerns of cancer survivors. This paper presents findings from a pilot study on the effectiveness of a novel training for interprofessional primary care providers on the clinically significant issue of fear of cancer recurrence. The on-site training was provided to a total of 46 participants, including physicians (61%), physician assistants (11%), nurse practitioners (7%), nurses (17%), and social workers (4%) in six different primary care practices. The average number of years of professional experience was 18.8, with standard deviation of 10.9. Results of paired-sample *t* tests indicated that the training increased knowledge and self-efficacy of providers in identifying and addressing FCR. The training was well-received by participants, who had high confidence in implementing practice behavior changes, although they also identified barriers. Results suggest the feasibility of a brief training for continuing education and have implications for models of care delivery in cancer survivorship.

Keywords Cancer · Cancer Survivorship · Fear of Cancer Recurrence · Interprofessional Training · Intervention · Evaluation

Introduction and Review of the Literature

Cancer survivorship is a growing public health concern, with an estimated 15.5 million cancer survivors in the United States (U.S.) today, and numbers expected to exceed 20 million in the next 10 years [1]. Cancer survivors across diagnoses experience a multitude of late and long-term effects from cancer and related treatments, including fatigue, pain, insomnia, risks

for secondary cancers, financial concerns, and fear of cancer recurrence [2, 3]. Often these concerns are experienced in the context of other comorbid illnesses and psychosocial issues, adding to the complexity of patient health care management [2]. Additionally, cancer survivors are increasingly being treated in primary care settings, where both physicians and nurses have identified gaps in knowledge and confidence to treat both biomedical and psychosocial aspects of cancer survivorship [4–6]. To further complicate matters, fragmented systems of health care limit communication and collaboration between specialists and primary care clinicians [2].

Institute of Medicine (IOM) report, *From Cancer Patient to Cancer Survivor*, [7] emphasized the need to improve quality of life for cancer survivors by developing evidence-based clinical guidelines and enhancing education and communication between specialty and primary care providers. Leading national organizations such as American Society of Clinical Oncology (ASCO), American Cancer Society (ACS) and National Comprehensive Cancer Network (NCCN) responded by developing guidelines for survivorship care. Further, ASCO has created a core curriculum for cancer survivorship education which includes information about both

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physical and emotional concerns [8]. However, evidence-informed trainings for disseminating this information have not been widely developed [9].

Continuing education programs, required of medical and mental health professionals, provide opportunities for disseminating evidence-based guidelines. In fact, continuing education trainings have specifically been identified as the first and most important step in disseminating evidence-based psychological treatments for cancer patients [10]. Empirical evidence indicates that curricula on caring for cancer survivors have not been broadly incorporated into formal education programs for physicians and nurses, particularly outside of oncology specialty care [11, 12]. Evaluation of in-person trainings has demonstrated positive outcomes such as increased knowledge and confidence in implementing practice changes [13, 14]. However, continuing education programs in general have been critiqued for not focusing on clinicians' questions arising from practice, lacking rigorous evaluation, and being limited in interprofessional scope and collaboration [15]. Previously evaluated continuing education trainings in cancer survivorship have largely targeted physicians and focused on topics such as communication [13], cultural sensitivity [16], and general survivorship care [14]. Continuing education, preferably with an interprofessional focus, is recognized as an important starting point for better educating practicing clinicians about care for cancer survivors [12]. IOM recommends interprofessional education (IPE) and training, with the goal of transforming the landscape of health delivery and outcomes [17]. IPE is particularly relevant in the current landscape of primary care, in which comprehensive, team-based models of care delivery are growing in popularity [18].

Although there are limited examples in the literature of interprofessional continuing education programs focused on cancer survivorship, one online intervention targeted to multiple primary care disciplines (physicians, nurse practitioners (NP), nurses, physicians assistants (PA), and doctor of osteopathic medicine (DO) showed positive outcomes [19]. The online CME program, which was designed to provide information about the medical and psychosocial concerns facing cancer survivors, resulted in high participant satisfaction with training material, statistically significant increases in knowledge, and positive changes in anticipated practice behaviors [19]. Additionally, a recent needs assessment of the learning needs of health care providers from multiple disciplines indicated that many preferred in-clinic trainings [20].

In order to address the often overlooked emotional concerns of cancer survivors, the current study built upon the existing literature by developing and evaluating an in-clinic interprofessional training on a significant and often unaddressed psychosocial issue in cancer survivorship [3]: fear of cancer recurrence (FCR). FCR, or the worry that the cancer will come back in the same or different part of the body, is experienced by the majority of cancer survivors across diagnoses and associated with poor quality of

life and negative symptom burden [21]. Experts in psychosocial oncology have identified FCR as a concern that should be recognized and addressed in the health settings in which survivors are receiving care [22]. As there is not a pre-existing, evidence-based training on FCR, the current training intervention was developed through use of key informant interviews, described elsewhere in the literature (Berrett-Abebe et al., currently under review). The current paper reports the evaluation results of this training. The primary goals of the training were to increase knowledge and self-efficacy of interprofessional primary care providers on identifying and addressing FCR in clinical practice.

Conceptual Framework

Consistent with previous research evaluating interprofessional trainings [23], this study was guided by Social Cognitive Theory and Kirkpatrick's Evaluation of Training Programs. Social Cognitive Theory (SCT) [24] posits that personal factors, environmental factors, and behaviors interact in a dynamic process, each influencing the other. Thoughts and beliefs are important aspects of personal factors. Additionally, self-efficacy is a significant factor in behavior change. Self-efficacy, or an individual's belief that she/he can accomplish a specific task, positively impacts behavior change despite obstacles [24]. Kirkpatrick's Evaluation of Training Programs [25] suggests that training should be evaluated at multiple levels: reaction to the training, learning (including skills, knowledge, and attitudes), behavior, and results. This study used constructs of reaction to training, knowledge acquisition, self-efficacy, and anticipated practice behavior change to evaluate the training. Institutional Review Board approval was obtained from participating institutions.

Methods

Data Collection

Data for this exploratory study were obtained from in-person trainings provided to interdisciplinary primary care teams on identifying and addressing FCR in their cancer survivor patient populations. Following IRB approval, primary care practice leadership in each setting provided permission for the trainings to be conducted and individual participants completed Informed Consent to participate in the study. Paper surveys were self-administered pre- and post-training sessions. Trainings lasted approximately 30 min (see Table 1 for training components). To protect confidentiality, a unique identifier was created for each participant based on four questions; this identifier was used to match pre and post-test questionnaires. All data was collected between June 2016 and December 2016.

Table 1 Components of the developed training for primary care providers on FCR

Components	Details
Patient narrative about FCR	3-min video*
Didactic information about cancer survivorship, late effects, and psychosocial distress	Delivered by PowerPoint presentation
Didactic information about FCR	Includes information about prevalence, clinical correlates, clinical significance
Evidence-informed screening questions for FCR	Delivered verbally and presented to trainees on notecards
Brief interventions to treat FCR	Delivered by PowerPoint: <ul style="list-style-type: none"> • First tier (education, normalization, and lifestyle interventions delivered in exam room) • Second tier (referrals to behavioral health and community resources)
Community resources/referrals	Delivered verbally and presented to trainees on the backside of notecard <ul style="list-style-type: none"> • National resources • Local resources tailored to participants’ community of practice
Discussion/questions	As permitted by time

*When technology was not available for video to work properly, patient narrative was shared verbally by the presenter

Sample

Participants included physicians (*N* = 28), PAs (*N* = 5), NPs (*N* = 3), social workers (*N* = 2), and nurses (*N* = 8) who practiced in primary care settings in which the trainings were being delivered. These primary care settings (*N* = 6) were affiliated with teaching hospitals in the Northeast although practices varied in location, with various practices serving urban, suburban, and rural communities. Refreshments were provided during the trainings to thank participants for their time.

Measures

The pre-test had 21 items, categorized into three domains: socio-demographics, knowledge, and self-efficacy. The post-test had 31 items, categorized into five domains: socio-demographics, knowledge, self-efficacy, reaction to training/ anticipated practice behaviors, and attitudes about survivorship issues.

Socio-demographics Socio-demographic information included gender, race/ethnicity, professional discipline, and years practiced in professional discipline.

Knowledge The majority of knowledge items were on a Likert scale ranging between 0 and 5 (0 = not sure; 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree). An example of a knowledge item was “Fear of cancer recurrence is associated with poor quality of life in cancer survivors.” Negatively phrased items were reverse-coded to match the remainder of the knowledge questions. One knowledge item was formatted differently. This item asked

participants if they were aware of cancer-specific resources to which they might refer their patients (yes/no/not sure), with space to list up to three specific resources.

Self-Efficacy All self-efficacy items were on a Likert scale ranging between 0 and 5 (same as above). An example of a self-efficacy item was “In my clinical practice, I am confident in my ability to ask patients about fear of cancer recurrence.”

Reaction to Training/Anticipated Practice Behaviors Four reactions to training items were on a Likert scale ranging between 0 and 5 (same as above). An example of this type of question was “The information provided in this training is relevant to my clinical practice.” The fifth question asked, on a Likert scale ranging between 0 and 10 (0 = not confident at all and 10 = extremely confident), how confident participants were that they would be able to apply what they had learned to practice. Participants were also asked to check boxes of items that would help increase confidence. An example of this was “Additional information and skill development.”

Attitudes About Survivorship Issues Opinion questions, such as “Are there other topics on which you would like additional training related to providing care to cancer survivors?” had answer options of (yes/no/not sure), with space to list additional information in narrative format.

Analysis

All analyses were conducted utilizing SPSS 24. Descriptive analyses assessed participants’ (a) socio-demographic characteristics, (b) reactions to training, and (c) opinions on

survivorship care. Paired-samples *t* tests examined changes in scores of knowledge and self-efficacy between pre- and post-tests. Finally, ANOVAs explored differences in knowledge and self-efficacy between professional disciplines, at baseline and after completion of the training. In all ANOVAs, NPs and PAs were grouped together as advanced practice clinicians, based on similarity of roles and benefits of more equal group sizes. Social workers were removed from ANOVAs due to small numbers. Therefore, the three professional groups for these analyses were (a) physicians (b) nurses, and (c) NPs/PAs. For all analyses, *p* values at the two-sided alpha level of $< .05$ were statistically significant.

Results

Characteristics of Sample

A total of 46 professionals participated in the six trainings. Of the 46 participants, 64% were female. Seventy-four percent of the participants identified as White, followed by Asian (11%), Black (9%), and More than one race (4%); 91% of participants identified as non-Hispanic. The majority of participants were physicians (61%), followed by nurses (17%), PAs (11%), NPs (7%), and social workers (4%). The average number of years of professional experiences was 18.8, with standard deviation of 10.9. Table 2 displays the characteristics of the sample.

Table 2 Sample characteristics

Demographics	<i>M</i> ± <i>SD</i> or frequency (%) Participants (<i>N</i> = 46)
Gender	
Female	29 (63)
Male	17 (37)
Race	
White	34(73.9)
Asian	5 (10.9)
Black	4 (8.7)
More than one race	2 (4.3)
Missing	1 (2.2)
Ethnicity	
Non-Hispanic	42(91.3)
Hispanic	2 (4.3)
Missing	2 (4.3)
Professional discipline	
Physician	28(60.9)
Nurse	8 (17.4)
Physician assistant	5 (10.9)
Nurse practitioner	3 (6.5)
Social worker	2 (4.3)
Years of professional experience	18.8 ± 10.9

Knowledge

Results of the paired-samples *t* tests show that overall, mean composite knowledge scores significantly differed at pre-test ($M = 3.21$, $SD = .71$) and post-test ($M = 4.03$, $SD = .56$), $t = -7.10$, $df = 45$, $p < .001$). With the exception of the knowledge question about the relationship between FCR and sleep quality, findings from all other knowledge items indicated significant changes in scores from pre-test to post-test, with scores higher at post-test (see Table 3). Results of descriptive statistics on the item, “Are you aware of any cancer-specific resources to which you may refer your patients as needed?” showed that 39% of participants responded “yes” at pre-test while the number rose to 87% at post-test. Thirty-nine of participants were able to name at least one specific resource at pre-test, while 74% were able to name at least one specific resource at post-test.

Prior to conducting ANOVAs, Cronbach’s alpha reliability coefficient was calculated on knowledge scale items. Using post-test data, Cronbach’s alpha = .34, indicating very poor internal consistency. Therefore, knowledge items were not treated as a composite scale and ANOVAs were run separately on all items that showed significant results in *t* test analyses. One-way ANOVAs were conducted to explore differences in mean knowledge scores between disciplines at pre-test. There were no statistically significant differences between disciplines on any knowledge items. One-way ANOVAs were also conducted to explore differences in mean knowledge scores between disciplines at post-test. One item (FCR related to quality of life) had statistically significant differences in mean knowledge scores between disciplines at post-test ($F(2,41) = 8.25$, $p = .001$). A Tukey post hoc test revealed that scores were significantly different for nurses ($M = 3.38$, $SD = 1.19$), as compared to NP/PAs ($M = 4.38$, $SD = .52$) and physicians ($M = 4.46$, $SD = .51$). There was no statistically significant difference between scores for NP/PAs and physicians. These results indicate that nurses had lower knowledge gain on the item FCR related to quality of life, as compared to the other disciplines.

Self-Efficacy

Results show that overall, mean composite self-efficacy scores significantly differed at pre-test ($M = 2.95$, $SD = .69$) and post-test ($M = 3.95$, $SD = .44$), $t = -9.58$, $df = 45$, $p < .001$. Paired-samples *t* tests of all individual self-efficacy items showed significant changes in scores from pre-test to post-test at the .001 level of significance, with average self-efficacy scores higher at post-test (see Table 3). Prior to conducting ANOVAs, Cronbach’s alpha reliability coefficient was calculated on self-efficacy scale items. Using post-test data, Cronbach’s alpha = .82, indicating good internal consistency. One-way ANOVA was conducted to explore differences in

Table 3 Means, standard deviations, and paired-samples *t* tests results for knowledge and self-efficacy domains

Outcome	Pretest		Posttest		95% CI of mean difference	<i>t</i>	df
	M	SD	M	SD			
Knowledge (composite)	3.21	.71	4.03	.56	− 1.05, − .59	− 7.10***	45
FCR persists over time	2.93	1.31	3.76	1.06	− 1.33, − .32	− 3.29**	45
Sleep related to FCR	3.59	1.50	3.39	1.51	− .46, .85	.60	45
Age related to FCR	3.20	1.54	3.72	1.19	− 1.02, − .02	− 2.10*	45
FCR prevalence	4.52	.51	4.76	.43	− .37, − .11	− 3.76***	45
ACS survivorship definition	1.61	1.76	4.28	1.56	− 3.29, − 2.06	− 8.78***	45
FCR related to quality of life	3.41	1.15	4.26	.77	− 1.17, − .53	− 5.35***	45
Self-efficacy (composite)	2.95	.69	3.95	.44	− 1.22, − .80	− 9.58***	45
Identify FCR	3.04	.97	3.91	.46	− 1.17, − .57	− 5.88***	45
Ask about FCR	3.30	.99	3.98	.54	− .95, − .39	− 4.84***	45
Screen for FCR	2.91	1.21	3.83	.80	− 1.30, − .52	− 4.71***	45
Address FCR	3.11	1.40	3.87	.62	− 1.14, − .38	− 4.07***	45
Referrals FCR	2.80	1.15	4.09	.51	− 1.63, − .93	− 7.33***	45
Community orgs—FCR	2.50	1.03	4.04	.63	− 1.87, − 1.21	− 9.43***	45

M Mean, *SD* standard deviation, *CI* confidence interval

p* < .05; *p* < .01; ****p* < .001

mean self-efficacy scores between disciplines at pre-test. There was no statistically significant differences between disciplines ($F(2,41) = 2.35, p = .11$). ANOVA was conducted to explore differences in mean self-efficacy scores between disciplines at post-test. No statistically significant differences were found by discipline ($F(2,40) = .47, p = .63$).

Reactions to Training/Anticipated Practice Behaviors

On average, scores of reaction to training items were high (as measured on Likert scale of 0 to 5). Participants agreed that the information was relevant to clinical practice ($M = 4.41, SD = .62$), that handouts from training would prove useful in their work ($M = 4.5, SD = .86$), that the training provided enough time for discussion ($M = 4.07, SD = .77$), and that participants would recommend the training to others in their profession ($M = 4.28, SD = .58$). On a scale of 0–10 of confidence in applying what was learned in the training to practice, participants on average displayed high confidence ($M = 7.67, SD = 1.25$). When asked what would help increase confidence, the most common checked responses were time/higher priority (65.2%), additional information/skill development (43.5%), more referral resources (39.1%), and more screening resources (28.3%).

Attitudes Toward Survivorship Care

Participants were asked about attitudes related to training on cancer survivorship issues, communication between oncology and primary care providers, and survivorship care plans.

Twenty-eight percent of respondents stated that they had received training in the past about providing care to cancer survivors. Topics of previous trainings included palliative care, local resources, immunizations, and surveillance screening. Twenty-six percent of respondents stated that they would like additional training in providing care to cancer survivors in the following areas: cancer’s impact on family/children, long-term effects/screening, communication with patient, co-management with oncology providers, and palliative care/end of life. Seventy-six percent of respondents stated that there was a need for improved communication between oncology providers and primary care providers. Suggestions for improved communication included in-person meetings, “doc to doc” communication by phone, sharing notes, emails, providing survivorship care plans/ outlines, better hand-offs, and better care guidelines for follow-up care. Although survivorship care plans were listed as a strategy for improving communication, when asked if the participant had ever received a cancer survivorship care plan for any patient, only 13% responded “yes.”

Discussion

This pilot intervention achieved its goal of increasing knowledge and self-efficacy of interdisciplinary primary care providers in identifying and addressing FCR for cancer survivors in primary care settings. With the exception of an item about the relationship between FCR and sleep quality, post-test scores on knowledge showed statistically significant increases from pre-test scores.

The pre-test score on FCR/sleep quality (3.59 on a Likert scale of 0–5), was the second highest average pre-test knowledge score. It is possible that material on the relationship between FCR and sleep quality was not emphasized enough in trainings in order to see additional knowledge gain. Only one statistically significant difference was seen between professional group scores in ANOVA analyses. Nurses had statistically significant lower scores on the item FCR related to quality of life at post-test, as compared to NP/PAs and physicians. This result suggests that nurses had less knowledge gain from the training material that FCR is correlated to poorer quality of life for cancer survivors. There is not adequate literature on interprofessional trainings in cancer survivorship to understand the reasons for this result. However, one possibility is that RNs are not performing the clinical roles in primary care (patient education and counseling) that are presented in the training material, particularly as related to psychosocial concerns such as quality of life. Overall, however, physicians, NPs/PAs, and nurses had similar levels of knowledge and self-efficacy both at pre-test and at post-test. This is not surprising, given the small sample size of the study and the fairly high average level of participants' professional experience.

All self-efficacy questions showed statistically significant increases from pre-test to post-test. In this study, participants displayed high confidence (7.67 on a 10-point scale) that they would be able to incorporate information from the training into their practices. This is in keeping with previous trainings [19] that demonstrated high intention for practice change. Commonly identified issues that would improve confidence (time/higher priority, additional information/skill development, more referral resources, and more screening resources) have also been identified elsewhere as barriers for comprehensive care for cancer survivors in primary care settings [9]. Future consultative services and research could focus on helping primary care providers develop practice pathways for identifying and addressing psychosocial concerns of cancer survivors, including consideration of having disciplines such as nursing or social work take primary responsibility for these issues.

The trainings evaluated in this study took place in six different clinic settings, some of which were more conducive to learning than others (e.g., dedicated conference space versus training in team breakroom/kitchen). However, across settings, participants had very favorable reactions to the training, with participants agreeing that information was relevant to clinical practice, that handouts from training would prove useful in their work, that the training provided enough time for discussion, and that participants would recommend the training to others in their profession. These results are similar to other research that has described provider preference for in-clinic training [20] and suggest that a brief training is feasible even in busy or resource-limited primary care practice settings. Despite high favorability, only 26% of participants identified interest in future trainings, with topics spanning both medical (e.g., surveillance screening guidelines) and psychosocial (e.g., impact of cancer on family/children) issues.

Consistent with the literature [2], the majority (76%) of participants agreed that there is need for improved communication between oncology specialists and primary care providers. Participants identified a range of micro (e.g., phone conversations) and macro (e.g., better care guidelines) strategies to improve communication. Survivorship care plans were also mentioned by three participants. Survivorship care plans, written tools to improve communication and care coordination between oncology and primary care providers and recommended by ASCO guidelines [8], had only been received by 13% of participants. This suggests that there may be a gap between survivorship guidelines and the knowledge and practice behaviors of both oncology and primary care providers.

Limitations

This pilot study was limited by small sample size, including small numbers of social workers, resulting in social workers being excluded from multivariate analyses and no significant statistical findings at the multivariate level. Additionally, low Cronbach's alpha on the knowledge scale items indicates that results in which the cumulative knowledge score was used should be interpreted with extreme caution. The results of the study were also limited by use of a convenience sample with no comparison group. This one group pre-test/ post-test design is common in training evaluations, but future research could use a stronger experimental design as well as consider changes in knowledge, self-efficacy, and practice behaviors over time to determine if positive changes persist. Although this study was conducted in primary care practices in communities that spanned urban, suburban, and rural settings, all practices were hospital-affiliated and in the Northeast, making it difficult to generalize study results to other types of practices (e.g., private) and in other parts of the U.S.

Future Directions

The quality of healthcare for cancer survivors can be improved through continuing education efforts for their interdisciplinary primary care providers. This study demonstrated that a brief, on-site training is feasible in a range of primary care practices, well-received by participants, and achieved goals of improved knowledge, self-efficacy, and confidence to implement anticipated practice behavior changes. The need remains for ongoing continuing education/ trainings across primary care disciplines to better disseminate evidence-based guidelines for cancer survivorship care. Future research should also explore ways to more broadly disseminate cancer survivorship educational offerings to primary care teams, including online or hybrid (online and on-site) trainings or integration into offerings at professional conferences. Additionally, integrated behavioral health services in primary care practices can offer value in providing resources to patients, consultation to

colleagues, and addressing barriers to managing psychosocial concerns of the growing population of cancer survivors in primary care.

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Compliance with Ethical Standards

Institutional Review Board approval was obtained from participating institutions.

Conflict of Interest The authors declare that they have no conflict of interest.

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