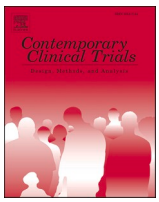
Contemporary Clinical Trials 130 (2023) 107215

Contents lists available at ScienceDirect

Contemporary Clinical Trials

journal homepage: www.elsevier.com/locate/conclintrial



Intervening on women's health for rural young breast cancer survivors: A study protocol

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ARTICLE INFO

Keywords:
Breast cancer
Oncofertility
Hot flashes
Sexual health
Contraception

ABSTRACT

Introduction: From diagnosis to post-treatment, many young breast cancer survivors (YBCS) experience infertility, limited contraception choices, concern about pregnancy safety, and menopausal symptoms. Clinical guidelines recommend oncofertility care (counseling and/or clinical services that meet fertility, contraception, pregnancy health and/or menopausal symptom management needs) throughout the cancer care continuum. However, significant oncofertility care gaps exist in rural, community oncology settings.

Materials and methods: We describe the design of an interrupted time series, effectiveness-implementation hybrid clinical trial that evaluates a multi-component intervention to improve YBCS engagement in oncofertility care. The intervention is comprised of 1) oncology clinic-based oncofertility needs screen; 2) a women's health survivorship care plan in Spanish and English; 3) remote patient navigation; and 4) telehealth oncofertility consultation. During the pre-intervention period (12 months), usual care will be delivered. During the intervention period (15 months), the multi-component intervention will be implemented at two rural oncology clinics with largely Latina, Spanish-speaking populations. The primary outcome of YBCS (n = 135) engagement in oncofertility care will be collected from medical record review. We will also collect validated patient-reported outcomes. Informed by the Exploration Preparation Implementation Sustainment (EPIS) implementation science framework, we will integrate qualitative and quantitative data to explore whether and how the intervention was effective, acceptable, appropriate, and delivered with fidelity.

Discussion: Our overall goal is to speed implementation of a scalable oncofertility care intervention for YBCS in underserved areas to reduce disparities and improve reproductive health and quality of life.

Trial registration: Clinicaltrials.gov Identifier: NCT05414812

1. Introduction

Nearly 10% of breast cancer cases occur in women younger than age 45 [1,2]. In pursuit of cure, most young breast cancer survivors (YBCS) undergo chemotherapy and/or endocrine therapy, which disrupt normal ovarian function [3–5]. Both the gonadotoxicity of chemotherapy and age-related decline in fertility that occurs during prolonged endocrine therapy significantly increase women's health risks in YBCS. Fifty to 65% of YBCS desire a biological child in the future, yet reproductive concerns related to pregnancy after cancer and possible infertility are

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https://doi.org/10.1016/j.cct.2023.107215
Received 28 January 2023; Received in revised form 2 May 2023; Accepted 3 May 2023
Available online 8 May 2023

associated with poorer physical health, depressive symptoms and distress [6,7]. Alternatively, many YBCS want to minimize risk of unplanned pregnancy and need acceptable and effective contraception [8]. However, lower rates of contraception and use of less effective contraceptive methods occur in YBCS versus the general population [9]. Ovarian failure or disruption of ovulation in endocrine therapy result in decreased ovarian estrogen synthesis and lead to menopausal symptoms, which are distressing in YBCS [10,11]. Finally, fear about breast cancer recurrence during or related to pregnancy is commonly reported among YBCS [12].

Infertility, suboptimal contraception, estrogen deprivation symptoms and pregnancy concerns can be treated and reduced [13–15]. Oncofertility care, which comprises counseling and/or clinical services on fertility, contraception, pregnancy health and menopausal symptoms, is an evidence-based intervention recommended by clinical guidelines [16–18]. Our scoping review of oncofertility care [19] showed: a) facilitators include communication aided by written materials and with high quality information on individualized risks and options; b) written materials increase referrals to reproductive specialists; c) fertility navigators increase provision of care; d) psychosocial support is desired throughout survivorship and e) lack of referral sites for fertility care is a barrier. Among YBCS, Latina ethnicity and geographic distance are risks of not receiving care from specialized cancer centers. Because barriers are multi-dimensional and multi-level, single interventions, such as educational materials in the form of survivorship care plans (SCP) or decision aids, have limited efficacy on improving patient-reported health outcomes [19–22].

Hence, we developed a multi-component intervention that includes a clinic-based oncofertility screening, educational materials in the form of a linguistically and culturally appropriate women's health SCP, patient navigation, and telehealth oncofertility counseling with reproductive specialists. Patient navigation individualizes guidance to help patients move through healthcare systems, increase access to care, and support complex administrative and clinical decisions [23]. Telehealth delivery can bridge geographical barriers and benefit rural survivors who often lack access to specialty survivorship care [24]. To evaluate the effectiveness of a multi-component intervention on engagement in oncofertility care and assess determinants and mechanisms of intervention effectiveness and implementation outcomes, we are conducting an effectiveness-implementation design among newly diagnosed and post-treatment YBCS in rural, community oncology clinics.

2. Materials and methods

2.1. Study design

A hybrid type 1 effectiveness-implementation design will evaluate the clinical effectiveness of the multi-component intervention while observing and gathering information on implementation [25]. The institutional review board at the University of California, San Diego approved this study protocol.

2.1.1. YBCS clinical trial

Using an interrupted time series design (Fig. 1), a clinical trial will be conducted over 27 months. The first 12 months will be the pre-intervention phase, followed by the 15-month intervention phase. Data on engagement in oncofertility care among YBCS will be collected throughout the 27 months. During the pre-intervention phase, usual care will be delivered. During the intervention phase, the multi-component intervention will be implemented at two rural, community oncology clinics.

2.1.2. Implementation evaluation

A mixed methods study will be conducted using data from organizational leaders, providers, staff, YBCS and patient-provider interactions. Guided by the Exploration Preparation Implementation Sustainment (EPIS) framework [26,27], we will systematically assess if and how the multi-component intervention is addressing the unmet oncofertility care needs of YBCS undergoing oncology care in a rural setting. We will study implementation barriers and facilitators in the outer (YBCS, insurers) and inner (oncology and fertility clinics) contexts, bridging factors (patient navigators), and innovation factors (multi-component intervention fit) that influence both effectiveness and implementation outcomes of acceptability, appropriateness, and fidelity (Fig. 2). We will match determinants, derived in our context and identified using EPIS constructs, with relevant implementation strategies from the Expert Recommendations for Implementing Change project and map them to EPIS phase [28,29].

2.2. Participants

2.2.1. YBCS clinical trial

We will recruit YBCS clinical trial participants through El Centro Regional Medical Center (ECRMC) and Pioneers Memorial Healthcare District (PMHD), which are the two sole oncology clinics located in Imperial County, a rural, medically underserved California border region. The target accrual goal is 135 YBCS participants. Enrollment began in March 2022, and participant assessments are scheduled to be completed by February 2024. Participants will receive up to $100 in gift cards for the completion of study activities.

2.2.2. Implementation evaluation

We will recruit organizational leaders, providers, and staff ($n = 20$) from four clinical service sites participating in oncofertility care [i.e., ECRMC, PMHD, Cancer Resource Center of the Desert (CRCD), and UC San Diego Health (UCSD)]. Participants will receive $50 in gift cards for the completion of study interviews.

2.3. Inclusion and exclusion criteria

2.3.1. YBCS clinical trial

Young breast cancer patients will be eligible for the study if they are English or Spanish-speaking, aged 18 to 50 years, have a breast cancer diagnosis, are undergoing oncology care at ECRMC or PMHD, and live in Imperial County, California. We will include newly diagnosed (pre-treatment) and post-treatment YBCS because women's health needs arise throughout the cancer care continuum. YBCS who are pregnant at recruitment will be excluded.

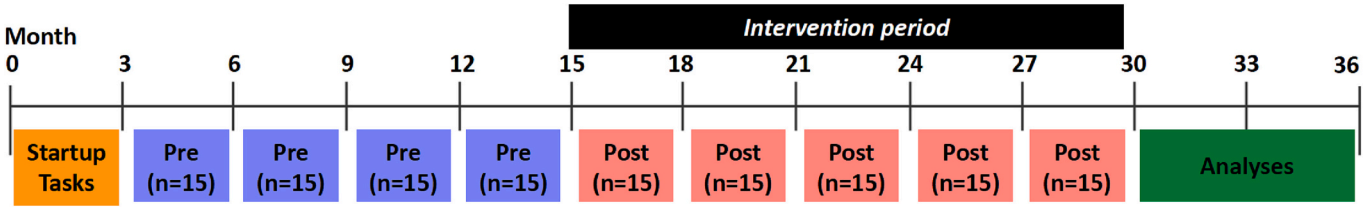

Fig. 1. An interrupted time series design will compare outcome rates before and after intervention start. Per time segment, we anticipate 15 young breast cancer survivor participants (total $n = 135$).

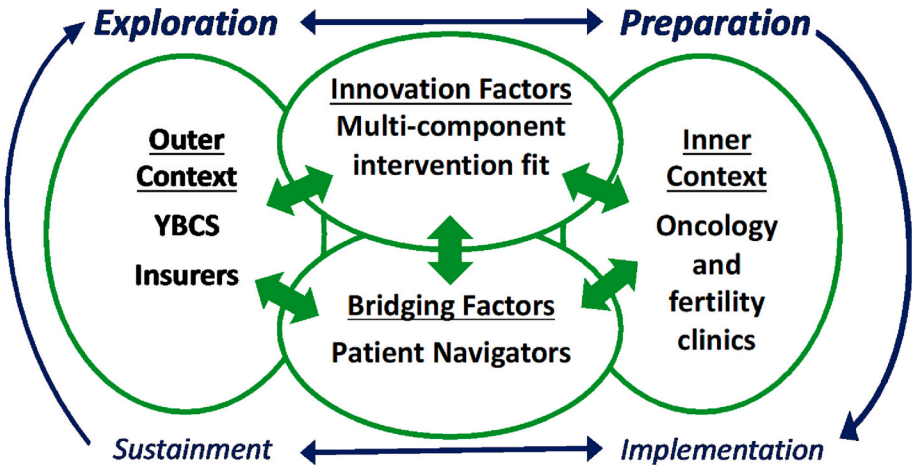

Fig. 2. Theory-guided assessment of contexts, innovation, and bridging factors related to oncofertility care implementation.

2.3.2. Implementation evaluation

Organizational leaders, providers (physicians, nurses, navigators) and staff (medical assistants, insurance authorization personnel, financial counselors) will be eligible for the study if they are affiliated with one of the four clinical service sites participating in oncofertility care.

2.4. Multi-component intervention

Through our previous community-academic partnership pilot project, the multi-component intervention (Fig. 3) was developed with YBCS and providers from each clinical service site to be linguistically and culturally appropriate for rural, Spanish-speaking Latina women. It is composed of the following:

1. Clinic-based oncofertility needs screen: YBCS presenting to oncology visits will complete a screening questionnaire with the intake nurse or medical assistant that includes three questions on oncofertility needs. These questions are part of clinical care to assess: i) desire to have a child in the future, ii) need for contraception, and iii) sexual health/menopause symptoms. The results are reviewed by the oncology clinical team.
2. The women's health SCP in English or Spanish encompasses content on screening and management strategies for a) fertility concerns/pregnancy health; b) contraception; c) hot flashes and d) sexual health. Each topic area has 4 layers of complementary content for each oncofertility issue: i) short SCP framed in a question-and-answer format with actionable steps; ii) summary of systematic review results; iii) summary of clinical guidelines; and iv) curated web resources to support actionable steps (See Appendix). The women's health SCP was linguistically and culturally adapted from our reproductive health SCP [20,30] with input from English and Spanish-speaking Latina YBCS and key clinical stakeholders. The women's health SCP will be provided to YBCS at the navigation visit.
3. Oncofertility navigation consists of one telehealth or in-person session with a CRCD social worker in English or Spanish to: i) assess YBCS oncofertility needs, ii) review sections of the women's health SCP relevant to the YBCS's reported oncofertility needs, iii) based on needs and preferences, provide support with the goal of engaging in oncofertility care. Each session is estimated to be 1 h. The need for additional sessions may arise and is allowable within a pragmatic approach.
4. Telehealth oncofertility consultations will occur between YBCS and reproductive specialists at UCSD. Each consultation is estimated to be 1 h. Via the EPIC Electronic Health Record (EHR) system's patient portal app on a YBCS device or at a device provided at the CRCD, YBCS will have a face-to-face video visit. Spanish translators will be able to participate in these video consultations. Like navigation sessions, the need for additional consultations may arise and is allowable within a pragmatic approach.

The intervention is grounded in Social Cognitive Theory by targeting individual cognitive factors and socioenvironmental factors to promote engaging in oncofertility care [31]. The needs screen will help identify patients who would benefit from engaging in oncofertility care services. To support *behavioral capability*, the women's health SCP increases knowledge of risk, type of care needed, and how to access care. Coaching

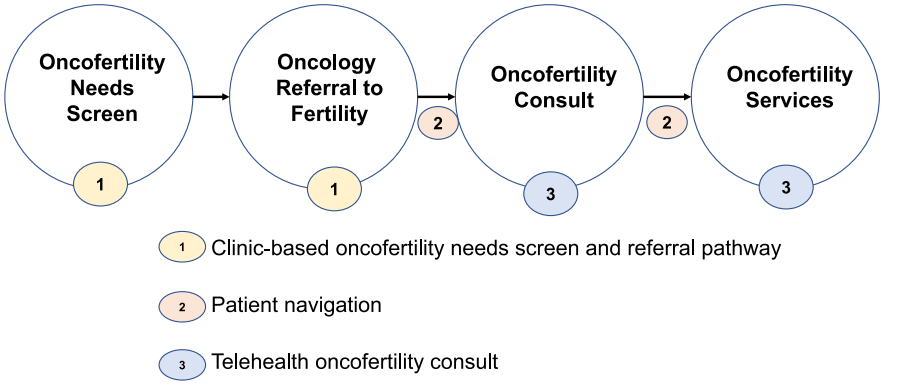

Fig. 3. Multi-component oncofertility care intervention.

as part of the navigation visit aims to provide *social support* and increase *self-efficacy* and *self-control*. To address *environmental barriers*, navigators and telehealth consults will facilitate coordination and access to oncofertility care services.

2.5. Procedures

2.5.1. YBCS clinical trial

Pre-intervention phase:

1. As part of their oncology clinic visit, consecutive YBCS will undergo routine clinical care.
2. Medical record review will be conducted to screen and identify YBCS who fit the eligibility criteria.
3. Eligible YBCS will be approached to consent to participate in the study and asked to complete one patient-reported questionnaire and/or interview.

Intervention Phase:

1. Oncology provider educational session: Prior to intervention start, the investigator team will hold a 30-min presentation at each oncology clinic to review the multi-component intervention operationalization and patient flow.
2. Oncofertility needs screen: As part of their oncology clinic visit, consecutive YBCS will be asked the oncofertility needs screen as part of routine clinical care. The questionnaire includes a prompt for oncology team to contact CRCD social workers for YBCS age < 50 years. The oncology clinic nurse or staff who completes the screening questionnaire with the patient will alert the CRCD team of an eligible YBCS by telephone, fax, email or in person.
3. Oncofertility navigation session: CRCD will contact the patient to arrange the navigation session. The navigation session will be recorded with participant consent. Before the navigation session, YBCS will be provided an opportunity to consent to participation, which includes a) completing a questionnaire before the navigation session and 12 weeks later; b) recording navigation sessions; c) recording telehealth consultations. The navigator will use the clinic oncofertility screening responses and interactions during the navigation session to determine if the YBCS has an oncofertility need, i.e., fertility, contraception, pregnancy planning or menopausal symptom informational or management need.
4. Women's health SCP receipt: During the navigation visit, YBCS will be given the SCP, asked about which topic(s) would be of interest for review, and review applicable SCP content with the navigator.
5. Telehealth oncofertility consultation: For YBCS who screen positive for an oncofertility need either during their oncology or navigation visit, an oncology provider referral to oncofertility counseling at UCSD will be completed. Referred YBCS will be contacted by UCSD fertility clinic staff for a new patient video appointment. These consultations will be delivered via the patient portal that is part of the EPIC EHR system. Consultations will be recorded with YBCS consent.
6. Engagement in oncofertility services: Fertility preservation, contraception care, pregnancy health counseling, and menopausal symptom management will be offered to YBCS as appropriate with shared decision making on which treatments to undergo.

2.5.2. Implementation evaluation

1. Data from clinical trial: We will collect quantitative data from the 12-week YBCS questionnaires during the clinical trial. We will randomly sample 25% of navigation sessions ($n \sim 20$) and telehealth oncofertility consultations ($n \sim 10$) for YBC-provider interactions.
2. Interviews: We will conduct 1-h semi-structured interviews with YBCS who completed the study questionnaire and with organizational leaders, providers, and staff at clinical service sites after the intervention period. Research staff will conduct purposeful sampling to screen and recruit interview participants [32].

2.6. Randomization

There is no randomization as the interrupted time series clinical trial is a quasi-experimental non-randomized design.

2.7. YBCS clinical trial outcomes

2.7.1. Primary outcome

The primary outcome is medical record review of YBCS engagement in oncofertility care by 12 weeks after their oncology visit. This time interval allows YBCS to complete oncofertility treatments (e.g., fertility preservation and start of hot flash treatment). This outcome will be ascertained by review of oncology, navigation, and fertility clinic records with an IRB-approved waiver of informed consent and HIPAA. Study staff will be trained to abstract the primary outcome of engagement in goal-concordant oncofertility care (Fig. 4) from the patient's medical records using standardized case report forms.

2.7.2. Secondary outcomes

Patient-reported outcomes will be used to measure the effect of engagement in oncofertility care on decisional conflict using the Decisional Conflict Scale [33], shared decision making [34], and health-related quality of life using the PROMIS Global-10 [35]. We will measure factors contributing to stress about oncofertility care decisions including financial hardship, using the 15-item Economic Strain and Resilience in Cancer tool [36], and reproductive risk knowledge.

Hot flash frequency/ severity over the prior 24 h will be measured, and a hot flash score will be calculated as the weighted sum of the number of hot flashes in each severity category multiplied by a severity-exclusive weight (1-mild, 2-moderate, 3-severe, 4-very severe) [37]. Sexual health will be measured the Vaginal Atrophy Symptoms Score, a 4-item scale on vaginal dryness, soreness, irritation and dyspareunia experienced in the prior 4 weeks [38]. The 19-item Female Sexual Function Inventory (FSFI) will be used to assess sexual desire, arousal, orgasm and pain [39]. We will ascertain pregnancies, pregnancy intentions, fertility assessments and treatments, and contraceptive practices using questions derived from the National Survey of Family Growth [40]. We will measure psychosocial outcomes through the Reproductive Concerns after Cancer scale [41] and the PROMIS Anxiety and Depression measures [42]. We will assess confidence to talk with a healthcare provider about their women's health symptoms and management, implementation of any suggested tip from the intervention materials as well as satisfaction with oncofertility care and oncofertility services undertaken. We will also collect demographic information (e.g., age, race/ethnicity, sexual orientation, marital status, household income, etc.).

2.8. Implementation evaluation outcomes

2.8.1. Quantitative outcomes (by EPIS Construct)

1. Oncofertility care costs from patient perspective (Patient reported, time obtaining oncofertility care and out-of-pocket medical expenses - Outer context).
2. Oncofertility costs from health system perspective (Clinic participant reported, navigator time, provider time - Inner context).
3. Fidelity: Proportions of eligible YBCS undergoing each component of the intervention, e.g., among women with an oncofertility counseling need, what proportion underwent an indicated telehealth oncofertility consultation (Medical record review - Implementation outcome).

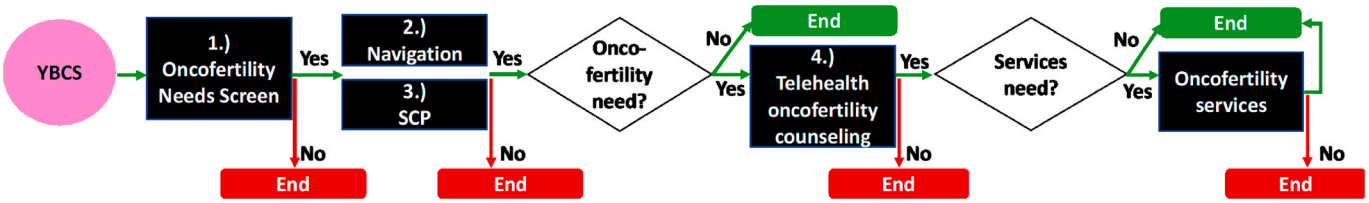

Fig. 4. The primary outcome of goal-concordant oncofertility care (green) will be assessed for each young breast cancer survivor. A young breast cancer survivor who does not engage in indicated intervention components (1–4) and oncofertility service will be considered as receiving goal-discordant care (red). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

4. Implementation outcomes measured by the Intervention Appropriateness Measure, Acceptability of Intervention Measure, and Feasibility of Intervention Measure [43]. These measures have substantive and discriminant content validity and high test-retest reliability [43] (Clinic participant reported - Implementation outcome).

2.8.2. Qualitative data (by EPIS Construct)

1. Interviews: We will qualitatively assess determinants of and processes related to effectiveness and implementation outcomes. We will develop separate but related interview guides based on EPIS constructs for YBCS and clinic participants. We will assess: i) quality of, satisfaction with, fit, and adaptability of each component of the intervention (Innovation factors); ii) roles of navigators and formal and informal processes that facilitated or prevented interactions among the outer context, inner context, and intervention (Bridging factors); (iii) clinic leadership, staffing, fidelity monitoring processes, and individual attitudes toward oncofertility care from clinic participants only (Inner context); and iv) YBCS circumstances and health insurance/cost factors (Outer context). We will assess quality of and satisfaction with oncofertility care among YBCS. We will seek clinic participants' perspectives on oncofertility care effectiveness and the appropriateness, acceptability, and fidelity of implementation. We will also solicit open feedback on participant engagement with the intervention and oncofertility care.
2. Navigation and oncofertility consultation sessions: We will randomly sample 25% of these sessions for transcription ± translation followed by qualitative analysis undertaken by trained research staff to describe types of participant needs, barriers addressed, and barriers that could not be addressed. We will also use fidelity checklists to quantify frequency of barriers/facilitators, SCP content review, oncofertility needs review, and oncofertility services discussions.

2.9. Analytic approach

2.9.1. YBCS clinical trial

The primary objective is to evaluate whether there is an increase in the proportion of patients who receive goal-concordant oncofertility care after the intervention. Quasi-experimental ITS design [44] will be applied to assess the intervention effect and if the intervention effect is achieved via slope change in these proportions over time before and after intervention. Segmented logistic regression analyses will be performed to determine baseline trends in utilization and detect changes in level and trend after the multi-component intervention starts [45]. Independent variables include the time variable (1, 2, …, 9), the study phase variable (before and after intervention), and a time variable after intervention starts (5, 6, …, 9). Significance of slopes before and after intervention, level change right after intervention, and slope change before and after intervention can then be tested. The presence of autocorrelation may also be tested [46]. If autocorrelation is detected ($p < 0.10$), we will test auto-regressive parameters and include them in the final segmented regression models. With two sites, we will account for heterogeneity between them by incorporating a site effect [47]. All analyses will control for pre-intervention trends and unit-level demographics. If a participant drops out early, we will treat them as not engaged in care; thus, there will be no missing values in the primary outcome.

Secondary analysis: We will compare 12-week patient reported outcomes by intervention condition using standard logistic and linear regression approaches. We will also compare baseline and 12-week patient reported outcomes in YBCS who were exposed to the intervention condition using repeated measures analyses.

2.9.2. Implementation evaluation

Quantitative analysis: Descriptive statistics will be calculated for each variable of interest. We will summarize the appropriateness, acceptability, and feasibility of each intervention component. Scores for each 4-question measure will be averaged across questions, with higher scores indicating greater acceptability, appropriateness, or feasibility. Using Student's *t*-test or Wilcoxon ranksum test, as appropriate, we will compare scores between the outcomes (fidelity, effectiveness, implementation) by demographic, socioeconomic, clinic role, and in YBCS, reproductive characteristics. Mediation analysis will also be conducted to identify which component of the intervention may be driving YBCS engagement. Cost data will be summarized to describe feasibility of intervention components, patient burden, potential for scaling up and replication across care settings.

Qualitative analysis: We will analyze qualitative data in MaxQDA software using thematic analysis. In addition to deductive themes (e.g., EPIS constructs), we will identify inductive themes, or those arising from the data via: two independent coders will 1) read transcripts, becoming familiar with the text and developing initial codes, 2) code three transcripts iteratively to assess inter-rater agreement (goal 80% agreement) and refine codebook after each transcript, 3) determine final codebook by consensus, 4) code data, 5) summarize data by themes and compare categories and 6) develop an overall interpretation. This process is iterative.

Integration of quantitative and qualitative data: Following the taxonomy of mixed methods designs, the structure of these data is sequential quan→qual, in which quantitative data collected during the study (e.g., engagement in care) are used to inform qualitative data collection. Qualitative data will complement, explain, expand, and elaborate on the results of the quantitative analysis. The data are combined at the interpretive level, while each data set remains analytically separate. Triangulation of these data aims to explain why, how, and the process through which the multi-component intervention is effective, appropriate, acceptable and/or cost-effective for oncofertility care delivery.

Develop implementation strategies: We will match determinants of implementation and effectiveness with, where possible, relevant implementation strategies in order to derive a list and descriptions of existing and newly proposed strategies for intervention implementation. Next, we will generate a matrix of strategies by EPIS construct and phase. For each strategy, we will identify the seven dimensions for naming, defining, and operationalizing: actor, action, action targets, temporality, dose, implementation outcomes addressed, and theoretical justification [48]. We will then conduct a series of investigator meetings to discuss the matrix to iteratively refine it.

Develop oncofertility navigation tools: We will derive a list of navigation tasks and detail sequential steps, timing, effort required, and resources used in each step. We will develop tools, which are guidelines or checklists to enable users to accomplish specific tasks, to support navigation tasks. Tools will specify purpose, time, skills, materials, equipment, administrative clearance, and approvals needed, with adequate instructions on use. We will use the Agency for Healthcare Research and Quality (AHRQ) Tool Checklist to evaluate and revise tools. We will have patient navigators with and without experience in oncofertility navigation ($n = 5$) review the oncofertility navigation tools and provide feedback. We will then conduct an investigator meeting to discuss feedback on the tools and refine them.

2.10. power analysis and sample size

2.10.1. YBCS clinical trial

The sample size is 135 YBCS over 2.25 years based on the existing patient volumes at the two clinical sites and the time frame supported by funding. To optimize power, we will have 4 pre-intervention and 5 post-intervention time points, i.e., every 3 months. Assuming 15 YBCS are observed every 3 months, with a pre-intervention proportion of 10% of YBCS receiving goal-concordant oncofertility care at pre-intervention time points, and using a slope change model, we will have over 81.6% power to detect a significant intervention effect if there is an 11% increase in the proportion at each time interval post-intervention among YBCS who receive goal-concordant oncofertility care. Under this assumption, the proportion of each time interval will change from 10% pre-intervention up to 65% post-intervention.

2.10.2. Implementation evaluation

We will conduct ~20 semi-structured interviews with YBCS and ~ 20 semi-structured interviews with organizational leaders, providers, and staff. The proposed sample size is estimated to achieve saturation based on our prior studies in YBCS and healthcare providers [49]. Samples of $n = 9$–12 for interviews have been found to be appropriate for saturation in homogenous samples [50,51]. If we do not reach saturation, we will increase sample size.

2.11. Patient and community engagement

We organized a community advisory board composed of three community members to contribute to the study design, optimal delivery of the multi-component intervention, recruitment and retention strategies, and implementation and dissemination efforts. Our community members include two young breast cancer patients who received care at the two oncology clinics and a key community-academic partnership leader in the Imperial Valley region. By collaborating with these partners, the patient perspective is included and helps to ensure that the research conducted is relevant and not unduly burdensome for patients. Our partners' involvement will help contribute to effectively translating and disseminating the study findings to patient, family, community, and research audiences to effect real-world change.

3. Discussion

By engaging in oncofertility care, YBCS can better understand their risks and engage in preventative treatments, but delivery of this care is extremely limited in rural, community oncology settings. The largely Latina and Spanish-speaking Imperial County YBCS population also faces additional language and cultural challenges in engaging in this care. Through conduct of an interrupted time series clinical trial, we hypothesize that implementation of the intervention will result in increased YBCS engagement in goal-concordant oncofertility care. Using a mixed methods approach, we will integrate qualitative and quantitative data to explore whether and how the intervention was effective, acceptable, appropriate, and delivered with fidelity. Finally, we will develop strategies to improve implementation and tools to support oncofertility navigation.

While this is a much-needed clinical trial, it is not without some limitations. Since intervention components are implemented at the clinic level (preventing randomization of individual YBCS) and oncology clinic stakeholders did not feel assignment to a control condition would be appropriate (preventing a cluster randomized trial), we do not have a parallel comparator group. However, we will leverage this opportunity to study both effectiveness and implementation of this complex intervention systematically and in depth. Our sample size for the clinical trial is limited due to the density of YBCS in rural settings. However, we have adequate power to detect a clinically meaningful increase in engagement of oncofertility care.

Despite these limitations, we anticipate finding that the multi-component intervention is effective at improving quality oncofertility care delivery among YBCS in Imperial County. We expect to learn why and how the intervention is effective, what adaptations to the intervention are needed to improve its effectiveness, and what facilitators can help the intervention be spread to other rural cancer care settings. By decreasing the time lag from research discovery to delivery of quality oncofertility care, the project has high potential for significant clinical impact on the reproductive health and quality of life of rural, Latina YBCS.

Funding and research support

Research reported in this article was supported through funding by the California Breast Cancer Research Program (B27BB4247, 25AB-1800) and the National Institutes of Health / National Center for Research Resources (UL1TR001442). The statements presented in this work are solely the responsibility of the authors and do not necessarily represent the views of the California Breast Cancer Research Program or National Institutes of Health.

CRediT authorship contribution statement

Sally A.D. Romero: Conceptualization, Methodology, Data curation, Formal analysis, Investigation, Project administration, Supervision, Writing – original draft, Writing – review & editing. **Helen Palomino:** Conceptualization, Methodology, Data curation, Formal analysis, Funding acquisition, Investigation, Project administration, Resources, Supervision, Writing – review & editing. **Syed H. Ahmed:** Conceptualization, Methodology, Resources, Writing – review & editing. **Diana Peacher:** Conceptualization, Methodology, Data curation, Investigation, Project administration, Supervision, Writing – review & editing. **Aday Urias:** Investigation, Writing – review & editing. **Lourdes Ramirez:** Investigation, Writing – review & editing. **Jessica Yocupicio:** Investigation, Writing – review & editing. **Priscilla Gutierrez:** Investigation, Writing – review & editing. **Ricardo E. Flores Ortega:** Data curation, Investigation, Writing – review & editing. **Breanna Reyes:** Investigation, Writing – review & editing. **Bonnie N. Kaiser:** Conceptualization, Methodology, Formal analysis, Writing – review & editing. **Helina Hoyt:** Conceptualization, Methodology, Supervision, Writing – review & editing. **H. Irene Su:** Conceptualization, Methodology, Data curation, Formal analysis, Funding acquisition, Investigation, Project administration, Resources, Supervision, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The datasets generated during and/or analyzed during the current study will be available from the principal investigator (H. Irene Su) on reasonable request.

Acknowledgements

The authors would like to thank Marisol Perez, Israel Samaniego, Tania Portillo, Maribel Arjona Benitez, Frances Nedjat-Haiem, the patients, healthcare providers, organization leaders, clinical staff, and research staff for their contributions to this study.

Appendix A. Supplementary data

Appendix. Sample of the women's health survivorship care plan (SCP) content on sexual health for young breast cancer survivor participants in English and Spanish. Similar materials are provided for fertility-related concerns, contraception, and hot flashes in English and Spanish. Supplementary data to this article can be found online at [https://doi.org/10.1016/j.cct.2023.107215].

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