



## ORIGINAL ARTICLE

# If you build it, will they come? Evaluation of a co-located exercise clinic and cancer treatment centre using the RE-AIM framework

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## Abstract

**Objective:** Employ the Reach, Effectiveness, Adoption, Implementation, Maintenance framework to evaluate the effectiveness of a co-located exercise clinic model in increasing access to exercise for people undergoing cancer treatment in a private clinic in Western Australia.

**Methods:** This retrospective evaluation utilised a mixed-method approach to gather feedback from key stakeholder groups involved with the exercise clinic. Questionnaires and workout summary sheets were gathered from 237 exercise clinic participants over the 50-month evaluation period. These were supplemented by survey results from 119 patients who received cancer treatment at the facility, and semi-structured interviews from seven radiation oncologists, eight nurses, and three accredited exercise physiologists involved with the exercise clinic.

**Results:** The co-located clinic demonstrated positive outcomes related to effectiveness and adoption. Participant feedback indicated satisfaction with the exercise programming (effectiveness), and clinicians were receptive to referring patients to the clinic (adoption). However, no clear implementation or maintenance plan was employed and overall reach (12%) remained suboptimal throughout the evaluation period.

**Conclusion:** Co-locating an exercise clinic into a treatment facility does not in itself overcome the logistical challenges of providing integrated exercise services to people during cancer treatment. To enhance its utilisation, an implementation plan needs to accompany the intervention.

## KEYWORDS

chemotherapy, exercise, implementation, oncology, radiotherapy, translation

## 1 | INTRODUCTION

Exercise medicine has emerged as a potent additional therapy following a diagnosis of cancer. Its broad range of benefits represents

a significant recent innovation to the field of oncology. A robust evidence-base has established the utility of exercise for improving physical function (e.g. muscular strength, aerobic capacity; Galvão et al., 2014; Galvão, Taaffe, Spry, Joseph, & Newton, 2010;



**FIGURE 1** A visual depiction of the co-located exercise clinic

Gardner, Livingston, & Fraser, 2013), cancer-related fatigue (Cramp & Daniel, 2008; Taaffe et al., 2017) and overall quality of life (Mishra et al., 2012) across a spectrum of clinical and demographic circumstances associated with cancer (Buffart et al., 2017). The safety of exercise for patients with cancer is also well demonstrated at multiple time points following diagnosis and after treatment, with benefits at each stage of disease progression (Demark-Wahnefried et al., 2018; Galvão et al., 2010, 2018; Hart, Gálvao, & Newton, 2017; Santa Mina et al., 2014; Singh, Newton, et al., 2017). Examples of benefits include preparation for treatment (neoadjuvant), management of treatment-related side effects (adjuvant) and restoration of health (rehabilitative; Courneya & Friedenreich, 2001). Furthermore, researchers suggest exercise can help to reduce treatment-related toxicities (Knols, Aaronson, Uebelhart, Fransen, & Aufdemkampe, 2005) and may improve adherence to treatment regimens (Bland et al., 2019; Cheville et al., 2015; Courneya et al., 2007). This compelling evidence-base has led to the recommendation that exercise be considered as a standard component of care for people with cancer (Buffart et al., 2017; Demark-Wahnefried et al., 2018; Hayes, Newton, Spence, & Galvão, 2019) and the development of strategies to integrate exercise services into cancer care (Schmitz et al., 2019).

While a strong evidence-base exists demonstrating the therapeutic benefits of exercise for people with cancer (Christensen, Simonsen, & Hojman, 2018), the majority of patients with cancer and survivors do not achieve the established guidelines for physical activity (Eakin et al., 2007; Zopf et al., 2017). Reports suggest compliance with the aerobic component of the guidelines ranges between 18% and 47% (Blanchard, Courneya, & Stein, 2008; Stevinson, Lydon, & Amir, 2014). When the resistance exercise component is also considered compliance drops as low as 13% (Galvão et al., 2015). This discrepancy between evidence of benefit and subsequent adoption highlights a clear disconnect between established fact and practice. Grol and Wensing's (2004) classification of barriers provides a framework to describe this "theory-practice gap," as barriers for exercise in oncology exist across all six levels of healthcare. For example, the lack of accessible quality exercise programmes (Santa Mina et al., 2018) is a barrier at the innovation level; doctors lack of knowledge and skill regarding exercise prescription (Barnes et al., 2019; Fong, Faulkner, Jones, & Sabiston, 2018) and perceived lack of time to include exercise as part of care (Smith, Buffart, Bauman, & van der Ploeg, 2008) is a professional level barrier; and the issue of exercise not being part standard reimbursement structures (Deloitte Access Economics, 2015) is an economic level barrier. Together, these

barriers create an environment where exercise during treatment remains largely underutilised (Blanchard et al., 2008).

A longstanding partnership between a radiation oncologist at an international private oncology treatment centre (GenesisCare) and the research team at the Exercise Medicine Research Institute at Edith Cowan University (ECU) led to the creation of a co-located exercise clinic (Co-LEC), whereby a standard circuit of strength-training and cardiovascular machines were set-up in an unused space in a newly built treatment centre. This innovative concept allowed patients to book treatment and exercise appointments within minutes of each other, alleviating several of the purported barriers to uptake of exercise during cancer treatment (e.g. travel/time constraints, uncertainty around appropriate practitioners; Figure 1).

The clinical benefits for people who attended the Co-LEC have been previously described (Singh, Newton, et al., 2017). Preliminary findings demonstrate significant improvements for muscular strength and physical function among participants, with no significant adverse change in body composition, benefits contrary to the usual decline in these characteristics typically observed in patients with cancer undergoing chemo and/or radiation therapy; however, the effectiveness of the integrated model to increase access to exercise for people receiving treatment at GenesisCare remains unclear. As the field of implementation science has demonstrated, making evidence-based practice (i.e. exercise) available does not ensure it will be used; evidence-based practice must be supported by evidence-based implementation (Grol & Grimshaw, 2003). The purpose of this article is to provide insight into the Co-LEC's operational success using the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) framework. RE-AIM was originally developed two decades ago to encourage consistent reporting of results (Glasgow, Vogt, & Boles, 1999) and is now used extensively in research translation (Sweet, Ginis, Estabrooks, & Latimer-Cheung, 2014; Gaglio, Shoup, & Glasgow, 2013; Glasgow et al., 2019). The framework evaluates a programme on five individual components: (a) ability to *reach* the target population; (b) *effect* on key outcomes (e.g. quality of life); (c) willingness to be *adopted* by people responsible for its delivery; (d) success of its *implementation*; and (e) potential for it to be *maintained* (Glasgow et al., 2019). Acknowledging the multitude of evaluation frameworks (Lynch et al., 2018), the authors chose RE-AIM due to its multi-level focus (considers individual, organisational and community socio-ecological levels), concern with both internal and external validity, and ability to identify issues that either facilitate or impede success regarding both implementation

and dissemination of a programme (Glasgow et al., 2019; Tabak, Khoong, Chambers, & Brownson, 2012). The Co-LEC's outcomes are evaluated by each RE-AIM element as described in Table 1. This comprehensive perspective will allow GenesisCare to identify whether the co-located model offers an organisational fit and is worthy of continued investment and/or potential dissemination across their network. More broadly, this evaluation approach has the potential to inform the national and international dissemination of best practices to improve access to exercise for people during cancer treatment.

## 2 | METHODS

### 2.1 | Study design

This mixed-method retrospective study evaluates participation in the Co-LEC during its first 50 months (4 years and 2 months) of operation. Table 2 describes the sources and timing of data collection in detail. Ethics approval was provided by ECU's Human Research Ethics Committee (ID: 9804 GALVAO and 20888 KENNEDY).

### 2.2 | Participants

After an initial exploratory period of observation, four groups of key stakeholders were identified for inclusion in data collection: (a)

patients who utilised the Co-LEC; (b) patients who received treatment at GenesisCare; (c) GenesisCare referrers; and (d) ECU AEPs. Sources and timing of data collection are presented in detail in Table 2. All participants were provided with an information letter outlining the research. Interviewees provided written informed consent prior to their interview and survey respondents provided consent before beginning the questionnaire. Finally, GenesisCare clinic statistics were shared with the study team.

### 2.3 | Setting

This study was set in the GenesisCare clinic in Joondalup, Western Australia. GenesisCare is a private health care company with a global network of cancer care clinics.

#### 2.3.1 | Cancer treatment

The clinic in Joondalup offers primarily outpatient-based radiation therapy and medical oncology treatments. It is a tertiary service referred to by other specialists. GenesisCare Joondalup opened in March 2013 with three radiation oncologists on staff. Today, the site staffs five radiation oncologists and two medical oncologists. An average of 485 patients received cancer treatment annually in its first 4 years, with 86% receiving radiation therapy for, on average, of 4.4 weeks.

**TABLE 1** Components of RE-AIM evaluation framework

Construct and definition applied for this study	Questions addressed	Data sources used
<i>Reach</i> The number, proportion and representativeness of people who participated in the exercise clinic	<ol style="list-style-type: none"> <li>How many people participated in at least one session at the exercise clinic as compared to how many people received treatment at GenesisCare?</li> <li>What were the key demographic and health profiles of the exercise programme participants?</li> </ol>	Routinely collected GenesisCare data Exercise clinic files
<i>Effectiveness</i> Patient satisfaction with the exercise clinic and services received	<ol style="list-style-type: none"> <li>How satisfied were exercise participants with the programme?</li> </ol>	Participant surveys
<i>Adoption</i> The integration of the exercise facility into the routine care of patients treated at the oncology clinic	<ol style="list-style-type: none"> <li>How many oncologists and nurses participated in referrals to the exercise clinic?</li> <li>What proportion of participants overall were referred by each practitioner?</li> </ol>	Routinely collected GenesisCare data Semi-structured interviews with oncologists
<i>Implementation</i> Consistency of delivery of the programme as intended and the cost of the programme	<ol style="list-style-type: none"> <li>Did the programme structure remain consistent?</li> <li>Was there a clear and consistent method of referral?</li> <li>What were the costs to deliver the programme?</li> </ol>	Participant surveys Semi-structured interviews with AEPs, nurses, and oncologists Exercise clinic financial records
<i>Maintenance</i> The extent to which the programme became part of routine organisational practices	<ol style="list-style-type: none"> <li>What challenges need to be considered to ensure the programme remains in place?</li> </ol>	Semi-structured interviews with referring practitioners

Abbreviations: AEP, accredited exercise physiologist; RE-AIM, Reach, Effectiveness, Adoption, Implementation, Maintenance.

Data sources	Total invited	<i>n</i>	Data collection method	Timeframe
Key stakeholder group #1: Patients who used the Co-LEC				
Exercise clinic participant	n/a	237	Patient questionnaire	July 2013–August 2017
Exercise clinic participant	n/a	237	Workout summary sheets	July 2013–August 2017
Key stakeholder group #2: Patients who received treatment at GenesisCare				
GenesisCare patient	1,168	119 <sup>a</sup>	Online survey	June 2018
Key stakeholder group #3: GenesisCare clinicians responsible for referral to the Co-LEC				
Oncologist	11	7	Interviews	July 2018
Nurse	10	8	Interviews	July 2018
Key stakeholder group #4: ECU AEPs overseeing programming at the Co-LEC				
AEP	3	3	Interviews	July 2018
Other: General GenesisCare data				
GenesisCare records	n/a	n/a	Organisation database	May 2018–September 2018

Abbreviations: AEP, accredited exercise physiologist; Co-LEC, co-located exercise clinic; ECU, Edith Cowan University; *n*, sample size.

<sup>a</sup>*n* = 26 of these patients participated in the Co-LEC and overlap with key stakeholder group #1.

**TABLE 2** Data sources, collection methods and timeline

### 2.3.2 | Exercise service

Edith Cowan University opened the Co-LEC inside the Joondalup cancer treatment centre in July 2013, 3 months after the cancer treatment clinic opened. An accredited exercise physiologist (AEP) from ECU was hired to run the exercise programme. The AEP offered individual assessments and oversaw group exercise sessions in the Co-LEC 2–3 days/week. GenesisCare nurses and oncologists were responsible for referrals. An average of 57 patients attended the Co-LEC annually in its first 4 years.

## 2.4 | Data collection procedures

### 2.4.1 | Workout summary sheets

Exercise session tracking sheets were completed by Co-LEC patients throughout each visit. Dates of workouts were extracted to assess attendance. All participants who attended at least one exercise session were included in the evaluation (*n* = 237).

### 2.4.2 | Co-LEC participant questionnaire

Upon enrolment into the Co-LEC, participants completed a questionnaire (*n* = 237) that obtains demographic and health information, including self-reported cancer-specific and general health history pertaining to treatments and medications, as well as lifestyle behaviours (e.g. physical activity participation, smoking status), and potential comorbidities such as cardiovascular disease. Details regarding cancer

diagnosis, treatment type, treatment duration and referring oncologist were subsequently confirmed using GenesisCare medical records.

### 2.4.3 | Online survey

An invitation to complete an online survey was emailed in June 2018 to 1,168 patients. Patients who received treatment at the GenesisCare Joondalup facility between June 2016 and June 2018, had a valid email address on file and consented to receive survey communications from GenesisCare were eligible for inclusion in the online survey. This sampling strategy was designed to primarily reach patients who did not utilise the Co-LEC in an effort to ascertain reasons for non-participation (Glasgow et al., 2019). The survey included questions regarding referral to the Co-LEC, experience using the facility and barriers and facilitators related to participation. One hundred and nineteen patients completed the survey yielding a response rate of 10%. Of these, 26 (22%) utilised the Co-LEC service.

### 2.4.4 | Interviews

GenesisCare nurses and oncologists working at the Joondalup facility in July 2018 and all AEPs employed at ECU who had experience working at the Co-LEC were invited to participate in semi-structured interviews. An overview of the study was presented to GenesisCare oncologists by the study author (MAK) during a regularly scheduled team meeting. GenesisCare nurses received an email description about the study from the nurse manager. ECU AEPs received an email description of the study from MAK. MAK followed up with all interested

participants to schedule an interview. A 64% participation rate from oncologists, 80% from nurses and 100% from AEPs were achieved.

A preliminary interview guide was developed based on recent reviews of clinicians' participation in exercise prescription (Lobelo & de Quevedo, 2014) and discussion among the research team. MAK conducted a semi-structured interview with each participant in a clinic room at GenesisCare during July 2018 for nurses and oncologists, or conference room at ECU for AEPs. Interviews were 15–30 min in length. Participant recruitment ceased when data saturation was achieved (i.e. no new concepts emerged). For each clinical group, saturation occurred after data from one round of interviews were analysed. All interviews were digitally recorded and transcribed.

#### 2.4.5 | GenesisCare clinic records

Data from records held by GenesisCare regarding total numbers of new patients per year, age, types of cancer treated and types of treatment provided at the Joondalup facility were extracted by the clinical data specialist at GenesisCare. De-identified statistics were shared with the study team.

### 2.5 | Data analysis

Quantitative data were analysed using the Statistical Package for Social Sciences Mac version 25.0 (Chicago, IL, USA) and are reported in line with the questions identified in Table 1. The Kolmogorov–Smirnov test was used to assess continuous data for normality. Demographic and attendance measures were summarised using descriptive statistics including range, median and inter-quartile range for non-normally distributed data. A generic qualitative data analysis approach as described by Schneider, Whitehead, LoBiondo Wood, and Haber (2016) was used wherein each interview was transcribed verbatim and analysed at the first level (“coded”). This involved extraction of phrases that relate to the phenomenon from the participants' narratives. These first level codes were then grouped into themed sub-categories, and these in turn were grouped to form themed major categories that are labelled with a representative name. Together, the major categories “tell the story” of the factors that impact the uptake of a dedicated exercise programme by people with cancer, and by extension, and help answer the research questions.

## 3 | RESULTS

### 3.1 | Reach

Over the 50-month evaluation period, 1,963 people commenced a course of treatment (radiotherapy, chemotherapy or combination) at GenesisCare's Joondalup location. Of these, 237 attended the Co-LEC. This represents an overall reach of 12%, with an annual range of 10 to 14% (Figure 2).

Key demographic features of the Co-LEC participants are outlined in Table 3. Age ranged from 22 to 83 years. The majority (66.2%) of Co-LEC participants were female. Among all Co-LEC participants, nearly half (57.2%) self-reported as “currently active” upon enrolment into the programme. No significant relationships were found between activity level and sex, cancer type or treatment received.

The most common reason cited for not attending the Co-LEC among survey participants who did not utilise the service was lack of awareness of its availability. This was described in 77% of open comments from non-attenders.

### 3.2 | Effectiveness

Four themes about programme satisfaction emerged from the survey participant's open-ended responses regarding programme benefits ( $n = 61$ ): (a) the exercise programme offered a chance for connection; (b) participants felt the programme improved their treatment experience; (c) the trusted staff were an integral part of the programme's success; and (d) the programme provided a source of positivity.

#### 3.2.1 | Connection/socialisation

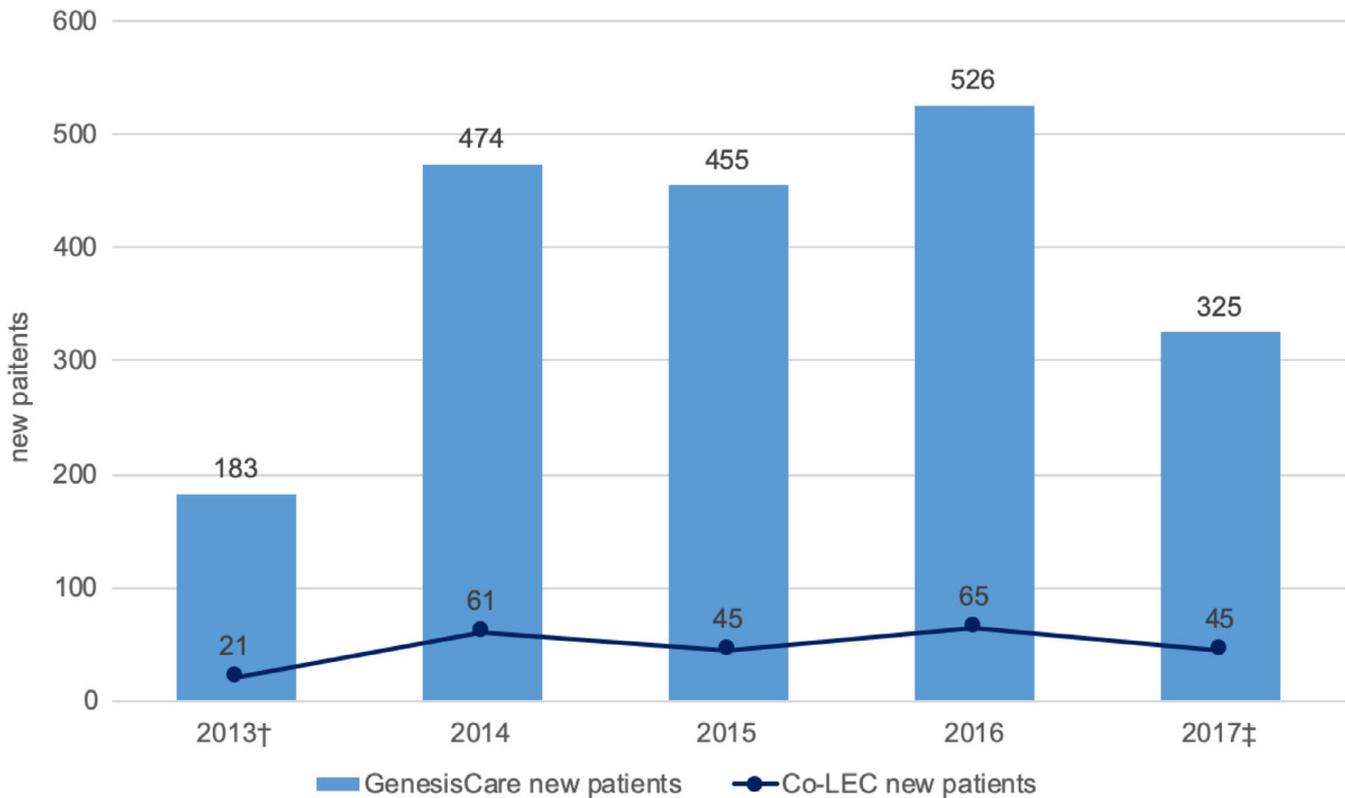
Meeting other people—especially those going through a similar experience—was an important benefit described in 11/61 of the comments. Participants used words and phrases like *camaraderie* and *informal network* to characterise this theme, and Exercise Clinic Participant #1 represented all when they said their “...*favorite thing was going along three times a week and seeing other men and women who were the same as yourself some much worse. Having a chat and laugh and also being able to feel useful again doing the exercises you found that you could do them and it made you feel alive again.*”

#### 3.2.2 | Improved treatment experience

Many (12/61) credited their participation in the Co-LEC with either a lack of treatment-related side effects or an improved ability to recover from treatment. Exercise Clinic Participant #2, for example, described how training for 1 hr “...*immediately following each radiation session...has allowed me to recover quickly from my treatment.*” Similarly, Exercise Clinic Participant #3 shared that participating in the exercise clinic “...*was the one thing that picked me up as I went through radiation...*” and Exercise Participant #4 felt that it “...*reduced the “gap” after treatment...to get back to my previous levels of fitness*”

#### 3.2.3 | Trusted staff

The quality of the staff was noted as a key aspect of the programme (17/61). Patients trusted their knowledge and experience working



**FIGURE 2** Reach of co-located exercise clinic (Co-LEC) by calendar year (January–December)

with people with cancer and respected the professional and supportive manner in which they conducted the programme. Exercise Clinic Participant #5, for instance, was reassured by being told that “... there was a strong scientific evidence-base supporting the case that exercise was beneficial during radiotherapy”, Exercise Clinic Participant #7 described being “...reassured by the expert staff support”, and Exercise Clinic Participant #8 described feeling “...confident in the properly supervised workouts.”

### 3.2.4 | Positivity

Participation in the Co-LEC elicited a sense of “positivity” among many (24/61) and provided something good and a sense of having some control during a difficult experience. Like others, Exercise Clinic Participant #9 said, “I found my exercise routine helped with my head space...gave me time to think, centre myself and prepare mentally for what was to come. It was a positive thing in such a hard situation.” Participant data in this theme also alluded to the programme having provided them with a sense of escape, or distraction, from their illness and treatment, which they viewed as positive: “It was something I could do for myself; it took the focus off the cancer.” [Exercise clinic participant #10]

Overall, most participants believed attending the Co-LEC was a beneficial part of their treatment.

Think it was great - never having been to a gym (more than a few times) I was thrilled to have somewhere

to go with experienced staff and to meet new people. Still keep in touch with people I met there 3 years later, created our own support group.

[Exercise clinic participant #11]

One major theme emerged for programme dissatisfaction: inconvenient hours of operation. Nearly 65% (33/51) of participants' open comments related to potential improvements that could be made to the clinic noted dissatisfaction with their ability to access the gym, especially at times that were compatible with treatment. Additional points of dissatisfaction were parking (8/51) and lack of transition plan at the end of the programme (4/51). An example is provided below.

Radiation and chemo sessions run all day on weekdays. Gym times were very limited. It was not possible to coordinate treatment times with the gym.

[Exercise clinic participant #12]

### 3.3 | Adoption

Individual referral data were not available; however, GenesisCare patient survey results ( $n = 119$ ) suggest referral from either an oncologist or a nurse was the most common pathway to the clinic, with over 40% of referrals split between oncologists (21%) and nurses (20%). Additional pathways were less common, including self-referral via signage at GenesisCare (7%), GenesisCare Facebook post (2%)

**TABLE 3** Demographic characteristics of cancer patients who participated in exercise

Variable	n	%/Median [IQR]
Age (years)	237	62.0 [52–69.5]
<39	9	3.8
40–49	40	16.9
50–59	56	23.6
60–69	73	30.8
70–79	44	18.6
80+	15	6.3
Sex	237	
Male	80	33.8
Female	157	66.2
Marital status	236	
Single	32	13.6
Married/defacto	204	86.4
Highest level of education	234	
College grad and above	54	23.1
Other	180	76.9
Employment status	236	
Yes	109	46.2
No	127	53.6
Cancer type	237	
Breast	136	57.4
Prostate	43	18.1
Colorectal	15	6.3
Lung	9	3.8
Other <sup>a</sup>	34	14.3
Secondary cancer reported	226	
Yes	25	10.5
No	201	84.8
Comorbidities		
Hypertension	101	42.8
High cholesterol	76	32.6
Cardiovascular disease	22	9.4
Diabetes	22	9.3
Osteoporosis	20	8.8
Currently active	218	
Yes	135	57.2
No	83	42.8
Treatment received during exercise	237	
Radiation	201	84.8
Chemotherapy	15	6.3
Chemotherapy and Radiation	21	8.9
Travel distance home to clinic (km) <sup>b</sup>	228	11.6 [7–15.4]
0–10	86	37.7
10–20	110	48.2
20–70	32	14.0

<sup>a</sup>Other cancers include brain (6), cervical (3), cholangiocarcinoma (2), liver (4), melanoma (4), oesophageal (2), ovarian (6), pancreatic (7).

<sup>b</sup>Patients who lived >70 km from the clinic ( $n = 9$ ) were not included in this analysis as they were supported by a government programme that offered nearby accommodation.

or website (1%); and other (e.g. referral from another patient) (5%). Almost one-half (45%) of survey respondents reported that they did not know the clinic existed.

Eleven oncologists practised at the Joondalup location of GenesisCare during the study period. Most ( $n = 9$ ) were radiation oncologists; two were medical oncologists. All oncologists had at least one participant under their direct management in the exercise clinic. Two oncologists were the treating oncologist for the majority of participants (67%) who attended the exercise clinic (though it is not possible to determine that the oncologist initiated the referral).

Seven radiation oncologists participated in semi-structured interviews; five were employed in 2013 when the exercise clinic originally opened. All oncologists stated they were aware of the benefits of exercise during cancer treatment and discussed exercise with patients when they remembered and had the time to do so. Eighty-six per cent (6/7) of the oncologists reported actively referring patients to the exercise clinic, though those who had been with the programme since the start expressed concern about its limited hours.

There are actually very few people that I would be saying “I don't want you to do it” because there is evidence you know even in the very palliative setting that there are benefits to exercise so that would actually be an unusual case for me to say “no, don't do this.”

[Oncologist #1]

I tell all my patients about the ECU clinic. But it's not open enough for many of them to go.

[Oncologist #2]

Additionally, all nursing staff ( $n = 8$ ) who participated in interviews were supportive of the clinic and reported sending patients. However, they expressed frustration about its structure and lack of utility.

I find that I don't push it so much because [the hours are] so restricted. I don't want to wave a fishbone in front of a patient and then tell them “well sorry, it's only open for an hour every two days, so you can't actually fit into this at all”.

[Nurse #1]

### 3.4 | Implementation

The Co-LEC opened in June 2013 using a 1-year ECU research grant provided to assess the feasibility of the concept. When the research funding expired, the feasibility of the Co-LEC was clear and the partner organisations (ECU and GenesisCare) were enthusiastic about its potential; however, additional research funds

were not available. ECU and GenesisCare agreed to continue operating the clinic using discretionary funds to support direct clinic operational expenses only. Over the evaluation time period, the programme changed significantly owing to a reduction in funding. Subsequently, ECU made changes to the programme structure: the hours of operation were reduced from six per week (2 hr/3 days per week) to two per week (1 hr/2 days per week); the eligibility criteria were updated, resulting in ineligibility for patients who were only receiving chemotherapy; and the duration was modified to 3 months for all participants regardless of the duration of treatment. The 3-month structure was modelled after a successful exercise oncology programme run at an ECU clinic (the Vario Health Clinic), wherein staff had consistent and familiar systems to oversee the clinic.

While the majority of clinicians reported actively referring patients to the Co-LEC, there were several interpretations of the process and no standardised approach was used. It is not clear whether there was ever a standard referral structure in place.

I do tell them that there is a clinic here if they're interested in doing that. We don't tend to sign any forms or anything there, but if they come back and some of them want to sign, that's when I do it there.

[Oncologist #1]

I talk to the patient, if the patient is interested, then I put a note in their record saying that patient is interested in the exercise clinic and I'll actually put it on their booking slip, I actually write it, "Patient to be referred to the exercise clinic". I assume the nurses are the people who pick it up.

[Oncologist #3]

I think we mention that it is available. I'm just thinking, today the guy I had was kind of this elderly guy who said he usually did exercise but he hasn't been recently and I just, I don't know, I didn't really think to refer him. But then last week there was another young woman who was saying she wanted to get into some exercise so that sort of triggered me to think of the gym down stairs and offer that. So, I would say it's not routine.

[Nurse #2]

Despite multiple changes to programme structure, communication between ECU and GenesisCare staff regarding service updates was noted as lacking. Employees hired after 2013 did not receive any formal introduction to the service. This lack of communication was expressed as an issue by both oncologists and nurses and resulted in uncertainty around how to effectively utilise the service.

I know that [the exercise clinic] exists but don't know the logistics of whether patients have to pay and how they get on it, or anything.

[Oncologist #4]

...with the changes over the past few months, we've not really had any idea about how things work anymore.

[Nurse #1]

### 3.5 | Maintenance

While the Co-LEC is the result of a partnership between two organisations, the operations remain independent. AEPs are separate to the patient's core care team and function as consultants, utilising ECU resources and systems while working within GenesisCare. Concerns about this were expressed by AEPs and nurses.

I don't have access to Genesis systems, so during the initial consult I get as much information as I can [about the person's medical history], but often they forget something, misinterpret something, or just don't understand. Having access to their medical record would allow me to have confirmation about their details.

[AEP #2]

I had a patient who had a dizzy spell after exercise. She said she spoke to the AEP and he told her to talk to me... It would have been helpful to have a note in the chart. It would be good if the AEP could put notes into the system so we are all on the same page. Also, we have no way of letting the AEP know things. Like sometimes a patient is hospitalised and we can't let them know.

[Nurse #3]

Finally, no financial model exists for the programme. The original aim was to ensure the programme was free for participants so cost would not be a barrier to participation. As such, there is no on-going income stream and discretionary funding was volatile.

## 4 | DISCUSSION

This study employed the RE-AIM framework to investigate the utility of operating an integrated exercise service within a cancer treatment facility. Three important findings emerged from this work: (a) effective integration of multidisciplinary care in a clinical setting requires planning and specialised expertise; (b) a robust model could not be developed in the absence of adequate funding; and (c) despite noted challenges, the Co-LEC appears to be a good organisational fit for GenesisCare and offers promise for promotion of exercise during cancer treatment.

The vision behind the Co-LEC was to establish exercise as an integral part of care during treatment at GenesisCare; however, the critical flaw was relying on integration to develop naturally from co-location. Effective integration of multidisciplinary care in cancer is an ongoing challenge that few have been able to successfully overcome, even among co-located health professionals (Gagliardi, Dobrow, & Wright, 2011). The Co-LEC was initially designed as a feasibility trial. Its implementation relied on ECU's extensive experience successfully operating exercise trials for people with cancer in a university setting. Referral, booking, and programming strategies familiar for the ECU team were employed. This approach was able to achieve clinically meaningful results (Singh, Galvão, et al., 2017) and garnered positive feedback from people who attended the service, but was not able to overcome the ongoing logistical challenges inherent in operating within a dynamic clinical setting (e.g. staff turnover, multiple clinician referral practices). The suboptimal utilisation of the Co-LEC (reach = 12%) is likely a reflection of this issue, representing a barrier at the level of the innovation itself in regards to the programme's external validity (Grol & Wensing, 2004). Furthermore, more than half of programme participants described themselves as active (57%) upon enrolment into the Co-LEC. While self-report measures often result in over-estimations of physical activity (Sallis & Saelens, 2000), this participation rate far exceeds estimates of people meeting activity guidelines who are undergoing cancer treatment (13%; Galvão et al., 2015) and suggests their intention or motivation to exercise may have played a role in helping overcome barriers to attend.

The emerging field of implementation science makes it clear that if interventions are going to have their desired effect, they should be supported by a detailed plan describing their adoption and maintenance (i.e. implementation strategies; Bartholomew et al., 2016). A one-size-fits-all approach is not sufficient, as plans need to be tailored to the specific needs of the environment where they are to be implemented (Powell et al., 2019). This work requires dedicated time and ideally the expertise of an implementation advisor (Powell et al., 2015). The Co-LEC team did not include implementation expertise and did not incorporate practices to move beyond the feasibility stage whereby familiar ECU operations were employed. For example, after it became clear people (both clinicians and patients) were willing to utilise the Co-LEC, no additional work was done to understand key issues necessary to integrate care, such as evaluating the effectiveness of the referral pathway or how well the Co-LEC's operating model was serving the needs of both the patients receiving treatment and the clinicians within GenesisCare. As a result, the vision of integrating the Co-LEC into standard operations at GenesisCare was not realised. This lack of integration disrupted the ability to co-book treatment with exercise and created inefficiencies in workflow, reducing the ability to provide patient-centric care.

Enhancement of services within the Co-LEC was not possible in the absence of an adequate resourcing strategy. The grant provided during year one allowed for development of the Co-LEC to demonstrate its feasibility and gain the support of GenesisCare

clinicians and leadership. However, this work could not be developed further when grant funding expired because the discretionary funds used to support the clinic were allocated for day-to-day clinic operations only (i.e. AEP-patient contact time, equipment maintenance). Discretionary funds were not provided to further develop, refine, or evaluate the Co-LEC. Moreover, the allocated discretionary funding was reduced each year, which forced a concurrent reduction in the service and left both GenesisCare patients and clinicians frustrated. As a result, patient utilisation of the Co-LEC remained stagnant despite the increasing numbers of people receiving treatment at GenesisCare. Cost is a core issue in the field of exercise oncology; its impact is seen across multiple levels of healthcare (Grol & Wensing, 2004). Furthermore, programme sustainability has become a focus in the field of public health, as the need to consider a project's ability to continue beyond the research funding period is essential to ensure its positive impact can be sustained (Scheirer & Dearing, 2011). Moreover, a project's sustainability should be considered during its planning phase (Bartholomew et al., 2016). Patients report cost as a barrier to programme participation (Blaney et al., 2010; Brunet, Taran, Burke, & Sabiston, 2013) and organisations struggle to find alternative strategies to re-coup AEP costs due to the lack of traditional funding available for exercise physiologists (Deloitte Access Economics, 2015; Smart, Williams, & Lyndon, 2016). Therefore, exercise oncology programmes cannot be effectively implemented, developed, or maintained without adequate financial backing. Furthermore, reliance on a single funding source leaves exercise oncology programmes vulnerable when funds are not guaranteed over the long-term. The prospective development of a multi-source funding model specific to the target patient population that incorporates strategies suggested by Santa Mina et al. (e.g. government, insurance agencies, corporate sponsors) should be seen as a first step in the development of an exercise oncology programme poised for long-term success (Santa Mina et al., 2012).

Despite the noted challenges and frustrations experienced with the Co-LEC, GenesisCare continues to be philosophically and practically supportive of the programme. For example, all GenesisCare oncologists reported a strong belief in the benefits of exercise, noted discussing it with patients when they had the time, and described a willingness to refer to the Co-LEC. This level of engagement is noteworthy given the historic challenge of involving oncologists in exercise promotion. A recent study surveyed oncologists regarding their opinions about engaging in health-promotion counselling, including physical activity (Stump et al., 2019); fewer than 30% (26.7) reported ever doing so. Despite the exponential growth of the evidence for exercise in cancer care over the last 15 years (Hayes et al., 2019), oncologist participation in exercise promotion has remained largely unchanged (Jones, Courneya, Peddle, & Mackey, 2005). Oncologist referral rates to exercise services are also low (Nadler et al., 2017) and have been described as too much of an additional burden (Beidas et al., 2014). The unanimous support of exercise among GenesisCare clinicians is atypical and demonstrates a potential willingness to engage in

improvements to the Co-LEC's implementation. However, willingness did not result in action for the majority of oncologists. Exploring this phenomenon of "intention without action" may offer insight regarding strategies to enhance oncologist engagement (Ajzen, 1985). Additionally, the two oncologists who seemed to be responsible for a majority of clinic referrals (66.6%) are well suited to be trained as programme champions. Engaging a programme champion has been recognised to help overcome internal organisational challenges as the programme moves into the future (Powell et al., 2015). Finally, GenesisCare's commitment to continue operating the Co-LEC despite financial challenges suggests organisational leadership buy-in. Leadership engagement is essential for any programme to thrive and should be explored more fully. Together, these organisational characteristics suggest the Co-LEC is a good fit for GenesisCare and is worth an investment to overcome the challenges of implementation and integration.

#### 4.1 | STRENGTHS AND LIMITATIONS

A major strength of this evaluation was the mixed-method approach employing multiple stakeholders to inform the evaluation. Bias of retrospective recall from interviews is present, but due to the breadth of sources included it is not considered significantly important. Additionally, a proxy had to be used for some measures of interest (e.g. method of referral) as not all information relevant to this evaluation was collected as part of standard operations at the Co-LEC. Finally, it was not possible to provide a comprehensive understanding of the characteristics of people who chose not to take up the service.

#### 5 | CONCLUSIONS

Co-locating an exercise clinic into a treatment facility does not in itself overcome the logistical challenges of providing integrated exercise services to patients during cancer treatment. The inability of the Co-LEC to achieve meaningful levels of engagement appears to be a failure of implementation. Nevertheless, while there are important gaps in the service that need to be addressed, the Co-LEC model offers a good organisational fit for GenesisCare. Further work is needed to create a dedicated implementation plan specific to overcome identified issues within GenesisCare will create a service that is effective, feasible and sustainable and could inform the development of future co-located models of patient care.

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#### CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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