Educating Hematology-Oncology Fellows About How to Communicate with Patients About Clinical Trials: A Needs Assessment

Journal of Medical Education and Curricular Development
Volume 11: 1–10

DOI: 10.1177/23821205241269376

Naomi D. Parker[1], Martina C. Murphy[2], Susan Eggly[3], Elisa S. Weiss[4], Tithi B. Amin[1], Easton N. Wollney[1], Kevin B. Wright[5], Daphne R. Friedman[6,7], Maria Sae-Hau[4], Andrea Sitlinger[6], Stephanie A. S. Staras[1], Leah Szumita[4], Eric Cooks[4] and Carma L. Bylund[1]

[1]Department of Health Outcomes and Biomedical Informatics, University of Florida College of Medicine, Gainesville, FL, USA. [2]Department of Medicine, University of Florida College of Medicine, Gainesville, FL, USA. [3]Department of Oncology, Wayne State University/Karmanos Cancer Institute, Detroit, MI, USA. [4]The Leukemia & Lymphoma Society, Rye Brook, NY, USA. [5]College of Humanities and Social Sciences, George Mason University, Fairfax, VA, USA. [6]Department of Medicine, Duke University School of Medicine, Durham, NC, USA. [7]Medicine Service, Durham VA Health Care System, Durham, NC, USA.

ABSTRACT

OBJECTIVES: Only 5–8% of adults with cancer participate in cancer clinical trials (CCTs), with even lower rates among underrepresented groups. Improving oncologists' communication skills may enhance the frequency and quality of their discussions with patients about CCTs, consequently increasing participation. However, little is known about interest in or presence of CCT-related communication training during Hematology-Oncology (Hem-Onc) fellowships. This study aimed to describe, from the perspective of Hem-Onc fellowship program directors (PDs): (1) the current landscape of CCT education for Hem-Onc fellows; (2) the acceptability and feasibility of implementing a CCT communication skills workshop for Hem-Onc fellows.

METHODS: We used an explanatory sequential mixed-methods approach. PDs were surveyed and interviewed about their graduate medical education (GME) programs' current CCT curriculum, training challenges, fellows' CCT knowledge and CCT communication skills, and preferences for a CCT communication workshop.

RESULTS: PDs were surveyed (n = 40) and interviewed (n = 12). PDs reported that their institutions prioritize CCT accrual (M = 4.58, SD = .78; 1-5 scale, 5 = "Strongly Agree") and clinical research training (M = 4.20, SD = .85). CCT skills that programs least often addressed were how to (1) discuss CCTs with newly diagnosed patients, (2) talk to patients about CCTs when none are available, and (3) help patients find CCTs at other institutions. PDs were interested in a CCT communication workshop for fellows ("yes" = 67.5%, "maybe" = 32.5%) and said training would be feasible (M = 4.28, SD = .78) and useful (M = 4.47, SD = .78). Qualitative results described programs' current approaches to CCT education and insights about developing and implementing CCT communication training.

CONCLUSIONS: There is a clear need to improve CCT communication skills training in Hem-Onc fellowship programs and to implement and scale such training to increase CCT participation, especially among diverse patient populations. Furthermore, Hem-Onc GME PDs view such training as feasible and useful.

KEYWORDS: Graduate medical education, cancer clinical trials, educational intervention, communication skills training

RECEIVED: February 26, 2024. **ACCEPTED:** June 26, 2024

TYPE: Original Research Article

FUNDING: This work was supported by a grant from The Leukemia & Lymphoma Society (Grant number HSR9022-23).

DECLARATION OF CONFLICTING INTERESTS: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CORRESPONDING AUTHOR: Naomi D. Parker, Department of Health Outcomes and Biomedical Informatics, University of Florida College of Medicine, Gainesville, FL, USA. Email: naomiparker@ufl.edu

Introduction

Cancer clinical trials (CCTs) are critical for improving cancer treatment to increase patients' quality of life and survival. Attaining the full benefit of cancer research requires the participation of informed and willing cancer patients who mirror the diversity of the U.S. population. However, CCT accrual remains persistently low, at about 5–8%.[1] This low rate hampers trial completion and the advancement of science, and it limits the generalizability of CCT results.

Low CCT enrollment can be attributed to factors at multiple levels. Patient barriers include lack of awareness[2–5] and self-efficacy,[6–8] fear, distrust, financial concerns,[9] and/or logistical barriers.[2] The literature also cites numerous systemic, institutional, and clinician-related barriers to CCT accrual, including lack of available trials that align with the characteristics and/or demographics of patient populations, strict eligibility criteria, high institutional costs, and poor clinician communication skills when discussing CCTs.[1–9] Notably, a significant but understudied barrier is that treating oncologists often do not initiate discussions about CCTs, even when patients may be eligible for available trials.[1] Even among institutions participating in CCTs, up to 27% of eligible patients are

not offered the opportunity to participate in a trial.[1] Therefore, educating oncologists about the importance of CCTs and how to discuss them with patients effectively is vital. Such an endeavor has the potential to improve oncologists' trial-related attitudes and communication skills, ultimately boosting patient participation.

Training cancer clinicians in CCT communication skills has been well-received and shown to be successful in improving clinicians' knowledge and attitudes[10] as well as comfort and communication behaviors.[11] An opportune time for oncologists to learn effective communication skills is during their training.[12] For instance, a recent systematic review of communication skills training in graduate medical education (GME)[13] found that 70% of studies reported positive outcomes. However, out of 77 published studies, none focused on improving CCT communication in Hem-Onc fellowship programs or in other types of GME training programs. Thus, there is a clear need to develop and implement a CCT communication skills training workshop for Hematology-Oncology (Hem-Onc) fellows.

This study aimed to investigate Hem-Onc fellowship programs' needs and preferences through a sequential explanatory mixed-methods design. Specifically, we aimed to describe, from the perspective of Hem-Onc fellowship program directors: (1) the current landscape of CCT education in Hem-Onc training programs and (2) the acceptability and feasibility of implementing a CCT communication skills workshop for Hem-Onc fellows. Our needs assessment study took a holistic view of programs' approach to CCT education, focusing on three components: (1) knowledge about CCT recruitment and enrollment (e.g., barriers to enrollment); (2) patient-centered communication; (3) skills specific to communicating with patients about CCTs.

Methods

This mixed methods study received approval from the University of Florida Institutional Review Board (IRB202202786). The study employed an explanatory sequential design, incorporating both quantitative and qualitative data collection and analysis methods.[14] The study comprised two distinct data collection and analysis phases: an initial survey (quantitative) followed by semi-structured interviews (qualitative)[15] with Hem-Onc Fellowship Program Directors and leaders (e.g., Assistant/Associate Program Directors), hereafter referred to as Program Directors.

After conducting separate analyses, the qualitative findings were linked to the quantitative results by integrating the two datasets by creating joint displays, allowing the qualitative data to enhance and illustrate the quantitative data.[16,17] This integration offers a more comprehensive view of Hem-Onc programs' current approaches to CCT training broadly as well as their needs and preferences for implementing a CCT communication skills workshop. This study followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology)[18] and SRQR (Standards for Reporting Qualitative Research)[19] guidelines for quality assessment and reporting the results [Supplementary Files].

Quantitative Phase

Participants and Recruitment. Our team of multidisciplinary investigators recruited participants to take a brief web-based survey. Recruitment was based on the following inclusion criteria: (1) Program Directors from GME Hem-Onc programs, (2) located in the United States, and (3) fluent in written and spoken English. Between February 2023 and August 2023, we emailed invitations that included a description of the study and a link for participants to access both the survey and a statement of participant rights and responsibilities. The invitations were distributed via a publicly accessible list of Accreditation Council for Graduate Medical Education (ACGME) Hematology-Oncology programs (n = 185 after removing duplicates), the American Society of Clinical Oncology (ASCO) program directors' community, and several of the co-authors' professional networks. As this was a descriptive, needs assessment study, there was no need for a power analysis. We were not testing differences between groups based on an a priori theoretical framework. We recruited as many Program Directors as possible using a convenience sample. Given this was a very specialized group, convenience sampling was appropriate.

Data Collection. Our multidisciplinary research team included communication scientists, implementation scientists, Hem-Onc clinicians, Hem-Onc Program Directors, and oncology fellows. Drawing on our collective expertise, we used Qualtrics[XM20] to develop a web-based survey tailored for Program Directors in Hem-Onc GME programs. The survey was based on our previous experiences conducting a CCT communication skills program, as well as our other work in GME and CCT research. Participants agreed to participate at the beginning of the survey, and demographic information was collected at the end. The survey asked Program Directors to rate their fellows' CCT knowledge and communication skills using a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Additionally, they were asked about their program's educational curriculum, program-specific characteristics (e.g., number of trainees, program focus), and their preferences for a CCT communication workshop to be included as part of their broader CCT curriculum. Program Directors also assessed the feasibility and utility of incorporating such a workshop into their respective programs. Demographic information included Program Directors' gender, geographic region, current role, years in the role, and years since training. At the end of the survey, Program Directors indicated their interest in participating in a follow-up

interview. Survey participants were compensated with a $20 gift card.

Statistical Analysis. We analyzed the quantitative survey data using IBM SPSS Statistics (Version 27). Frequencies, mean scores, and standard deviations for all survey measures are reported below.

Qualitative Phase

Participants and Recruitment. To gain a deeper understanding of the survey findings, we conducted follow-up interviews with the Program Directors. We did not base participant recruitment and data collection on saturation. Instead, we conducted interviews with all Program Directors who had previously indicated their willingness to participate at the end of the survey. Between March 2023 and July 2023, members of the research team [CLB, TBA] contacted interested Program Directors to confirm their participation and to schedule interviews online via Zoom or by telephone.

Data Collection. Two co-authors [TA, ENW] conducted follow-up interviews via Zoom and telephone between March 2023 and August 2023. Development of the semi-structured interview guide was informed by the survey findings, primarily focusing on developing a deeper understanding of Program Directors' experiences with and perceptions of their respective fellowship programs. Participants were asked about their fellows' and programs' CCT-related strengths and weaknesses, current CCT curriculum, and suggestions for developing and implementing a CCT communication workshop. Participants were provided an opportunity to ask any questions about the statement of participant rights and responsibilities at the beginning of the interview, and demographic information was collected at the end. Demographic information included gender, geographic region of program, and years of experience as a Program Director. All interviews were audio recorded, professionally transcribed, and de-identified prior to analysis. Participants were offered an additional $50 gift card as compensation for their time.

Analysis. The interview data and analysis were managed using ATLAS.ti (Version 23.3.0) software. We *a priori* identified three main categories based on the research questions and interview guide: (1) fellows' and programs' strengths and weaknesses, (2) current CCT curriculum, and (3) training preferences and implementation suggestions. We thematically analyzed the data within these categories, employing a combination of deductive and inductive coding strategies guided by the constant comparative method.[21,22] First, two authors [TA, ENW] became immersed in the data by reading the first eight transcripts (i.e., interviews completed to that point), followed by independent open coding to identify concepts and assign codes. The two authors [TA, ENW] regularly met to compare and discuss codes and emerging themes to achieve consensus and to develop a codebook, which guided the analysis of the four remaining transcripts. Similar codes across all transcripts were collapsed into themes, followed by axial coding to identify and characterize thematic properties.[20] Thematic saturation was guided by Owens' criteria of repetition, reoccurrence, and forcefulness.[23] To ensure rigor and comprehensiveness, a third author [NDP] analyzed the entire dataset to validate themes and properties and met with a second author [TA], who finished analyzing the remaining four transcripts, to review the analysis and refine the data for presentation.[22,24,25]

Data Integration. After the initial analysis, findings from the quantitative and qualitative phases were interpreted interactively to enhance findings. We created joint displays to illustrate the integration of the quantitative and qualitative findings and to organize the results from both approaches visually.[17,26]

Results

Demographic and professional characteristics of participants from the quantitative phase (n = 40) and qualitative phase (n

Table 1. Demographics.

VARIABLE	SURVEY (N = 40)	INTERVIEW (N = 12)
Sex	n (%)	n (%)
Male	23 (57.5%)	8 (66.7%)
Female	16 (40.0%)	4 (33.3%)
Not reported	1 (2.5%)	0 (0.0%)
Region of United States		
Northeast	12 (30.0%)	4 (3.3%)
Midwest	10 (25.0%)	5 (41.7%)
Southeast	8 (20.0%)	1 (8.3%)
Southwest	6 (15.0%)	1 (8.3%)
Northwest	1 (2.5%)	1 (8.3%)
Not reported	3 (7.5%)	0 (0.0%)
Current Role		
Program Director	33 (82.5%)	12 (100%)
Assistant/Associate Program Director	7 (17.5%)	0 (0%)
Years in Current Role		
Mean (SD)	5.6 (5.9)	4.9 (6.4)
Not reported	2 (5.0%)	0 (0.0%)
Fellows in Program		
Mean (SD)	14.2 (6.4)	14.2 (5.8)

= 12) are presented in Table 1. We surveyed 40 participants, including 23 male (57.5%), 16 female (40.0%), and 1 not reported (2.5%), and conducted follow-up interviews with 8 male (66.7%) and 4 female (33.3%) participants.

The survey took an average of 11 minutes to complete. Surveyed participants described their current role as Program Director (82.5%) or Assistant/Associate Program Director (17.5%). Program Directors represented GME programs located in the Northeast (n = 12), Midwest (n = 10), Southeast (n = 8), Southwest (n = 6), and Northwest (n = 1) regions of the United States or declined to report a location (n = 3). Most Program Directors (97.5%) described their fellowship programs as focusing on both hematology and oncology and having an average of 14 trainee spots (SD = 7.71, range 2-30) across all fellowship years. They reported that Program Directors typically make the decisions regarding their programs' CCT curriculum (n = 38), and most agreed their institutions prioritize CCT accrual (M = 4.58, SD = .78) and training in clinical research (M = 4.20, SD = .85).

Across the quantitative and qualitative data sets, the perspectives of Hem-Onc Program Directors were captured in two overarching categories: 1) the current landscape of CCT education, and 2) the acceptability and feasibility of implementing CCT training for Hem-Onc fellows. First, the quantitative data is described and then elaborated on by the qualitative findings.

*Current Landscape of **CCT** Education*

Fellows and Programs' Strengths and Weaknesses. Program Directors evaluated fellows' levels of *CCT knowledge* at the completion of their fellowship programs. They also evaluated fellows' levels of *CCT communication skills* when discussing clinical trials with patients. Survey responses were measured on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree").

Program Directors rated fellows' *CCT knowledge* as highest on three items: (1) why clinical trials are important to high-quality care (M = 4.26, SD = 0.82), (2) diversity and representativeness among clinical trial participants (M = 3.85, SD = 0.81), and (3) key elements of informed consent (M = 3.62, SD = 0.99). Fellows were rated lowest in understanding: (1) patient-level barriers to participating in clinical trials (M = 3.56, SD = 0.75), (2) clinician-level barriers to enrolling or referring patients to clinical trials (M = 3.41, SD = .91), and (3) system-level barriers to patient clinical trial accrual (M = 3.33, SD = .95). Program Directors rated fellows' *CCT communication skills* with less variation across items, with the highest being (1) addressing patient concerns about clinical trial participation (M = 3.83, SD = 1.17), and the lowest being (2) patient-centered communication (M = 3.50, SD = 1.15). Full survey results are reported in Table 2.

When interviewed, Program Directors shared their perspectives of fellows' and programs' strengths and weaknesses regarding CCT knowledge, CCT communication skills, and training. Program Directors characterized fellows as being "well-trained in a traditional aspect" (PD1) of *basic clinical investigation* and *communicating CCT fundamentals to patients* and as being less proficient in *understanding* and *communicating the complexities of CCTs* with patients. A Program Director explained: "I think our fellows are strong in communicating the basics of risks, benefits and alternatives to enrollment on a clinical trial versus standard of care. I think weaknesses are

Table 2. Fellows' CCT knowledge and CCT communication skills.

Fellows' CCT Knowledge	**Mean**	**SD**
Why clinical trials are important to quality care	4.26	0.82
Diversity and representativeness among participants in clinical trials	3.85	0.81
Key elements of informed consent	3.62	0.99
Patient-level barriers to participating in trials	3.56	0.75
Provider-level barriers to enrolling or referring patients in trials	3.41	0.91
System-level barriers to patient accrual to trials	3.33	0.95
Fellows' CCT Communication Skills		
Addressing patient concerns about participating in clinical trials	3.83	1.17
How to talk to patients about clinical trials at diagnosis and every change in treatment	3.80	1.11
Discussing standard of care versus a clinical trial	3.80	1.04
Discussing the key elements of informed consent	3.78	1.12
Making a shared decision with patients about participation in a clinical trial	3.65	1.14
Patient-centered communication	3.50	1.15

Table 3. Joint display of fellows' CCT knowledge and CCT communication skills.

QUANTITATIVE RESULTS	QUALITATIVE RESULTS	EXEMPLAR QUOTES
Fellows' Characteristics	**Fellows' Strengths and Weaknesses in Discussing CCTs**	
CCT Knowledge PDs rated fellows' highest in understanding why CCTs are important to quality care (M = 4.26, SD = 0.82), diversity and representativeness among CCT participants (M = 3.85, SD = 0.81), and key elements of informed consent (M = 3.62, SD = 0.99).	**CCT Knowledge** PDs characterized fellows as knowledgeable in *basic clinical investigation* but less proficient in *understanding the complexities of CCTs,* with one reason being lacking enough seniority in their training to have achieved adequate CCT knowledge and understanding.	"I think the fellows, I would describe as being well-trained in a traditional aspect to be involved in clinical investigation in so far as they get core topics discussed during fellowship" (PD1). "I think the weakness is … talking about those clinical trials … A lot of times they don't understand the processes behind what it takes to open a clinical trial, what we do with information that we get from the clinical trial" (PD7). "I can say that in general being first year fellows they might not necessarily have the clinical background to understand the fundamentals of the trial they're discussing with the patient" (PD12).
CCT Communication Skills PDs rated fellows highest in addressing patient concerns about CCT participation (M = 3.83, SD = 1.17) and discussing standard of care versus CTs (M = 3.80, SD = 1.04).	**CCT Communication Skills** PDs characterized fellows as skilled in *explaining the basics of CCTs to patients* but less proficient in *communicating the complexities of CCTs to patients*.	"Our fellows … are remarkable at being able to explain clinical trials, the risks and benefits, understanding the mechanisms, going through the procedures, and really helping patients and their families come to decisions about participation … I do think their ability to communicate well with it, their ability to do a complete informed consent and then document it is quite remarkable" (P3). "Our fellows are strong in communicating kind of the basics of risks, benefits and alternatives to enrollment on a clinical trial versus standard of care" (PD6). "Teaching [fellows] how to break it down. … I think that's the hardest thing because sometimes fellows have to go into the nitty-gritty of every little detail. And I don't know that that's always necessary to help the patient understand what the actual goal of the trial is, right. … It's just really hard for fellows to explain that to patients…" (PD5).

explaining the nuances of clinical trial design" (PD6). However, Program Directors acknowledged that fellows' CCT knowledge and CCT communication skills may vary, as less senior fellows "may not [yet] feel comfortable enough in the standard of care treatment to talk about all the [available treatment] options" (PD7).

Fellows' weaknesses were underscored by Program Directors' perceptions of overall program weaknesses, including a *lack of a comprehensive CCT curriculum* and *limited CCT communication training* with fellows "learning a lot informally" (PD3) as CCT-specific training is often excluded from programs' formal curricula: "It's not…a robust [CCT] curriculum. For example, although our office of clinical research has topics including management of clinical trials and adverse event reporting and a bunch of practical skill sets…that's not built into the current fellow curriculum" (PD11). Although Program Directors rated fellows' knowledge of *diversity and representativeness* among participants in CCTs as moderately high in surveys, in interviews, programs were described as lacking sufficient emphasis on the topic. Overall, Program Directors said their programs inadequately address *diversity and representativeness* with the topic being "an area that we can improve on, particularly how do we recruit diverse patient populations to clinical trials" (PD1). A Program Director expressed: "I don't think we do a good job covering [recruitment of underrepresented groups in CCTs] explicitly within the curriculum. It's something that we've highlighted intermittently" (PD8). The quantitative and qualitative findings are jointly displayed in Table 3.

Current Approaches to Communication Skills and CCT Training. Program Directors reported that their programs' overall communication skills curriculum is typically developed internally (57.5%), externally (2.5%), or both internally and externally (40%), with programs employing a mixture of formal teaching methods including lectures (65%), group discussions (60%),

Table 4. CCT-related topics currently addressed in GME programs.

CCT-related Training Topic	Yes (n, %)	No (n, %)
Why clinical trials are important to quality care	28 (70.0)	12 (30.0)
Obtaining informed consent	25 (62.5)	15 (37.5)
Diversity and representativeness in cancer clinical trials	24 (60.0)	16 (40.0)
Making a shared decision with patients about participation in a clinical trial	20 (50.0)	20 (50.0)
Discussing standard of care versus a clinical trial	18 (45.0)	22 (55.0)
Patient level barriers to participating in trials	17 (42.5)	23 (57.5)
Discussing clinical trials with diverse patient populations	15 (37.5)	25 (62.5)
System level barriers to clinical trial enrollment	14 (35.0)	26 (65.0)
How to talk to patients about trials when they are newly diagnosed	12 (30.0)	28 (70.0)
How to talk to patients about trials when none are currently available to them	11 (27.5)	29 (72.5)
Utilizing tools to help patients locate trials at outside institutions	7 (17.5)	33 (82.5)
Other	2 (5.0)	38 (95.0)

workshops that include role plays (42.5%) and online modules (2.25%). Program Directors reported their curriculum about CCTs most often addresses why CCTs are important to quality care (70%), obtaining informed consent (62.5%), and diversity and representativeness in CCTs (60%). Curricula less often address discussing CCTs with newly diagnosed patients (30%), talking to patients about CCTs when none are available for enrollment (27.5%), and helping patients find CCTs at other institutions (17.5%). Full survey results are reported in Table 4.

Program Directors, when interviewed, discussed programs' *methods of instruction and format* and their *CCT curriculum*. They described their programs' overall *methods of instruction and format* as utilizing both *didactic* (e.g., lectures) and *experiential* (e.g., hands-on, interactive) learning methods, often emphasizing that fellows' training in both CCT knowledge and communication is usually more experiential than didactic and mostly "comes from the hands-on work that fellows do with research mentors (PD2)."

Program Directors acknowledged their CCT-related education is typically an *elective or specialized track* that is often only "targeted to trainees who are interested in clinical trials specifically" (PD11). They further explained that fellows who are interested in clinical research often participate in *external training* opportunities offered by national organizations such as the American Society of Clinical Oncology (ASCO) and the American Association for Cancer Research (AACR). One Program Director noted: "We strongly encourage and usually have fellows going every year to external training in clinical research. So, things like the ASCO/AACR Workshop" (PD2). Another Program Director added: "We encourage our fellows who have interest in careers in clinical trials to do things like the AACR ASCO course" (PD10). Program Directors additionally described fellows as receiving patient-centered communication skills training through collaborations with external departments: "We have a longitudinal curriculum in communication around the continuum of cancer care. We run that in collaboration with partners in the palliative care service" (PD12).

Programs' *CCT curricula* were described as primarily focusing on *clinical research fundamentals,* including CCT design, research methods, statistics, biostatistics, writing, and publication, as well as *research ethics and informed consent*.

Some Program Directors further noted that *diversity and representativeness* in CCTs is "touched on as an important issue" (PD2) and addressed "as part of health disparities lectures" (PD5) and in grand rounds. However, this emphasis was more institutional rather than formally integrated into a CCT-specific curriculum. One Program Director explained: "[Recruitment of underrepresented groups to CCTs] is not specifically covered. I think that this is something that we're cognizant of as an institution, and it's something that we, in general, are thinking about" (PD3). Communication skills training about CCTs was less often highlighted, as one Program Director shared: "[The fellows] get a core lecture topic on communication regarding clinical trials, and then they get experience as senior fellows in that regard, but that's the extent of it" (PD1).

Implementing CCT Training. Program Directors expressed interest in a CCT communication skills workshop for fellows ("yes"=67.5%, "maybe"=32.5%) and agreed that training

would be both feasible (M = 4.28, SD = .78) and useful (M = 4.47, SD = .78) to their programs. Their preferences for training were live presentations in a webinar format (M = 3.9, SD = 1.03) and program-tailored virtual workshops (M = 3.9, SD = 1.08) with slightly less interest in pre-packaged modules that fellows complete on their own (M = 3.47, SD = 1.01). Overall, Program Directors favored an in-person or synchronous virtual CCT communication workshop that incorporates experiential teaching methods such as role play and simulated patients. Program Directors emphasized the value and utility of developing a universal but locally adaptable CCT communication workshop, so they will not "have to reinvent the wheel" (PD1). Quantitative and qualitative findings are jointly displayed in Table 5.

Discussion

Increasing clinical trial participation among people with cancer, including those from underrepresented groups, is essential for advancing cancer research and improving treatment options. Offering training in communication skills about CCTs to fellows in Hem-Onc training programs can play a critical role in improving communication about CCTs.[10,11] Although systemic and institutional barriers exist, patient participation in available trials starts with high-quality patient-physician communication in the clinical setting. The aims of this mixed-methods study were first to examine the current landscape of Hem-Onc programs and fellows as it pertains to clinical trials education, and second, to assess the feasibility and acceptability of implementing CCT communication skills training in fellowship programs.

Overall, the survey data and interviews suggest that many fellowship programs lack a formally integrated CCT-specific curriculum. Instead, fellows' CCT exposure is gained as an extension of education already being received, including working in clinical settings with faculty mentors or attending grand rounds and core lectures that center CCTs. Such training variances raise the question: How are the topics selected for teaching in fellowship programs? One possible answer may be that emphasized topics are those that attending physicians are the most comfortable with. This is evidenced by Program Directors highlighting that most CCT-related training is hands-on, with fellows often learning through mentorship from senior physicians. However, these senior physicians may lack expertise in communicating about clinical trials to patients, potentially limiting fellows' learning about communication skills necessary for CCT discussions.

Program Directors acknowledged that CCT-specific education is typically not mandatory and, in some programs, may only be undertaken by a subset of interested fellows. Moreover, when "formal" CCT education is offered, the purpose is usually to educate fellows about the science behind and management of CCTs (e.g., CCT design, biostatistics) rather than interfacing with patients. Additionally, patient-centered communication skills may not be specifically taught in Hem-Onc programs. Instead, fellows may learn through hands-on experiences or by participating in communication training provided by other departments, such as palliative care. In this regard, qualitative and qualitative findings aligned, as Program Directors reported curricula least often focused on patient-centered communication skills in general or focused on CCTs. This was evidenced in interviews, as Program Directors described programs as most often teaching the basics of clinical research. Fellows' skill deficiencies were often linked to them not yet being knowledgeable enough or far enough into their training to comfortably discuss CCTs with patients. Quantitative findings further highlighted programs' lack of emphasis on communication training about CCTs. Instead, CCT-related curricula were described as most often addressing recruitment and enrollment issues such as (1) why CCTs are important to quality care, (2) obtaining informed consent, and (3) diversity and representativeness. Notably, these findings aligned with Program Directors' ratings of fellows' CCT knowledge as being highest in understanding (1) why CCTs are important to quality care, (2) diversity and representativeness among participants in CCTs, and (3) key elements of informed consent.

While surveys highly rate fellows' understanding of diversity and representativeness in CCTs, Program Directors, in interviews, acknowledged their curriculum often lacks sufficient training in this area. They noted fellows may instead learn about the topic from occasional grand rounds, core lecture series, or institutional initiatives aimed at increasing enrollment of underrepresented populations in clinical trials. The disparity between survey results and interviews could be attributed to Program Directors recognizing fellows' general awareness of diversity and equity, influenced by their collective institutional exposures.

Overall, Program Directors show an interest in integrating a CCT communication skills workshop into their fellowship programs and broader CCT curriculum, albeit with certain conditions. Ideally, the workshop would be delivered in a standardized format – one that is easily integrated and not overly burdensome, to avoid exacerbating fellows' existing overwhelm. Program Directors further suggested that programmatic value could be increased if the workshop was endorsed or delivered in collaboration with nationally recognized organizations. They also underscored the benefits of leveraging the reach and infrastructure of national programs.

Limitations

While this study provides valuable insights, it is important to acknowledge its limitations. First, the participant sample was self-selected, which may limit the generalizability of the findings. These findings may primarily apply to GME programs where Program Directors are interested in CCTs or are inclined to integrate CCT communication training into their broader

Table 5. Joint display of fellows' CCT knowledge and CCT communication skills.

QUANTITATIVE RESULTS	QUALITATIVE RESULTS	EXEMPLAR QUOTES
Interest in didactic training PDs were most interested in live presentations by external experts in a webinar format (M = 3.90) and pre-recorded presentations (M = 3.80) and least interested in pre-packaged modules that fellows complete on their own (M = 3.47).	**Preferred method of delivery** PDs noted the benefits of *in-person instruction* but acknowledged the ease and accessibility of *online or virtual* course delivery, particularly when presenting introductory or follow-up material.	"I think in-person is great. I think introductory material can be virtual or online, but I think the higher-level teaching in-person is better…" (PD1). "I would love to do it all in person… But I feel like it's probably easier to do it as a Zoom or a webinar just because you can reach more people that way" (PD5). "I think that in general, in person meetings are more effective. However, I think… access is really critical, so I personally would prioritize access… If it's done the right way, you can minimize the impact of a virtual setting" (PD12).
Interest in experiential training PDs were most interested in program-tailored webinars (M = 3.90) and nationally held virtual workshops (M = 3.80) that include role-play sessions and standardized patients.	**Preferred method of instruction** PDs discussed the importance of *experiential training* while recognizing the value and practicality of a *blended approach* that combines experiential and didactic training.	"I think from an educational science point of view, certainly anything that's interactive is more beneficial than just some straight didactic or lecture" (PD2). "Ideally… it's a mixture of a didactic portion just to make sure that everyone gets sort of the same conceptual framework. I think for communication, hands-on workshops are kind of key. They have to be interactive" (PD1).
	Incorporating interactive learning PDs emphasized incorporating specific interactive (e.g., experiential) learning methods into the workshop curriculum including *role plays* and *simulated patients*.	"I do think that roleplaying a discussion about '*Oh, I don't want to be a guinea pig*,' or '*I don't want anything that's placebo*,' like some of the challenging conversations that happen with trials. I think having fellows sort of practice what they should be saying, how they should be approaching some of those conversations and those potential myths or misconceptions is really important, especially if they're not getting that experience in clinic" (PD3).
Interest in CCT Communication Workshop PDs stated they were yes (67.5%) or maybe (32.5%) interested in having a CCT communication training in their GME program	**Suggestions for workshop curriculum** Interested PDs stated that a CCT communication workshop should focus on teaching fellows about *patient barriers to CCTs,* how to *communicate with patients about CCTs* and how to *develop doctor-patient communication skills* while considering patients' barriers and cultural needs.	"Patients aren't going to understand clinical research, right?… So, I think just imparting that understanding of how much you need to communicate" (PD11). "Yes, the fellows can learn what happens behind the scenes in a clinical trial, and what's needed in terms of documenting things. But it's really around that communication. So, communication of introduction, introducing the clinical trial, and then actually doing a consenting visit…." (PD7). "How to make a patient comfortable when you sit down, what's the proper way to sit down to discuss things… Should you wait until the patient comes in the office to tell these things or give them a call ahead of time saying that you have a clinical trial that you want to discuss with them… Those are the things that I think you may learn the hard way, but I think could be shared to make people more aware of some of the problems they're going to run into" (PD4). "If you're communicating with patients there's – oh, gosh, this gets tricky because there's teaching patients about the importance of trials, there's also addressing some of the cultural and other concerns that people may have around trials and how to communicate that issue…" (PD8).

(continued)

Table 5. Continued.

QUANTITATIVE RESULTS	QUALITATIVE RESULTS	EXEMPLAR QUOTES
Feasibility of CCT Communication Training PDs agreed that a workshop seemed both feasible (M = 4.28, SD = 0.78) and useful (M = 4.47, SD = 0.78) to their respective programs.	**Increasing perceived workshop feasibility and usefulness** PDs offered suggestions for increasing the feasibility and usefulness of implementing a CCT communication workshop including *standardizing training* by developing a *universal core curriculum* that is *locally adaptable*.	"I like the idea of having a core curriculum that's available nationally… that can be adapted locally. To a certain degree each program wouldn't have to reinvent the wheel, so maybe that's perhaps the biggest barrier if we're thinking about the issue nationally" (PD1). "I think certainly implementation, or being provided… something that would be feasible, not too time-consuming, things like that…. I do think the idea of something universal that could be provided to programs, as opposed to each program having to figure that out themselves would be really key" (PD2).
	PDs further emphasized the importance of *demonstrating the value* of training to programs and fellows and suggested *leveraging national programs* to facilitate workshop implementation.	"You have to tap into some win for the institution, some gain for the institution, whether it's that [the workshop] will boost their clinical trial accruals, which every center's trying to do, then I think you'll get some buy-in" (PD7). "The other thing I would throw out there is, as you develop this, undoubtedly leverage the infrastructure that's already there, ASCO/ASH… talk with their educational committees…" (PD8).

CCT and fellowship curriculum. Furthermore, the geographic distribution of participants may not be representative of all GME fellowship programs in the United States. Moreover, the evaluation of fellows' CCT knowledge and CCT communication skills relied on assessments by Program Directors rather than self-reports from the fellows themselves. This approach, while providing valuable insights, represents only one perspective, thus potentially limiting a more comprehensive understanding of fellows' proficiencies. Future studies may benefit by directly assessing fellows' CCT knowledge and communication skills, as well as their perspectives on the practicality and value of attending CCT knowledge and communication skills training. In addition, incorporating patient perspectives will be important for ensuring the relevance and applicability of CCT communication training to everyday clinical practice, thereby aligning educational outcomes with patient needs.

Conclusion

This mixed methods study identifies the need for a CCT communication workshop for Hem-Onc fellows and demonstrates that implementing such a workshop is both feasible and acceptable. Overall, Hem-Onc fellowship program leaders expressed a need for training that improves fellows' CCT-related knowledge and patient-centered communication skills. By highlighting programs' current training practices, needs, challenges, and preferences, this study is an important step towards implementing and scaling communication skills training in GME programs, with the goal of increasing CCT participation among diverse cancer patient populations.

Ethics and Consent

Ethical approval was granted by the University of Florida Institutional Review Board (IRB202202786). The IRB approved this study as exempt using waivers of informed consent. All survey participants (quantitative phase) were given a statement of participants rights and responsibilities for the study and checked a box stating that they agreed to participate in the survey. All interview participants (qualitative phase) were given a statement of participants rights and responsibilities and had the opportunity to ask any questions about this document before beginning the interview.

Author Contributions

Naomi D. Parker: Formal analysis, Data curation, Writing - Original Draft, Visualization. Martina C. Murphy: Conceptualization, Methodology. Susan Eggly: Conceptualization, Writing - Review & Editing. Elisa S. Weiss: Conceptualization, Writing - Review & Editing. Tithi B. Amin: Data Curation, Formal analysis, Investigation, Writing - Review & Editing. Easton N. Wollney: Data Curation, Formal analysis, Investigation. Kevin B. Wright: Formal analysis, Writing - Review & Editing. Daphne R. Friedman: Conceptualization, Writing - Review & Editing. Maria Sae-Hau: Conceptualization, Writing - Review & Editing. Andrea Sitlinger: Conceptualization. Stephanie A. S. Staras: Conceptualization, Methodology, Review & Editing. Leah Szumita: Conceptualization, Writing -review & editing. Eric Cooks: Writing - Review & Editing. Carma L. Bylund:

Conceptualization, Supervision, Project administration, Funding acquisition, Writing - Review & editing.

ORCID iD

Naomi D. Parker https://orcid.org/0000-0002-6783-9666

Supplemental Material

Supplemental material for this article is available online.

REFERENCES

1. *Barriers to Patient Enrollment in Therapeutic Clinical Trials for Cancer*. American Cancer Society Cancer Action Network; 2018. https://www.fightcancer.org/policy-resources/barriers-patient-enrollment-therapeutic-clinical-trials-cancer.
2. Townsley CA, Selby R, Siu LL. Systematic review of barriers to the recruitment of older patients with cancer onto clinical trials. *J Clin Oncol*. 2005;23(13):3112-3124. doi:10.1200/JCO.2005.00.141
3. Avis NE, Smith KW, Link CL, Hortobagyi GN, Rivera E. Factors associated with participation in breast cancer treatment clinical trials. *J Clin Oncol*. 2006;24(12):1860-1867. doi:10.1200/JCO.2005.03.8976
4. Pinto HA, Mccaskill-Stevens W, Wolfe P, Marcus AC. Physician perspectives on increasing minorities in cancer clinical trials. *Ann Epidemiol*. 2000;10(8):S78-S84. doi:10.1016/S1047-2797(00)00191-5
5. Jones J, Nyhof-Young J, Moric J, Friedman A, Wells W, Catton P. Identifying motivations and barriers to patient participation in clinical trials. *J Cancer Educ*. 2007;21(4):237-242. doi:10.1080/08858190701347838
6. Melisko ME, Hassin F, Metzroth L, et al. Patient and physician attitudes toward breast cancer clinical trials: developing interventions based on understanding barriers. *Clin Breast Cancer*. 2005;6(1):45-54. doi:10.3816/CBC.2005.n.008
7. Meropol NJ, Buzaglo JS, Millard J, et al. Barriers to clinical trial participation as perceived by oncologists and patients. *J Natl Compr Canc Netw*. 2007;5(8):753-762. doi:10.6004/jnccn.2007.0067
8. Comis RL, Miller JD, Aldigé CR, Krebs L, Stoval E. Public attitudes toward participation in cancer clinical trials. *J Clin Oncol*. 2003;21(5):830-835. doi:10.1200/JCO.2003.02.105
9. Wong YN, Schluchter MD, Albrecht TL, et al. Financial concerns about participation in clinical trials among patients with cancer. *J Clin Oncol*. 2016;34(5):479-487. doi:10.1200/JCO.2015.63.2463
10. Eggly S, Manning M, Senft N, et al. Development and pilot test of a physician-focused cancer clinical trials communication training intervention. *PEC Innov*. 2022;1:100012. doi:10.1016/j.pecinn.2021.100012
11. Wuensch A, Goelz T, Ihorst G, et al. Effect of individualized communication skills training on physicians' discussion of clinical trials in oncology: results from a randomized controlled trial. *BMC Cancer*. 2017;17(1):264. doi:10.1186/s12885-017-3238-0
12. Bylund CL, Banerjee SC, Bialer PA, et al. A rigorous evaluation of an institutionally-based communication skills program for post-graduate oncology trainees. *Patient Educ Couns*. 2018;101(11):1924-1933. doi:10.1016/j.pec.2018.05.026
13. Bylund CL, Vasquez TS, Peterson EB, et al. Effect of experiential communication skills education on graduate medical education Trainees' communication behaviors: a systematic review. *Acad Med*. 2022;97(12):1854-1866. doi:10.1097/ACM.0000000000004883
14. Creswell JW, Creswell JD. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Fifth edition. Sage, 2018.
15. Ivankova NV, Creswell JW, Stick SL. Using mixed-methods sequential explanatory design: from theory to practice. *Field Methods*. 2006;18(1):3-20. doi:10.1177/1525822X05282260
16. Creswell JW, Plano Clark VL. *Designing and Conducting Mixed Methods Research*. Third edition. Sage, 2018.
17. Guetterman TC, Fetters MD, Creswell JW. Integrating quantitative and qualitative results in health science mixed methods research through joint displays. *Ann Fam Med*. 2015;13(6):554-561. doi:10.1370/afm.1865
18. von Elm E, Altman DG, Egger M, et al. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *J Clin Epidemiol*. 2008;61(4):344-349. doi:10.1016/j.jclinepi.2007.11.008
19. O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. *Acad Med*. 2014;89(9):1245-1251. doi:10.1097/ACM.0000000000000388
20. Qualtrics. Published online 2020. https://www.qualtrics.com.
21. Glaser BG, Strauss AL. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Adline Publishing Company, 1967.
22. Strauss AL, Corbin JM. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. Sage Publications, Inc., 1998.
23. Owen WF. Interpretive themes in relational communication. *Q J Speech*. 1984;70(3):274-287. doi:10.1080/00335638409383697
24. Morse JM, Barrett M, Mayan M, Olson K, Spiers J. Verification strategies for establishing reliability and validity in qualitative research. *Int J Qual Methods*. 2002;1(2):13-22. doi:10.1177/160940690200100202
25. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: striving to meet the trustworthiness criteria. *Int J Qual Methods*. 2017;16(1):160940691773384. doi:10.1177/1609406917733847
26. Guetterman TC, Fàbregues S, Sakakibara R. Visuals in joint displays to represent integration in mixed methods research: a methodological review. *Methods Psychol*. 2021;5:100080. doi:10.1016/j.metip.2021.100080