

Title: Evidence-informed development of women-focused cardiac rehabilitation education

Short Title: Women-focused cardiac rehab education

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Abstract

Background: Despite their differential risk factor burden, context and often different forms of heart disease, cardiac rehabilitation (CR) programs generally do not provide women with needed secondary prevention information specific to them.

Objective: to co-design evidence-informed, theory-based comprehensive women-focused education, building from Health e-University's Cardiac College for CR.

Methods: A multi-disciplinary, multi-stakeholder steering committee (N=18) oversaw the four-phase development of the women-focused curriculum. Phase 1 involved a literature review on women's CR information needs and preferences, phase 2 a CR program needs assessment, phase 3 content development (including determining content and mode, assigning experts to create the content, plain language review and translation), and phase 4 will comprise evaluation and implementation. In phase 2, a focus group was conducted with Canadian CR providers; it was analyzed using Braun and Clarke's iterative approach.

Results: Nineteen providers participated in the focus group, with four themes emerging: current status of education, challenges to delivering women-focused education, delivery modes and topical resources. Results were consistent with those from our related global survey, supporting saturation of themes. Co-designed educational materials included 19 videos. These were organized across 5 webpages in English and French, specific to tests and treatments, exercise, diet, psychosocial well-being, and self-management. Twelve corresponding session slide decks with notes for clinicians were created, to support program delivery in CR flexibly.

Conclusion: While further evaluation is underway, these open-access CR education resources will be disseminated for implementation, to support women in reducing their risk of cardiovascular sequelae.

Keywords: Cardiac Rehabilitation; Women; Patient Education as a Topic; Educational Materials; Cardiovascular Prevention; Gender Medicine.

Abbreviation List

CACPR = Canadian Association of Cardiovascular Prevention and Rehabilitation

CR = cardiac rehabilitation

CVD = cardiovascular diseases

CWHHA = Canadian Women's Heart Health Alliance

ICCPR = International Council of Cardiovascular Prevention and Rehabilitation

MINOCA = myocardial infarction with nonobstructive coronary arteries

SCAD = spontaneous coronary artery dissection

Introduction

Cardiovascular diseases (CVD) are among the leading causes of disability and are the leading cause of death worldwide in men but also – albeit less well-recognized – in women.¹ Despite acute care, CVD patients – particularly women – are at much greater risk of recurrent events and death than patients without, necessitating secondary prevention.² In recent years, there has at last been more research regarding CVD in women, such that clinicians now know more about secondary preventive treatment.³

Cardiovascular rehabilitation (CR) is an outpatient model of secondary preventive care proven to mitigate the burden of CVD,⁴ including in women.⁵ CR involves the delivery of all recommendations for risk reduction⁶ – including patient education and counselling – by a multidisciplinary team,⁷ over 2 months on average.⁸ Despite the benefits,⁴ CR is under-utilized,⁹ and even more so among women.¹⁰ Research has suggested that while referral failure is largely to blame,¹¹ CR programs themselves often do not meet women’s unique needs.^{12,13}

To address this gap, women-focused CR has been developed.¹⁴ While not broadly available, it is estimated this CR model is available in 890 programs across 50 of the 111 countries with any CR.¹⁵ Recently, the International Council of Cardiovascular Prevention and Rehabilitation (ICCP) published the first Clinical Practice Guidelines on women-focused CR delivery.¹⁶ One of the recommendations was that women receive education on how their sex and gender affects CVD management. Unfortunately, however, given the recency of evidence accumulation in this field, most CR programs do not have trained staff or other needed resources to implement this key recommendation.¹⁷ Therefore, we aimed to co-design evidence-informed, theoretically-based women-focused education for the secondary prevention of CVD. Broadly, we aim to build capacity in women-focused CR education for patients who identify as women and

their care partners, multi-disciplinary healthcare professionals and trainees involved in delivery of CR,⁷ as well as decision-makers.

Methods

Development of the women-focused education – entitled “Cardiac College for Women” – followed a multi-phase process (Figure 1). The steps were informed by Adult Learning Principles,¹⁸ patient education development theories¹⁹⁻²¹ including curriculum development approaches, as well as best practices in patient-centred care for women.²² The study was approved by York University’s Office of Research Ethics (e2023-165; Toronto, Canada). All participants provided written informed consent prior to the focus group.

A multi-disciplinary, multi-stakeholder steering committee (N=18; 5 registered kinesiologists, 4 medical doctors, 3 registered dietitians, 1 nurse, 1 physical therapist, 1 pharmacist, 1 social worker, 1 psychologist and 1 patient education expert) was created to guide the initiative across all phases. The steering committee included representation from patients, clinical care (nurses, psychologists, registered dietitians, kinesiologists, physical therapists, medical doctors), research, patient education, instructional design, and knowledge translation. Some of the members spoke French as their first language. The committee met monthly from March 2023.

Materials

Cardiac College offers free multimedia patient education resources for secondary prevention of CVD in 9 languages.²³ The comprehensive curriculum developed at the University Health Network CR program in Toronto, Canada is the only evidence-based and theoretically-informed educational program for CR available open access globally to our knowledge. The five main areas of Cardiac College are: types as well as tests and treatments for heart diseases,

exercise, nutrition, psychosocial well-being, and self-management. It has been tested in 7 countries spanning low- to high-income settings, with results showing improvements in knowledge and heart-health behaviours, as well as decreases in morbidity and other clinical benefits, with maintenance of gains one year following CR.²⁴⁻²⁹

Although Cardiac College includes information relevant to female CR participants and was designed to be inclusive, the content required updating based on the latest evidence regarding sex and gender in CVD (e.g., cardiac conditions such as myocardial infarction with nonobstructive coronary arteries [MINOCA] and comorbidities that are more common in women) and women-specific topics needed to be added (e.g., impact of menopause). This was achieved through this multi-phase development of Cardiac College for Women following best practices,³⁰ comprising short videos and a website for patients, as well as curriculum delivery materials for clinicians.

Phase 1: Literature Review on Women's CR Information Needs and Preferences

The first phase involved a review of literature to learn what content needed to be delivered, and how women wanted it to be delivered (i.e., modes). This was primarily based on studies identified in our previous systematic reviews of women-focused CR,^{14,31} with a rapid search for more recent literature, with a particular focus on education needs and delivery preferences.

Phase 2: CR Program Educational Needs Assessment

A global survey and national focus group were undertaken to get input from a broad sample of CR programs as well as in-depth input to inform optimal development and facilitate implementation. The cross-sectional online survey regarding the delivery of women-focused CR programming around the globe was undertaken by ICCPR (led by the first and senior authors)

between May and August 2023. Over 220 programs responded from 52 countries, and results are described elsewhere.¹⁷ Briefly and of relevance here, respondents reported desire for educational resources for patients in multiple modalities as well as to support staff in their delivery. In order of importance, the topics programs were most interested in covering if they had the resources were: menopause/hormonal therapy, unique considerations for exercise in women, comorbidities more common in women, CVD tests and treatments in women, CVD risk factors that are unique or more hazardous in women, women's barriers to attending CR, more in-depth psychosocial topics, gender-related determinants of CV health / self-management (e.g., multiple roles), and chemotherapy cardiotoxicity from breast cancer therapy. Preliminary survey results were analyzed descriptively to inform the development of the focus group guide.

The focus group with Canadian CR programs was held during the annual Canadian Association of Cardiovascular Prevention and Rehabilitation (CACPR) conference in June 2023. Best practices in qualitative methods were applied.³² The goals were to understand program needs for education delivery to women patients and gaps in this delivery.

Participants included CR personnel working in clinical care or management who were able to communicate in English and available to attend in person. All CACPR conference registrants were emailed an invitation to participate.

A focus group guide (Supplement File A) was developed by the first and senior authors, based on the literature review, survey results and study objectives; it was reviewed by the steering committee. The first author led the focus group, which was held over a light lunch in a separate room of the conference hotel. Another member of the research team (CA) maintained reflexivity through making notes about participants' comments and her thoughts during the interview, as well as memoing immediately after the interview with the first author. Audio from

the focus group was digitally recorded and transcribed verbatim except to preserve anonymity by a third party. Participant confidentiality was ensured using pseudonym initials, to also support presentation of illustrative quotes of themes.

To identify, analyze, and report themes from the focus group, Braun & Clarke's 6-phased iterative and reflexive thematic content analysis approach was used.³³ Transcripts were reviewed and initial systematic coding and categorization of transcripts was conducted through repeated readings and line-by-line analysis by two independent coders. Preliminary themes and subthemes were generated and reviewed by a third research team member. To explore the credibility of results, they were also shared with focus group participants for participant validation.

Phase 3: Education Content Development

The many steps undertaken to develop the educational content are described below. First the steering committee set out to decide on a name for the education curriculum inclusive of any patients who identify as women or those who identify as non-binary or transgender. Use of gender-inclusive language and images as well as consideration of intersectionality were foremost throughout the development process.

Based on the results of the literature review, the theoretical educational foundations of the project (phase 1), and the results from global survey and focus group (phase 2), the second step was to determine what content should be covered. A curricular set was determined, such that a CR education schedule would be laid out to cover the most highly-endorsed areas of secondary prevention for women. Moreover, a list of specific topics that would not be relevant to all women but would be made available to disseminate as applicable, given limits on in-session CR time, was generated.

Next, Cardiac College assets were reviewed, and a list of uncovered content areas generated. Covered areas were also re-visited to assess currency and gender inclusiveness, with any needed updates flagged. This was followed by a search for lay, open access, evidence-based, women-friendly materials already available in the uncovered content areas that could be collated. Permission was then solicited to link to identified external materials from Cardiac College. Then, a list of content prioritized for development was finalized.

The third step was format decisions. Based on the findings of the literature review and needs assessment regarding women's preferences for delivery modes, the steering committee then decided on the optimal format(s) for the new educational materials to be developed by content. Accessibility was a key consideration.

Fourth, an appropriate female expert from the steering committee (or the program more broadly if unavailable) was allocated to develop specific content for the decided format. Subject matter experts were selected based on training / knowledge, experience, and discipline. A key guiding principle for development was ensuring that the materials were evidence-informed; these experts were responsible for identifying and reviewing the relevant literature and incorporating the pertinent evidence into the new materials. Inclusiveness, actionability, implementability, and brevity were also foremost.

Fifth, the education specialist reviewed all drafted text/scripts to ensure use of plain language. This was to apply a universal precautions approach to address barriers to health literacy, and optimize accessibility for women whose first language was not English or French.

Sixth, video scripts, animations, and other text drafts were rigorously peer-reviewed by other members of the steering committee, to get the right balance of comprehensiveness and parsimony, as well as to check for any errors or evidentiary inaccuracies. Seventh, patient

partners reviewed all materials developed to provide input on parameters such as applicability, inclusivity, appropriateness of examples, volume of content, and understandability. Also, current CR participants were asked to provide feedback on graphics and website illustrations.

All the suggested edits were shared with the subject matter experts, and in conjunction with the first author, were incorporated. Eighth, the English text was translated to French by a certified translator. Finally, the short videos were recorded; the expert who developed the material or another CR provider member of the steering committee presented the content for recording. Materials were uploaded to the website and checked.

Results

In phase 1, literature regarding women's needs and preferences for CR education was identified and reviewed.^{12,16,30,34-36} Two systematic reviews on women-focused CR delivery including education were identified, inclusive of 52 papers to May 2020.^{14,31} Results highlighted that women with CVD have different preferences for delivery mode and information needs than men;³⁷⁻⁴⁰ importantly herein, they want women-specific and tailored content available in multiple modes. They like short videos and podcasts in particular, to fit in when they have a few minutes to spare, or so that they can go back and review later. And women themselves have diverse preferences, such as for in-person group (preferably with other women) versus asynchronous, remote education delivery.

Phase 2: Program Needs Assessment Focus Group

Nineteen CR healthcare providers and program managers (80% female) participated in the program needs assessment focus group. They were from 6/10 Canadian provinces. As illustrated in Figure 2, four themes emerged and are elucidated below.

With regard to the first theme around current status of education, most CR programs tended not to have specific education for women, or an organizational culture to educate women differently than men. Participants identified the great need to add women-specific content as part of their structured education or during informal discussions with women participants.

“We don’t have any difference [in education] between men and women in my program. But I found that when we speak directly with women or if they are in a small group, there’s really a difference. And they tend to like it more when you have that social environment and focused attention to their needs”.

With regard to the second theme, participants identified barriers/challenges to including women-focused education in their CR programs. At the patient level, they spoke of the need to engage more women to come to the program to educate, but once they are there it was generally agreed that CR patients are already overwhelmed by the amount of information provided, so they suggested there would be a need to streamline content to also include women-specific education. Program-related delivery barriers included cost, time, human resources, internet access / barriers to dissemination of education resources, lack of staff training on women’s health and lack of support from their institution. To overcome some of these, the participants suggested it would help if they had teaching points, and that perhaps previous patients could be engaged to support and educate current patients.

“If we give a lot of material in writing, that can be overwhelming”.

The third theme concerned the modes to deliver education for women. Women want a multi-modal interactive approach, for example 5-to-10-minute webinars, infographics, as well as having time with peers and healthcare providers to talk and share about what is important to them. They also want written (paper) materials they can review when time permits or to go back

to consult at a later time. Other education modes mentioned included a CR app where reliable information could be easily accessible. Overall, programs desired an overall education plan /schedule so women can see how they will learn progressively, which incorporates time for motivational discussions along with the education.

“A few different avenues for resources [...]. So, we found that maybe something small that they can have the benefit of the clinician, the teaching points, and the resources that they can go to then to elaborate on that might be helpful”.

Finally, in regard to areas where educational resources for women are needed, participants reported the following: spontaneous coronary artery dissection (SCAD), nutrition specific for women (including body image), hormone therapy in menopause, juggling multiple responsibilities while managing their health, exercise considerations for women, as well as a desire for education to reduce risk factors among daughters of the women with CVD.

“We have a lot of patients with SCAD, and the big complaint is we don’t have enough materials that are relevant to them.”

Overall, focus group themes were consistent with what was identified in the global survey, particularly with regard to enablers to delivery as well as desired content and mode as outlined above.¹⁷ Therefore, it can be concluded that saturation was achieved.

Phase 3: Content Development

Consultation with the University Health Network’s patient engagement / experience departments identified the optimal name for these materials would be Cardiac College for Women (French version: Cardiac College pour Femme). Logo prototypes were correspondingly developed by the first author, with finalization upon input from the steering committee (Figure 1).

Based on the literature review and needs assessments, a list of additional topics that should be available for educating women with CVD were agreed, including chiefly: the different pathophysiology of CVD in females, including different forms of CVD more common in women and how they are diagnosed; sex differences in risks and effectiveness of CVD treatments such as revascularization, and medications; risk factors (including psychosocial issues and substance use, metabolic disorders of pregnancy) and comorbidities (e.g., autoimmune, bone diseases) more common or hazardous in women; relatedly cardiac effects of chemotherapy and breast irradiation treatment; impacts of menopause and hormone therapy on the heart; diet culture; psychosocial issues that are more common in women (e.g., how to juggle multiple roles and still self-manage CVD); and common exercise as well as CR barriers, with ways to overcome them (e.g., musculoskeletal pain, urinary incontinence).

Also based on the results outlined above, a 12-session curriculum was agreed. Using Cardiac College slides, twelve slide decks were revised to be women-inclusive and to cover the additional topics identified. The senior author (SLG) edited them, and subject matter experts reviewed these additions. Moreover, given limits on in-session CR time, a list of specific topics that would not be relevant to all women but could be made available to disseminate as applicable, was also agreed (Table 1).

To support this with written materials and videos available on-demand, a webpage curating the women-focused education material was added to each Cardiac College area of focus. Indeed, when the women CR participants were consulted, they reported they wanted illustrated pages with less text, whereby the illustrations were of women from different age groups, preferably in groups, showing action and the practice of healthy behaviours.

As per the process outlined above, available assets were reviewed, permissions were obtained to link to some appropriate materials already available (e.g., from the Canadian Women's Heart Health Alliance; CWHHA), and then formats for the educational content that still needed to be developed were decided. Ultimately, 17 short educational videos (maximum of 5 minutes in duration) were recorded by women subject matter experts (Table 2), and 2 animated videos developed by third-party professionals – one each on diet and exercise considerations for women (Figure 3). Figure 3 summarizes the suite of available women-focused CR educational materials and where they can be accessed.

Discussion

There are major gaps in the secondary preventive care of CVD women, including in therapeutic education, with CR programs reporting need for delivery materials. Through this study, a multi-phase process was undertaken to develop 'Cardiac College for Women' that can be used to support women in their CR journey. It comprises a website including videos regarding testing and treating heart disease, being physically active, heart-healthy eating, psychosocial well-being, and self-management, as well as a 12-session CR curriculum for programs to implement-- all open access. These materials were developed following best practices for curriculum development, considering adult learning principles, are based on the latest scientific evidence, with input from a multi-disciplinary steering committee, and with engagement of patients and partner programs to support utility as well as implementability. To our knowledge, this is the first-time that CR programs needs are addressed in the development of women-focused educational resources.

Programs should be mindful that to be inclusive of women-specific information, a greater volume of education content needs to be covered. CR is intended to be patient-centred,⁷

yet results reveal this may be overwhelming to some patients. It is recommended staff assess patient's knowledge and information needs at program intake,¹⁶ and only offer needed and desired education. To support this, two psychometrically-validated questionnaires would be useful. First, the Coronary Artery Disease Education Questionnaire (CADE-Q, short version) assesses CVD knowledge related to heart patients' medical condition, risk factors, exercise, nutrition, and psychosocial risk, so gaps and/or inaccuracies in knowledge can be identified.⁴¹ Second, the Information Needs in CR (INCR) scale facilitates identification of information patients desire (there is an open-ended item at the end so women patients can also report additional information needs) and do not perceive they already sufficiently understand.⁴² A patient-report version of INCR is available on ICCPR's website, where patients are directed to specific pages on the Cardiac College website to fulfill their greatest information needs (<https://globalcardiacrehab.com/Patients-INCR>). While it is advised to convey safety information in all patients at the outset, CADE-Q and INCR administration can facilitate prioritization of further needed information to deliver to women, and identification of what information can be omitted. Education to address the information needs women patients identify which are not covered in standard CR programming, can be shared with women from the Cardiac College for Women website mid-program for asynchronous review, with patients invited to ask CR staff any questions.

Phase 4: Evaluation and Future Implementation

For the final phase (Figure 1), several studies are underway. First, think-aloud sessions are being held with women starting CR, with subsequent semi-structured interviews (protocol registration: <https://osf.io/b2jz3/>). Through this, detailed patient input will be solicited on all

Cardiac College webpages and the 5 new ‘Cardiac College for Women’ webpages, including all embedded links and videos.

Second, a multi-site, mixed-method, prospective, controlled assessment of effectiveness, as well as patient and program satisfaction and implementation of these educational materials is currently underway (protocol registration: <https://osf.io/b2jz3/>). The latter evaluation involves qualitative interviews with patients and programs. Input will then be applied, improving educational content where possible. This may include development of further content (same or new topics) in alternative modalities. Efforts will be made to address any identified barriers or facilitators to education implementation.

Plans for implementation include development of a section on the Cardiac College website for CR professionals. Here, the educational slides will be readily accessible to any programs, as well as a supporting implementation webinar. These assets will also be circulated via ICCPR’s program email distribution list comprising over 2200 subscribers from 70+ countries. Women with CVD will be reached directly through collaboration with patient organizations such as the CWHHA and Global Heart Hub.

Efforts to translate and culturally adapt these resources to other languages are also planned. For now, use of free browser-embedded translation software can optimize reach, but this is limited due to some error and given that literal translation would be culturally inappropriate in some instances (e.g., religious differences, local food availability). Multiple members of the steering committee have extensive experience in this; we have already culturally-adapted Cardiac College materials in multiple languages,^{24,25,27,29} following best practices.⁴³

Limitations

Caution is warranted in interpreting these results. While generalizability is not a goal of qualitative research, this study was limited methodologically in that there was only one focus group conducted. However, findings were triangulated with the results of the global survey with 223 respondents in 52 countries across all regions of the globe.¹⁷ Qualitative and quantitative results were consistent, quelling concerns about saturation.

There are also some limitations to consider related to the developed education materials and curricula. Availability of these assets does not overcome structural issues identified such as need for more staff, staff training, and availability of multidisciplinary professionals to deliver the education. We also cannot overcome the need for greater referral of women to CR, and increasing their session attendance so they can receive all the education needed. In addition, the development of a 12-session education curriculum would not fit with programs that have fewer sessions;⁸ however, materials can be adapted,²³ and portions could be delivered asynchronously. Finally, it is important to highlight that all recommendations from the women-focused CR clinical guideline need to be heeded – such as for example also delivering women’s preferred forms of exercise.¹⁶ But having educational resources developed to support education puts the field one step closer to broader implementation of women-focused CR.

In conclusion, Cardiac College for Women is a multi-modal, accessible, co-designed, evidence-based, plain language, theoretically-informed educational curriculum with resources available in all areas of CVD secondary prevention. It can be delivered based on women’s preferences for modalities and content, as well as CR program realities (e.g., staff, dose). While further evaluation is underway to confirm utility and effectiveness, it is hoped these resources will support women to reduce their risk of cardiovascular sequelae.

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Figures

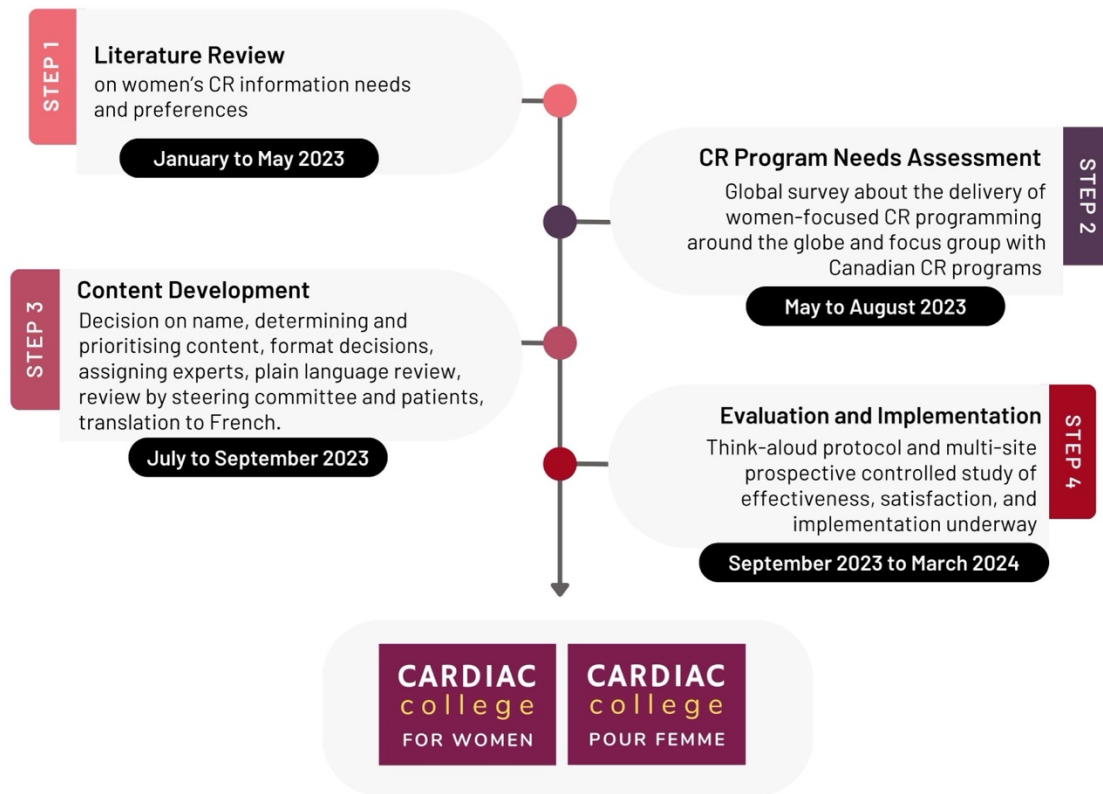


Figure 1: 4-phase process for the development of women-focused cardiac rehabilitation education

CR, cardiac rehabilitation.

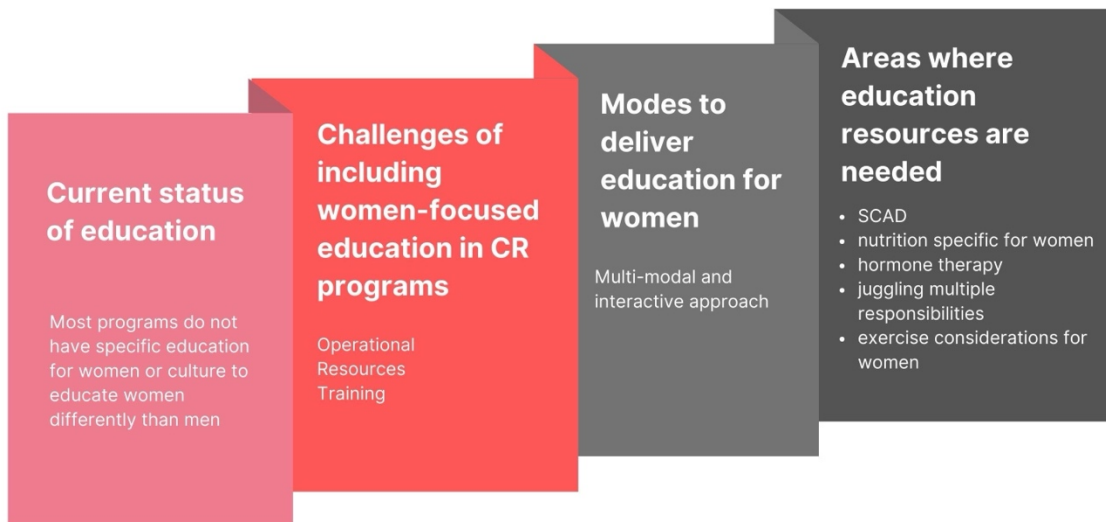


Figure 2: Themes from the cardiac rehabilitation program needs focus group

CR, cardiac rehabilitation; SCAD, spontaneous coronary artery dissection.



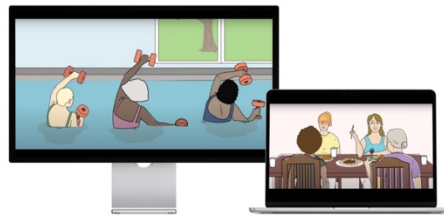
5 WEBSITE PAGES

additional women-focused information for each area of secondary prevention*



17 SHORT VIDEOS

recorded by women subject matter experts covering all areas of secondary prevention**



2 ANIMATED VIDEOS

- Eating heart-healthy as a woman
- Exercise considerations for women with heart diseases



EDUCATION SESSION SLIDES FOR CR PROGRAMS

12 slide sets for online or in-person delivery, covering all areas of secondary prevention, with notes***

* all resources available are evidence-based, free, and open access at cardiaccollege.ca

** refer to table 2 for list of videos.





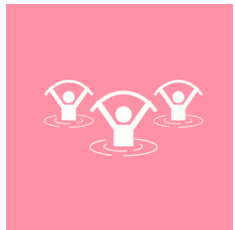
***See Table 1 for the 12 topics; can be adapted to suit various program models. For access, contact the corresponding author.







Figure 3: Women-Focused Education Resources for Cardiac Rehabilitation Programs and Patients



CR, cardiac rehabilitation.

Tables

Table 1: 12-session education curricula* and list of extra topics to be assigned as applicable.

	Educational topic	Specific content, with resource format as applicable
	Session 1: Introduction and orientation	<ul style="list-style-type: none"> • Cardiac emergencies • Women’s barriers to CR adherence & how to address • Creating a plan for change (animated video)
	Session 2: About your heart	<ul style="list-style-type: none"> • Diagnoses • Tests • Treatments (procedures, medications)
	Session 3: Cardiovascular risk factors (non-behavioral)	<ul style="list-style-type: none"> • Hypertension • Dyslipidemia • Menopause
	Session 4: Cardiac medications	<ul style="list-style-type: none"> • Classes of medication • Side effects • Take your medicines (animated video) • Promoting adherence
	Session 5: Exercise (aerobic)	<ul style="list-style-type: none"> • Starting an aerobic exercise program (animated video) • Including women’s preferred forms • Pain, fatigue symptoms • Active living

	<p>Session 6: Exercise (safety)</p>	<ul style="list-style-type: none"> • Weather safety, exercising outdoors (air pollution) • Monitoring • Progressing
	<p>Session 7: Exercise (resistance training)</p>	<ul style="list-style-type: none"> • Starting resistance exercise (animated video) • Gallery of resistance exercise videos
	<p>Session 8: Nutrition</p>	<ul style="list-style-type: none"> • Mediterranean dietary pattern (animated video) • Plate model (animated video)
	<p>Session 9: Nutrition</p>	<ul style="list-style-type: none"> • Mindful, intuitive eating (animated video) • Diet culture, thinness ideal (short video)
	<p>Session 10: Psychosocial health</p>	<ul style="list-style-type: none"> • Depression, anxiety (animated video)
	<p>Session 11: Psychosocial health</p>	<ul style="list-style-type: none"> • stress, relationships (animated video), sleep (animated video) • Self-management while juggling multiple roles (short video)

	<p>Session 12: Maintenance post-program</p>	<ul style="list-style-type: none"> • Maintenance of health behaviors (animated video) • Exercise post-program • Communicating with health care providers • Social supports
	<p>Additional educational content created for areas more commonly needed by or tailored to women but not applicable to all patients (women to be assigned materials to review independently as applicable to them)</p>	<ul style="list-style-type: none"> • Tobacco (any form) cessation • Alcohol, cannabis, and the heart • Spontaneous coronary artery dissection • Takotsubo cardiomyopathy • Heart failure with preserved ejection fraction • MINOCA/INOCA • Comorbidities: • Breast cancer (i.e., chemotherapy cardiotoxicity) • Diabetes • Bone diseases (e.g., osteoporosis) • Autoimmune diseases • Polycystic Ovarian Syndrome • Menopause / hormone therapy

*slide sets available, with facilitator notes.

Abbreviations: CR, cardiac rehabilitation; INOCA, ischemia with non-obstructive coronary arteries; MINOCA, myocardial infarction with nonobstructive coronary arteries.

Table 2: List of newly-developed educational videos tailored to women (N=17)

Secondary Prevention Domain	Video Title	Duration (mins)	YouTube Links
Treating heart disease	Heart Disease in Women Versus Men	6:18 (English) 5:37 (French)	English: https://www.youtube.com/watch?v=fxh0EH47L5k French: https://www.youtube.com/watch?v=KzcvW7QUZqU
	Spontaneous Coronary Artery Dissection in Women	5:55 (English) 5:42 (French)	English: https://www.youtube.com/watch?v=T-Cnju8ZmR4 French: https://www.youtube.com/watch?v=vieKAD2v8bs
	Heart Failure with Preserved Ejection Fraction	3:39 (English) 3:49 (French)	English: https://www.youtube.com/watch?v=gWfItojSjnU French: https://www.youtube.com/watch?v=9trELTYPO_Y
	Myocardial infarction with non-obstructive coronary arteries (MINOCA)	3:14 (English) 3:00 (French)	English: https://www.youtube.com/watch?v=p3P6ZPBnplg French: https://www.youtube.com/watch?v=-uI-2DmeWvU
	Takotsubo Cardiomyopathy in Women	4:39 (English) 4:31 (French)	English: https://www.youtube.com/watch?v=EbUp7K07peg French: https://www.youtube.com/watch?v=Fb3SBvvwk4U
	Autoimmune Diseases in Women: Protect Your Heart	3:11 (English) 2:52 (French)	English: https://www.youtube.com/watch?v=CGRp83Tk3c4 French: https://www.youtube.com/watch?v=QzAiLLd6i3g
	Know Your Risk Factors, Protect Your Heart	3:30 (English) 3:31 (French)	English: https://www.youtube.com/watch?v=DhDChcNJMqg French: https://www.youtube.com/watch?v=SjAACGRKXHg
	Osteoporosis	3:32 (English) 3:40 (French)	English: https://www.youtube.com/watch?v=dMfoDon4PwY French: https://www.youtube.com/watch?v=WPVWMh9BsK0
Getting active	Getting Enough Exercise for Your Heart	2:55 (English) 3:06 (French)	English: https://www.youtube.com/watch?v=ncJZbGIIAGk French: https://www.youtube.com/watch?v=KITETg01huQ

	Exercise and Breast Cancer	3:00 (English) 3:08 (French)	English: https://www.youtube.com/watch?v=bu_FJMoE-xQ French: https://www.youtube.com/watch?v=Ofme9wdwDo4&t=1s
Eating healthy	Ultra-Processed Foods	5:15 (English) 5:14 (French)	English: https://www.youtube.com/watch?v=r5KgavT-HwY French: https://www.youtube.com/watch?v=QXqLGgJorOU
	Choosing Protein for Better Heart Health	4:42 (English) 5:01 (French)	English: https://www.youtube.com/watch?v=fjP95fLxdx4 French: https://www.youtube.com/watch?v=O9GaSokE-9M
	Positive Body Image: No More Diet Culture	2:58 (English) 3:34 (French)	English: https://www.youtube.com/watch?v=s3tajxQBR4k French: https://www.youtube.com/watch?v=-OWSNcd5IJ0
Staying mentally well	Managing Multiple Roles	5:43 (English) 5:14 (French)	English: https://www.youtube.com/watch?v=ISDTgdQVmgM French: https://www.youtube.com/watch?v=Ss-LK1WeLdE
	Alcohol and a Women's Heart	5:46 (English) 6:35 (French)	English: https://www.youtube.com/watch?v=TgycC_LYrac French: https://www.youtube.com/watch?v=XLWjKta31kU
	Tobacco Use in Women	5:08 (English) 3:58 (French)	English: https://www.youtube.com/watch?v=t7ja-5gGJfo French: https://www.youtube.com/watch?v=qWYm37UmwSU
Self-management	You Started Cardiac Rehab, Now What?	5:31 (English) 5:18 (French)	English: https://www.youtube.com/watch?v=q59UUm29b_4 French: https://www.youtube.com/watch?v=Ss-LK1WeLdE

List of Supplement Files

Supplement File A: Focus Group Guide

- Introduction**
1. Please tell us about your CR program, and whether you currently have the capacity (e.g., human resources / time, expertise on your team) to address the needs of women in your program.
- Transition**
2. How do you deliver education as part of your CR program?
 - Probe: Who delivers? (i.e., does their program have experts in the various areas of CR, or does one profession deliver all?)
 - Probe: Frequency? Duration? Or asynchronous?
 - Probe: Group and/ or 1-1?
 - Probe: Which modes of delivery? Which materials do you use?
- Education Delivery Challenges**
3. What challenges do you face in providing patient education in your program, that comprehensively covers all areas of secondary prevention?
 - Probe: i.e., nutrition, exercise, psychosocial, medical, etc
- Women's Education Challenges**
4. What challenges do you face in delivering patient education to women specifically in your program?
 - Probe: Lack of expertise, staff time, women not engaged, lack of materials, not relevant to all patients
 - Probe: How could these challenges be overcome?
 - If programs say they offer women-focused education, ask if they would be willing to share the resources (Notate attendee / program to follow-up after)
- Mode of Delivery to Women**
5. Let's talk about modes or ways to deliver education for women:
 - [Show slide with examples of Cardiac College materials (pre-recorded webinars, website, short video, ppt slide deck, written downloadable patient guide)]
 - Probe: What would be most feasible for your program to integrate realistically?
 - Probe: What other modes do you think you could ideally offer women participants? (e.g., podcasts)
- Content for Women**
6. Let's talk about content: what topics do you need material on so you can address the issues relevant to secondary prevention in women?
 - [Show slide with a list of topics to start discussion]
 - Probe: which of these would you say are not needed?
 - Probe: What do you think is missing?

- Probe: Is this volume of information feasible? If not, do you need it in asynchronous form?

**Women's
Education
Implementation**

7. Let's talk about barriers and facilitators to effectively and realistically using these educational materials in your program
 - Probe: What are the anticipated barriers for using these materials?
 - i. E.g., staff time, staff expertise
 - ii. Supporting patients who identify with women to actually engage with them and each other?
 - iii. Ways to follow-up with women patients after the education if asynchronous to address any questions, outstanding information gaps? Support behaviour change?
 - Probe: What resources are needed for your program to use these these educational materials?
 - i. e.g., training
 - Probe: Would you need to do it asynchronous only realistically?

Ending

Before we summarize, are there any points you think we have missed discussing about what you need as a CR program to support you in delivering women-focused education?