The Alberta Moving Beyond Breast Cancer (AMBER) Cohort Study: Recruitment, Assessment, and Description of the First 1023 Participants

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BACKGROUND

To our knowledge, the Alberta Moving Beyond Breast Cancer (AMBER) study is the first and only prospective cohort study of breast cancer survivors that includes objectively-measured physical activity (PA), sedentary behavior, health-related fitness (HRF), and biologic mechanisms focused on understanding breast cancer outcomes.

OBJECTIVES

The purpose of the present study was to report on the feasibility of recruitment, baseline measurement completion, and the representativeness of the first 1023 participants.

METHODS

Participants

- Incident, histologically-confirmed stage I (≥T1c) to IIIc breast cancer, Completion of the revised Physical Activity Readiness Questionnaire for Everyone (rPAR-Q+)
- Breast cancer cases identified through Alberta Cancer Research Biobank (Calgary) and Cross Cancer Institute (Edmonton)
- Alberta resident, <80 years of age, not pregnant, female

Data Collection

- One or two clinic visits involve: (1) administration of questionnaires and activity monitors (Actigraph GT3X® and activPAL®), (2) completion of health-related fitness testing (cardiorespiratory fitness, upper/ lower body strength/endurance, flexibility) (3) anthropometrics/DXA scans, (4) lymphedema/upper body function
- Blood samples collected pre/post-surgery (pre-surgery preferred)
- Medical chart abstraction completed for staging, treatments, co-morbidities, new cancers, recurrences/progression data.
- Abovementioned measurements are repeated at 1 and 3 years post-diagnosis. Questionnaires only repeated at 5 years post-diagnosis.

RESULTS

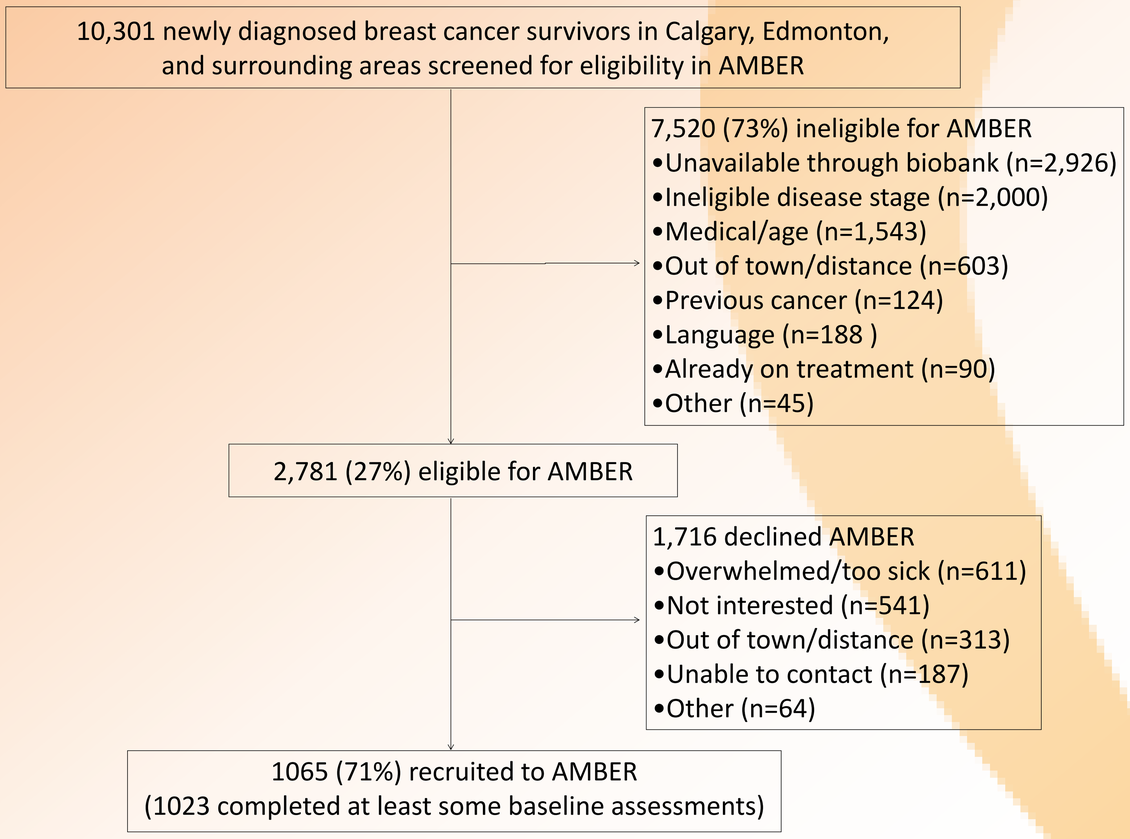

Figure 1. Flow of the first 1023 participants through baseline assessment in the AMBER study, Alberta, 2012-February 28, 2017.

RESULTS

Table 1. Baseline descriptive characteristics of the first 1023 participants in the AMBER study, Alberta, 2012-February 28, 2017.

Baseline characteristics	Calgary (n=537)	Edmonton (n=486)	Total (n=1023)
Age at diagnosis (n=1023)	56.8 ± 11.3	54.5 ± 10.6	55.7 ± 11.0
Marital status (n=1009)			
Married/common law	382 (71.5%)	361 (76.0%)	743 (73.6%)
Not married	152 (28.5%)	114 (24.0%)	266 (26.4%)
Education (n=983)			
≤High school	115 (22.6%)	113 (23.8%)	228 (23.2%)
≥University	394 (77.4%)	361 (76.2%)	755 (76.8%)
Ethnicity (n=986)			
Caucasian	440 (84.6%)	388 (80.1%)	815 (82.4%)
Other	78 (15.4%)	93 (19.9%)	171 (17.6%)
Menopausal status (n=961)			
Premenopausal	186 (36.6%)	184 (40.6%)	370 (38.5%)
Postmenopausal	322 (63.4%)	269 (59.4%)	591 (61.5%)
Weight, kg (n=1023)	73.9 ± 15.7	73.6 ± 15.9	73.7 ± 15.8
Body mass index, kg/m² (n=1023)	27.6 ± 5.5	27.3 ± 5.6	27.5 ± 5.6
Normal weight (< 25 kg/m²)	200 (37.2%)	196 (40.3%)	396 (38.7%)
Overweight (25-30kg/m²)	183 (34.1%)	166 (34.2%)	349 (34.1%)
Obese (>30 kg/m²)	154 (28.7%)	124 (25.5%)	278 (27.2%)
First degree family history of breast cancer (n=982)			
≥ one first degree relative	145 (27.9%)	109 (23.5%)	254 (25.9%)
No first degree relatives	374 (72.1%)	354 (76.5%)	728 (74.1%)
Cancer stage (n=1023)			
I (≥TIc)	239 (44.5%)	212 (43.6%)	451 (44.1%)
II	259 (48.2%)	220 (45.3%)	479 (46.8%)
III	39 (7.3%)	54 (11.1%)	93 (9.1%)

Values are means ± SD or n (%) within each study site and overall.

Table 2. Baseline assessment completion rates of the first 1023 participants in the AMBER study, Alberta, 2012-February 28, 2017.

Baseline assessments	Total (n=1023) n (%)	Mean ± SD , Median (Q1, Q3) or n (%)
Health-related fitness		
Cardiorespiratory fitness (mL/kg/min)	899 (87.9%)	Peak: 26.4 ± 6.0 [c]
Upper body strength – predicted 1RM (kg)	838 (81.9%)	35.2 ± 10.1
Upper body endurance – 50% p1RM [a]	831 (81.2%)	482.6 ± 226.7
Lower body strength – predicted 1RM (kg)	890 (87.0%)	97.2 ± 33.6
Lower body endurance – 70% p1RM [a]	876 (85.6%)	1358.2 ± 900.6
Grip strength (kg)	979 (95.7%)	53.2 ± 11.6
Curl-ups (#)	911 (89.0%)	25.0 (10.0, 40.0)
Flexibility (sit and reach cm)	959 (93.7%)	28.1 ± 9.8
Waist/hip ratio	1020 (99.7%)	0.87 ± 0.07
Total percent body fat (DXA scan)	1005 (98.2%)	40.4 ± 7.1
Clinical data		
Lymphedema (#)	1013 (99.0%)	<100: 748 (73.1%) 100-<200: 208 (20.3%) 200+: 67 (6.6%)
Upper arm range of motion flexion [b]	1009 (98.6%)	<10: 657 (64.2%)10+: 366 (35.8%)
Upper arm range of motion abduction [b]	1009 (98.6%)	<10: 534 (52.8%)10+: 478 (47.2%)
Peripheral neuropathy total CTSIB score	1010 (98.7%)	119.5 ± 5.0
Blood samples	1016 (99.2%)	-
Pre-surgical	509 (49.8%)	-
Post-surgical	507 (49.6%)	-
Questionnaires (Baseline Health)	1019 (99.7%)	-
Activity monitors		
Actigraph GT3X®	962 (94.1%)	-
ActivPAL®	939 (92.9%)	-

Notes: DXA=dual energy x-ray absorptiometry, CTSIB=clinical test of sensory organization and balance. [a] Total load: weight*repetitions (kg). [b] Degree of difference between right and left arms. [c] Participants who were unable to do maximal testing have a predicted VO_2 value collected.

CONCLUSION

AMBER has demonstrated that newly diagnosed breast cancer survivors are willing and able to complete sophisticated and physically demanding HRF and PA assessments. AMBER is a unique breast cancer survivor cohort that may inform future randomized controlled trials on lifestyle and breast cancer outcomes.

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