



Acceptability of a virtual prostate cancer survivorship care model in rural Australia: A multi-methods, single-centre feasibility pilot

Nicole Heneka PhD¹  | Suzanne K. Chambers PhD² | Isabelle Schaefer MScMed¹ | Kelly Carmont RN³ | Melinda Parcell MMgmt³ | Shannon Wallis GCert (Clinical Redesign)³ | Stephen Walker RN³ | Haitham Tuffaha PhD⁴ | Michael Steele PhD⁵  | Jeff Dunn PhD⁶

¹University of Southern Queensland, University of Technology Sydney, Sydney, New South Wales, Australia

²Australian Catholic University, University of Technology Sydney, Sydney, New South Wales, Australia

³West Moreton Health, Ipswich, Queensland, Australia

⁴University of Queensland, St Lucia, Queensland, Australia

⁵Australian Catholic University, Sydney, New South Wales, Australia

⁶University of Southern Queensland, Prostate Cancer Foundation of Australia, Sydney, New South Wales, Australia

Correspondence

Nicole Heneka, University of Southern Queensland, 7 Sinnathamby Blvd, Springfield Central, QLD 4300, Australia.

Email: nicole.heneka@unisoq.edu.au

Funding information

The University of Southern Queensland; National Health and Medical Research Council

Abstract

Design: A multi-methods, single-centre pilot comprising a quasi-experimental pre-/post-test design and an exploratory qualitative study.

Setting: A rural Australian hospital and health service.

Participants: Men newly diagnosed with localised prostate cancer who were scheduled to undergo, or had undergone, radical or robotic prostatectomy surgery within the previous 3 months.

Intervention: The intervention comprised a 12-week virtual care program delivered via teleconference by a specialist nurse, using a pre-existing connected care platform. The program was tailored to the post-operative recovery journey targeting post-operative care, psychoeducation, problem-solving and goal setting.

Main Outcome Measures: Primary outcome: program acceptability.

Secondary outcomes: quality of life; prostate cancer-related distress; insomnia severity; fatigue severity; measured at baseline (T1); immediately post-intervention (T2); and 12 weeks post-intervention (T3).

Results: Seventeen participants completed the program. The program intervention showed very high levels ($\geq 4/5$) of acceptability, appropriateness and feasibility. At T1, 47% ($n=8$) of men reported clinically significant psychological distress, which had significantly decreased by T3 ($p=0.020$). There was a significant improvement in urinary irritative/obstructive symptoms ($p=0.030$) and a corresponding decrease in urinary function burden ($p=0.005$) from T1 to T3.

Conclusions: This pilot has shown that a tailored nurse-led virtual care program, incorporating post-surgical follow-up and integrated low-intensity psychosocial care, is both acceptable to rural participants and feasible in terms of implementation and impact on patient outcomes.

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2024 The Author(s). *Australian Journal of Rural Health* published by John Wiley & Sons Australia, Ltd on behalf of National Rural Health Alliance Ltd.

KEYWORDS

cancer, nurse specialists, oncology, patient acceptance of health care, prostatic neoplasms, psycho-oncology, psychosocial intervention, remote consultation, survivorship, telemedicine

1 | BACKGROUND

Prostate cancer is one of the most commonly diagnosed cancers worldwide, with more than 1.4 million cases diagnosed in 2020.¹ In 2022, prostate cancer became the most commonly diagnosed cancer in Australia with an estimated 24 000 men diagnosed, and over 240 000 men living with a current or previous prostate cancer diagnosis.² While prostate cancer survival rates have greatly improved over the last three decades, men's experiences of prostate cancer survivorship care (i.e., care from the point of diagnosis to the end of life³) are often sub-optimal. Persistent short- and long-term physical and psychosocial burdens, poor care-co-ordination and a lack of men-centred care dominate the survivorship care experience for many men with prostate cancer.⁴

Rural prostate cancer patients face numerous additional challenges as a result of geographical disparities, which hinder accessible survivorship care, further increasing the burden of prostate cancer.⁵ Men residing in rural areas have poorer access to and availability of prostate cancer-related treatment modalities and services.⁵ Additionally, limited local treatment and supportive care services, and substantial travel distances to access high-quality care further contribute to financial, psychosocial and logistical barriers which impact treatment and survivorship care.⁶

In order to lessen the urban-rural care gap, rural health services are increasingly utilising virtual models of care to improve access to health care services and specialist health care, and provide care closer to home.⁷ Virtual care presents an opportunity to address issues of accessibility and enhance the monitoring and care of people with cancer, particularly for those in rural areas.⁸ Strategies such as telehealth are highly acceptable for people with cancer offering improvements in waiting time, travel time and days of missed work.⁹ Reducing the need to travel to regional or metropolitan centres for monitoring or treatment is especially beneficial for rural patients with cancer, who report improved quality of life, better access to services and improved continuity of care.¹⁰

A number of virtual care models for cancer survivorship have been developed and tested in an effort to reduce in-person follow-up care and deliver tailored, integrated survivorship care to patients.¹¹ Virtual care models for prostate cancer survivorship specifically show comparable clinical outcomes, high patient

What is already known about this subject?

- Gaps in cancer survivorship and supportive care services are considered one of the most critical service gaps in rural Australia.
- Although a range of evidence-based cancer survivorship care interventions have been proven effective in improving quality of life outcomes, accessibility to these services is often limited for rural populations, and many of these interventions do not reflect the unique needs of rural cancer survivors, limiting service acceptability, and adversely impacting treatment adherence and subsequent treatment outcomes.
- In order to lessen the urban-rural care gap, rural health services are increasingly utilising virtual models of care to improve access to health care services and specialist health care, and provide care closer to home. However, virtual care models for prostate cancer survivorship are sparse, despite prostate cancer being the most commonly diagnosed cancer in Australia.

What this study adds

- This pilot shows that a tailored, nurse-led virtual care intervention, incorporating post-surgical follow-up and integrated low-intensity psychosocial care, is acceptable to rural participants and feasible in terms of implementation.
- Despite the potential for poorer outcomes due to rurality and relative socio-economic disadvantage in this rural cohort, significant improvements in psychological distress and urinary irritative/obstructive health-related quality of life were evident 12 weeks post-intervention.
- This paper reinforces the importance of making post-treatment survivorship care services, which extend beyond symptom management and include integrated psychosocial care available and accessible to men with prostate cancer in rural areas.

satisfaction, and significant time and cost savings compared with usual care.¹²⁻¹⁵ Currently, these virtual care offerings extend to prostate-specific antigen (PSA)

monitoring,¹⁴ post-treatment follow-up care,^{13,15} and symptom management.¹²

In Australia, radical prostatectomy is a common curative treatment for men with low- or intermediate-risk prostate cancer. The time immediately after surgery can be particularly challenging for men as they experience physical changes such as incontinence and sexual dysfunction, which also generate negative social and psychological changes.¹⁶ Men can feel unprepared for the changes they experience post-radical prostatectomy and struggle to maintain their physical and mental health in the weeks and months following surgery.¹⁶

In light of these findings, we developed a virtual care intervention for men following radical prostatectomy, combining post-operative and psychosocial care, which was piloted in a rural hospital and health service in Australia. Underpinning the intervention is the widely endorsed Prostate Cancer Survivorship Essentials Framework ('Essentials Framework'),⁴ which provides a road map for improving prostate cancer survivorship care in a multitude of clinical and community settings. The Essentials Framework was developed in 2020 by leading clinical, nursing, allied health and consumer groups, to guide the provision of integrated quality prostate cancer survivorship care. With almost one-third of the 47-member panel represented by prostate cancer survivors, the Essentials Framework captures a strong and contemporary consumer voice that reflects the lived experience and preferences of prostate cancer survivors.

The objectives of this pilot study were to determine the acceptability and feasibility of an evidence-based prostate cancer survivorship intervention, delivered in a rural service via an established virtual care platform, through a novel nurse-led approach. The study was undertaken in an Australian Hospital and Health Service (HHS) which services rural communities (MMM4-5) totalling approximately 250 000 people, in a region spanning over 9500 km². The HHS is largely comprised of towns in the lower quintiles (Q1–Q3, i.e., most disadvantaged) of the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD). The participating service has successfully delivered virtual care for chronic disease since 2016, using an established connected care platform. This pilot study enabled the testing of the platform in the rapidly growing area of prostate cancer survivorship care in a rural health service setting.

2 | METHODS

Ethics approval for this study was obtained through the West Moreton Health Human Research Ethics Committee (HREC/2020/QWMS/68068).

2.1 | Study design and setting

This multi-methods, single-centre pilot comprised a quasi-experimental pre-/post-test design and an exploratory qualitative study. Participants were recruited from the major public hospital within the HHS between 22 March 2021 and 20 January 2022.

2.2 | Participants

Study participants comprised men newly diagnosed with localised prostate cancer who were scheduled to undergo, or had undergone, radical prostatectomy or robotic prostatectomy surgery within the previous 3 months, recruited from consultant clinics at the HHS major public hospital ('participants').

2.3 | Intervention

The intervention comprised a virtual care program ('program') based on an existing and tested framework, evidence review, and expert and consumer consensus.^{4,17–19} The program was tailored in partnership with HHS stakeholders to reflect local service delivery and rural patient needs. A specialist virtual care nurse led the program which was delivered via a pre-existing connected care platform that has successfully been in use for other patient groups across the HHS. The program ran in parallel with usual post-surgical follow-up delivered by the participants' treating team. It included an initial onboarding session where participants received program materials, study questionnaires and an integrated tablet to enable videoconferencing, access to online program resources and remote patient monitoring tools, followed by a 12-week schedule of videoconferencing consultations and self-paced resource engagement (refer [Figure 1](#)).

The program was tailored to the post-operative recovery journey targeting post-operative care and symptom management, psychoeducation about prostate cancer, stress management, problem-solving and goal setting for the future. Participants also received a self-management resource¹⁷ that addresses key prostate cancer-related challenges with an evidence-based, low-intensity care model underpinned by a cognitive behavioural approach.¹⁸ This approach matches men-centred care to the level and type of need, and connects to self-help that is client paced. Manualisation of program structure and weekly session content for delivery ensured compliance with, and fidelity of, the tailored program by those delivering the program.

FIGURE 1 Virtual prostate cancer survivorship care intervention structure.

Session	Approximate timing	Components
Onboarding	Opportunistically prior to surgery if possible	<ul style="list-style-type: none"> • Introduce Virtual Prostate Nurse • Demonstrate Tablet and issue to patient • Issue Facing the Tiger® resource • Introduce Survivorship information and plan
1	Week 1	Videoconference Consultation <ul style="list-style-type: none"> • IDC Management, Wound Care, Soft Bowels • Confirm Trial of Void Clinic Appointment date/time if applicable • Facing the Tiger, Chapter 1: Effects of a prostate cancer diagnosis
2	Week 2	Videoconference Consultation <ul style="list-style-type: none"> • Preparedness for physical symptoms; Continence & Erectile Function • IDC Management, Soft Bowels, Wound Care, Trial of Void • Facing the Tiger, Chapter 2: Coping with prostate cancer
3	Week 3	Videoconference Consultation <ul style="list-style-type: none"> • Continence, Using Pads/Aids, Penile Rehab, Pelvic Floor • Facing the Tiger, Chapter 8: Stress management strategies
4	Week 4	Videoconference Consultation <ul style="list-style-type: none"> • Erectile function, Social activity, Physical activity, Continence, Infertility • Facing the Tiger, Chapter 6: Prostate cancer and sexual function
5	Week 5	<ul style="list-style-type: none"> • Continence Review • Facing the Tiger, Chapter 3: <ul style="list-style-type: none"> – How to discuss prostate cancer with partners/carers – Including partner/carer/potential partners in journey
6	Week 6	Videoconference Consultation <ul style="list-style-type: none"> • Strategies to Access Support • Discuss erectile dysfunction and associated medications • Facing the Tiger, Chapter 4: Communication Strategies
7	Week 7	<ul style="list-style-type: none"> • Fatigue/Sleep scale • Physical Activity levels, Social Activity levels, Anxiety • Continence Review • Facing the Tiger, Chapter 9: Solving problems after treatment
8	Week 8	<ul style="list-style-type: none"> • Erectile Function, Penile Rehab, Pelvic Floor • Facing the Tiger, Chapters 7 & 10: Thoughts and Thinking strategies
9	Week 9	Videoconference Consultation <ul style="list-style-type: none"> • Continence Review • Facing the Tiger, Chapter 11: Recovery and Finding Meaning
10	Week 10	<ul style="list-style-type: none"> • Facing the Tiger, Chapter 12: Survivorship care planning Part 1 <ul style="list-style-type: none"> – Health Promotion – Shared Management – Vigilance
11	Week 11	<ul style="list-style-type: none"> • Facing the Tiger, Chapter 12: Survivorship care planning Part 2 <ul style="list-style-type: none"> – Personal Agency – Care Coordination – Decision-Making – Evidence-based Survivorship Interventions • Facing the Tiger, Chapter 5: Making decisions you can live with
12	Week 12	Videoconference Consultation <ul style="list-style-type: none"> • Strategies to Access Support • Program Evaluation and closure

Outcome measures

Acceptability measure: Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM), and Feasibility of Intervention Measure (FIM).^a

Participant measures: eHealth Literacy Scale (eHEALS);^b Expanded Prostate Cancer Index Composite (EPIC) for urinary function and sexual function;^c Distress Thermometer and Problem List^d validated for prostate cancer;^e Insomnia Severity Index;^f Brief Fatigue Inventory (BFI);^g and Godin-Shephard Leisure-Time Physical Activity Questionnaire (GSL TPAQ).^h

Cost effectiveness measure: The European Quality of Life-5 Dimension 5-Level (EQ-5D-5L).ⁱ

^a Weiner BJ, Lewis CC, Stanick C, Powell BJ, Dorsey CN, Clary AS, Boynton MH, Halko H. Psychometric assessment of three newly developed implementation outcome measures. *Implement Sci* 2017;12(1):108.

^b Norman CD, Skinner HA. eHEALS: The eHealth Literacy Scale. 2006;8(4):e507

^c Wei JT, Dunn RL, Litwin MS, Sandler HM, Sanda MG. Development and validation of the expanded prostate cancer index composite (EPIC) for comprehensive assessment of health-related quality of life in men with prostate cancer. *Urology*. 2000;56(6):899-905.

^d Riba MB, Donovan KA, Andersen B, Braun I, Breitbart WS, Brewer BW, Buchmann LO, Clark MM, Collins M, Corbett C, Fleishman S, Garcia S, Greenberg DB, Handzo RGF, Hoofring L, Huang CH, Lally R, Martin S, McGuffey L, Mitchell W, Morrison LJ, Pailler M, Palesh O, Parnes F, Pazar JP, Ralston L, Salman J, Shannon-Dudley MM, Valentine AD, McMillian NR, Darlow SD. Distress Management, Version 3.2019, NCCN Clinical Practice Guidelines in Oncology. *Journal of the National Comprehensive Cancer Network* 2019;17(10):1229-49.

^e Chambers SK, Zajdlowicz L, Youlden DR, Holland JC, Dunn J. The validity of the distress thermometer in prostate cancer populations. *Psycho-Oncol*. 2014;23(2):195-203

^f Morin CM, Belleville G, Bélanger L, Ivers H. The Insomnia Severity Index: Psychometric Indicators to Detect Insomnia Cases and Evaluate Treatment Response. *Sleep*. 2011;34(5):601-8.

^g Mendoza TR, Wang XS, Cleeland CS, Morrissey M, Johnson BA, Wendt JK, Huber SL. The rapid assessment of fatigue severity in cancer patients. *Cancer*. 1999;85(5):1186-96.

^h Godin G. The Godin-Shephard leisure-time physical activity questionnaire. *Health Fit J Can*. 2011;4(1):18-22.

ⁱ Herdman M, Gudex C, Lloyd A, Janssen M, Kind P, Parkin D, Bonsel G, Badia X. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res*. 2011;20(10):1727-36.

2.4 | Outcome measures

The primary outcome measure for this study was program acceptability. Secondary outcome measures included as follows: quality of life in patients with prostate cancer; prostate cancer-related distress; insomnia severity; fatigue severity; and program costs.

2.4.1 | Program acceptability measures

Program acceptability was evaluated using the Acceptability of Intervention Measure (AIM), Intervention Appropriateness Measure (IAM) and Feasibility of Intervention Measure (FIM). These four-item measures are commonly used in pilot studies as indicators of implementation success and the 'fit' of the intervention for the target setting.²⁰ Responses are scored from one to five with higher scores indicating greater potential for successful intervention implementation. In accordance with best practice acceptability evaluation, program acceptability was evaluated both prior to the intervention commencing, and upon completion of the intervention (versus retrospectively at completion only).²⁰ Additionally, semi-structured interviews guided by the Theoretical Framework of Acceptability were undertaken to explore perceived effectiveness of, and attitudes towards, intervention appropriateness, suitability and convenience, and assess intervention acceptability.²¹

2.4.2 | Participant measures

A suite of validated patient-reported outcome measures assessing digital health literacy, and prostate cancer-related symptom burden, distress and health-related quality of life (HRQoL) were administered via a paper-based questionnaire. Measures comprised the: eHealth Literacy Scale (eHEALS); Expanded Prostate Cancer Index Composite (EPIC) for urinary function and sexual function; Distress Thermometer and Problem List validated for prostate cancer; Insomnia Severity Index; Brief Fatigue Inventory (BFI); and Godin-Shephard Leisure-Time Physical Activity Questionnaire (GSLTPAQ).

2.4.3 | Cost-effectiveness measures

The European Quality of Life-5 Dimension 5-Level (EQ-5D-5L) was administered in conjunction with participant measures above. Participants also completed a costs diary from 3 months prior (retrospective) and throughout the

study period. Additional participant and service delivery costs were collected using health service roundtable costing data and scheduling data.

2.5 | Study procedures

Study data were collected at three time points: T1—prior to intervention commencing (baseline); T2—at completion of the 12-week intervention; and T3—3 months post-intervention completion. Digital health literacy was assessed at T1 only, patient-reported measures were collected at all three time points, program acceptability measures were collected at T1 and T2 only, and semi-structured interviews with participants were undertaken within 2 weeks of participants completing the intervention (T2).

2.6 | Data analysis

Continuous outcomes were described with basic descriptive statistics. Categorical outcomes were described with frequencies (*n*) and percentages (%). Difference between continuous variables over time were computed with Wilcoxon signed ranks test as the vast majority of variables were not normally distributed. Significance was accepted at $p \leq 0.05$. Data were analysed with IBM SPSS Statistics (Version 28). The number of patient measures returned in this pilot study at T2 was low ($n = 13$) however increased again at T3 ($n = 16$). In light of this, and the already small participant numbers in this pilot, data analysis for patient-reported outcome measures was undertaken at T1 and T3 only. Program acceptability measures were administered pre-/post-intervention only (T1 and T2), hence these measures were only analysed at T1 and T2. For the cost-effectiveness measures, HRQoL was estimated using the Australian value sets for EQ-5D-5L. The difference in HRQoL between T3 and baseline was calculated using the Wilcoxon signed rank test. Costs were estimated by identifying, measuring and valuing health resources consumed (e.g., GP visits) using national databases (e.g., Medicare Benefits Schedule Online). Due to the small sample size, care should be taken in accepting or rejecting statistical hypotheses from this pilot study.

3 | RESULTS

3.1 | Participants

A total of 31 eligible participants were referred to the study and 17 participants completed the program. Eight (47%)

participants were enrolled pre-operatively, the remainder were enrolled within 3 months of post-operatively. Twelve participants declined to join the program (did not require additional support $n=8$; hesitant about using technology $n=2$; hesitant about study procedures $n=2$). Two prospective participants could not start the program due to current community transmission rates and COVID-19 response within the HHS. The ongoing impact of the COVID-19 pandemic heavily impacted capacity to perform surgeries and surgical waitlists which significantly delayed surgery scheduling and subsequent entry into the program.

Participants had a mean age of 64 years (± 5.2) with more than half (53.0%) residing in small rural towns ($n=7$) or regional centres ($n=2$). The majority (58.8%, $n=10$) were Australian-born, with three participants (17.7%) identifying as Aboriginal or Torres Strait Islander and all participants speaking English at home. Most participants (64.7%, $n=11$) were in a relationship, lived with their spouse/partner (58.8%, $n=10$) and held a pensioner concession card (64.7%, $n=11$). Over half (53%, $n=9$) reported annual household income pre-tax below the national median.²² Participant socio-demographics are reported in Table 1.

Digital health literacy was assessed at baseline using the eHealth Literacy Scale (eHEALS), which measures perceived skills at finding, applying and evaluating electronic health information in relation to health concerns. Combined eHEALS scores ranged from 14 to 40 with a mean score of 27.1 (± 3.4), indicating high e-health literacy in this cohort. Leisure-time physical activity scores averaged over 30 at T1 and T3, suggesting a generally active cohort (i.e., >24 units/120 min of physical activity per week), with scores ranging from 0 to 112.

3.2 | Program acceptability

Program acceptability was assessed using the AIM, IAM and FIM measures and semi-structured interviews guided by the Theoretical Framework of Acceptability constructs. For participants, AIM, IAM and FIM measures showed very high levels (≥ 4) of acceptability (AIM), appropriateness (IAM) and feasibility (FIM) in all constructs at baseline (Table 2), with measures increasing as participants worked through the program. Despite small participant numbers at T2, there was a statistically significant increase in AIM 3: 'I like the virtual prostate cancer program' and consistent increases in all domains of program acceptability, appropriateness and feasibility from T1 to T2; however, these did not reach statistical significance. Program acceptability findings from the semi-structured interviews are reported in detail elsewhere.²¹

TABLE 1 Patient demographics.

	N = 17 (%)
<i>Age (years)</i>	
Mean (SD)	64.0 (± 5.0)
Range	56–72
<i>Country of birth</i>	
Australia	10 (58.8)
England	3 (17.7)
Kenya	1 (5.9)
New Zealand	1 (5.9)
Switzerland	1 (5.9)
Wales	1 (5.9)
<i>Identifies as Aboriginal and Torres Strait Islander</i>	
No	14 (82.4)
Yes—Aboriginal	2 (11.8)
Yes—Torres Strait Islander	1 (5.9)
<i>Language spoken at home</i>	
English	17 (100)
<i>Relationship status^a</i>	
Married or in a relationship	11 (64.7)
Separated	3 (17.7)
Divorced	1 (5.9)
Widowed	1 (5.9)
<i>Current living situation</i>	
Live with spouse/partner	10 (58.8)
Live alone	4 (23.5)
Live in a household with other people	3 (17.7)
<i>Dependents</i>	
Yes	1 (5.9)
<i>Highest level of education received</i>	
Less than Year 12 or equivalent	6 (35.3)
Certificate I–IV	5 (29.4)
Advanced Diploma/Diploma	3 (17.7)
Graduate Diploma	2 (11.8)
Year 12 or equivalent	1 (5.9)
<i>Current employment status</i>	
Employed—full-time/part-time/ casual	8 (47.1)
Retired, not in labour force	7 (41.2)
Unemployed—looking for work	2 (11.8)
<i>Current annual household income pre-tax</i>	
<\$30 000	5 (20.4)
\$30 000–\$49 000	4 (23.5)
\$50 000–\$69 000	1 (5.9)
\$70 000–\$89 000	4 (23.5)
\$90 000–\$109 000	1 (5.9)
>\$110 000	2 (11.8)

TABLE 1 (Continued)

	N=17 (%)
<i>Private health insurance</i>	
Yes	2 (11.8)
<i>Veteran card</i>	
Yes	1 (5.9)
<i>Pensioner concession card</i>	
Yes	11 (64.7)

^aMissing data $n=1$.

3.3 | Participant measures

3.3.1 | Prostate cancer-related distress

At T1, mean distress in this cohort measured 4.1 out of 10 (± 2.3 ; range 1–8) with almost half of men (47.1%, $n=8$) reporting a distress score of ≥ 4 , indicating the presence of clinically significant psychological distress. Primary self-reported distress contributing factors using the associated Problem List included as follows: physical problems related to urinary ($n=11$, 65%) and sexual ($n=8$, 47%) function, fatigue and pain (both $n=6$, 35%); as well as uncertainty about the future ($n=9$, 53%), partner and work-related problems (both $n=5$, 29%). At T3, mean distress had significantly decreased (2.1, ± 2.1 , $p=0.020$) with a corresponding decrease in men reporting problems related to urinary function ($n=2$, 13%), pain ($n=1$, 6%), uncertainty about the future ($n=4$, 25%) and work ($n=1$, 6%) (Refer Table 3).

3.3.2 | Urinary and sexual symptom burden

There was a significant improvement in EPIC HRQoL for urinary irritative/obstructive symptoms from T1 to T3 ($p=0.030$) and a corresponding decrease in urinary function burden over the previous 4 weeks ($p=0.005$). Specifically, although not statistically significant, clinical improvements were seen in dripping or leaking urine ($p=0.056$), waking up to urinate ($p=0.070$) and need to urinate frequently during the day ($p=0.096$). EPIC Sexual HRQoL declined from T1 (38.7 ± 25.2) to T3 (24.7 ± 22.5) ($p=0.145$) with participants reporting decreased ability to function sexually ($p=0.056$) and increased problems with sexual function ($p=0.065$) over the previous 4 weeks.

3.3.3 | Fatigue and insomnia

There was a statistically significant increase in ‘fatigue right now’ ($p=0.024$) and the degree to which

fatigue interfered with enjoyment of life in the past 24 h ($p=0.041$) from baseline to T3 based on BFI domains. Global fatigue (i.e., fatigue right now and usual/worst level of fatigue in the past 24 h) also increased from baseline but did not reach statistical significance ($p=0.064$). The majority of participants ($n=12$, 71%) reported no clinically significant insomnia at T1, however by T3 this had decreased to less than half of participants ($n=8$, 47%) with a corresponding increase in subthreshold insomnia ($n=7$, 41%). Mean total insomnia score showed no statistically significant change between T1 and T3 ($p=0.288$).

3.3.4 | Cost-effectiveness measures

There was an improvement in HRQoL measured by EQ-5D-5L at T3 (0.95) compared with 0.92 at baseline (0.03; $p=0.23$) as demonstrated in Table 4. Health resource utilisation cost per participant averaged \$438 for outpatient care and \$7446 for hospitalisation (Tables S1 and S2).

4 | DISCUSSION

This pilot study tested the acceptability and feasibility of a nurse-led virtual survivorship care program in a health service which primarily services rural communities (MMM4-5), to support post-surgical care of men newly diagnosed with localised prostate cancer. Gaps in cancer survivorship and supportive care services are considered the most critical service gap in rural Australia, and although a range of evidence-based cancer survivorship care interventions have been proven effective in improving quality of life outcomes, accessibility to these services is often limited for rural populations.²³ Additionally, many of these interventions do not reflect the unique needs of rural cancer survivors,²³ limiting service acceptability, and adversely impacting treatment adherence and subsequent treatment outcomes.

Program acceptability is generally poorly assessed in virtual prostate cancer care programs, as is assessment of intervention translation/implementation potential.²⁴ In this study, the use of validated acceptability and implementation measures sought to address this gap and measures showed high program acceptability, feasibility and implementation potential at baseline which grew as the program progressed. These findings reflect the data from the qualitative interview component of this study (reported in detail elsewhere²¹), which identified that this virtual post-surgical care intervention was highly acceptable to participants in this setting when assessed against the domains of the Theoretical Framework of Acceptability.²¹

Measure	Time 1, mean (±SD)	Time 2, mean (±SD)	p-Value	Effect size
AIM1	4.3 (0.6)	4.8 (0.4)	0.082	-0.526
AIM2	4.3 (0.6)	4.6 (0.5)	0.165	-0.410
AIM3	4.0 (0.7)	4.7 (0.5)	0.013	-0.810
AIM4	4.5 (0.5)	4.5 (0.7)	0.721	0.101
AIM total	17.2 (2.0)	18.5 (1.7)	0.053	-0.595
IAM1	4.5 (0.5)	4.5 (0.7)	0.721	-0.101
IAM2	4.4 (0.5)	4.5 (0.7)	0.502	-0.192
IAM3	4.4 (0.5)	4.5 (0.5)	0.436	-0.223
IAM4	4.3 (0.5)	4.4 (0.7)	0.753	-0.089
IAM total	17.5	18.0	0.544	-0.173
FIM1	4.4 (0.5)	4.7 (0.6)	0.219	-0.360
FIM2	4.4 (0.5)	4.6 (0.7)	0.337	-0.277
FIM3	4.4 (0.5)	4.5 (0.7)	0.549	-0.171
FIM4	4.0 (0.8)	4.5 (0.7)	0.082	-0.526
FIM total	17.2 (2.1)	18.3 (2.4)	0.198	-0.378
Total acceptability	51.9 (4.9)	54.8 (6.0)	0.158	-0.417

TABLE 2 Measures of program acceptability, appropriateness and feasibility ($n=13$).

Briefly, participants consistently reported minimal participation burden, largely due to substantially reduced travel time compared with attending face-to-face consultations, and perceived the quality of care received as superior to previous experiences of in-person clinical care. Notably, a key driver of program acceptability was the dedicated virtual care nurse and the ongoing sense of support and ready access to care beyond the usual post-surgical follow-up delivered by the participants' treating team.²¹

A large proportion of men with prostate cancer report unmet functional and psychosocial survivorship care needs,²⁵ with remoteness and low IRSAD both significant predictors of poor outcomes following prostate cancer treatment.^{26,27} Increasingly, post-operative virtual care models show comparable recovery and health outcomes to in-person care, and high levels of patient satisfaction.²⁸ Data specific to post-operative virtual care for men with prostate cancer is currently sparse, although uptake of virtual care in urology is growing. A recent randomised controlled trial of virtual post-operative care for men >90 days after radical prostatectomy found that virtual care was of equal acceptability to in-person visits for patients, and virtual visits generated cost savings, reduced distances patients travelled and decreased missed work.¹⁵ However, data on patient outcomes were not reported.

This study examined patient-reported outcomes in addition to acceptability with almost half of participants reporting clinically significant psychological distress related to their prostate cancer and/or treatment, and substantial urinary and sexual symptom bother at baseline. Despite

the potential for poorer outcomes due to rurality and relative socio-economic disadvantage in this cohort, even for a small sample of participants, significant improvements in distress and urinary irritative/obstructive HRQoL were evident 12 weeks post-intervention. Declines in sexual function and urinary incontinence seen at T3 were congruent with comparable post-prostatectomy trajectories, which typically persist beyond 12 months post-treatment.²⁹

An interesting finding in this study was the increase in participant fatigue reported from baseline. Fatigue-related concerns were reported by approximately one-third of participants as part of distress screening. Additionally, half of participants were found to have clinically significant fatigue across the study period (i.e., BFI Global Fatigue Score >3),³⁰ with a corresponding increase in mean global fatigue in T3. Cancer-related fatigue as a side effect of treatment is commonly reported in men with prostate cancer.³¹ While much of the literature focuses on fatigue related to radiotherapy and androgen deprivation therapy, clinically significant fatigue following radical prostatectomy using the BFI has been identified in up to 22% of men up to 12 months post-operatively in other studies,³⁰ and likely reflects persistent fatigue associated with major surgery. In this study, T3 corresponded with the period participants may have been returning to pre-operative physical activity and/or work, which may also account for these findings.

The higher proportion of men with clinically significant fatigue in this study may also be linked to the degree of psychological distress at baseline, which was clinically

TABLE 3 Participant reported measures.

Measure	Time 1, mean (±SD)	Time 3, mean (±SD)	p-Value
EPIC urinary incontinence HRQoL ³⁸	59.8 (33.0)	56.7 (19.2)	0.602
EPIC urinary irritative/obstructive HRQoL ³⁸	79.7 (13.1)	92.4 (10.5)	0.030
EPIC sexual HRQoL ³⁸	38.7 (25.2)	24.7 (22.5)	0.145
BFI global fatigue score ³⁹	2.5 (2.1)	3.6 (2.3)	0.064
Fatigue right now	2.2 (2.0)	3.9 (2.5)	0.024
Usual level of fatigue past 24 h	2.2 (1.5)	3.2 (2.3)	0.157
Worst level of fatigue past 24 h	2.9 (2.2)	3.7 (2.7)	0.311
Total insomnia score ⁴⁰	6.4 (6.7)	7.1 (6.2)	0.288
Leisure-time physical activity: GSLTPAQ ⁴¹	35.9 (30.4)	33.2 (31.9)	0.380
Prostate cancer-related distress score ³⁹	4.1 (2.3)	2.1 (2.1)	0.020
	T1, n (%)	T3, n (%)	p-Value
Distress-related problem list items ⁴²			
Practical problems			
Work	5 (29.4)	1 (6.3)	n/a
Financial/insurance	2 (11.8)	2 (12.6)	
Family problems			
Partner	5 (29.4)	5 (31.3)	n/a
Emotional problems			
Depression	2 (11.8)	1 (6.3)	n/a
Uncertainty about the future	9 (52.9)	4 (25.0)	
Nervousness	1 (5.9)	1 (6.3)	
Sadness	3 (17.6)	1 (6.3)	
Worry	3 (17.6)	4 (25.0)	
Loss of interest in usual activities	4 (23.5)	2 (12.6)	
Treatment problems			
Understanding treatments	1 (5.9)	1 (6.3)	n/a
Making a decision	1 (5.9)	2 (12.6)	
Information about my illness	0	1 (6.3)	
Physical problems			
Pain	6 (35.3)	1 (6.3)	n/a
Fatigue	6 (35.3)	5 (31.3)	
Sexual	8 (47.1)	9 (56.3)	
Urinary	11 (64.7)	2 (12.6)	
Bowel	0	2 (12.6)	
Hot flushes	2 (11.8)	0	
Weight gain	2 (11.8)	2 (12.6)	
Weight loss	3 (17.6)	1 (6.3)	
Loss of muscle mass	2 (11.8)	2 (12.6)	
Memory/concentration	3 (17.6)	4 (25.0)	
Sleep	4 (23.5)	5 (31.3)	

significant for almost half this cohort. Psychological distress has been strongly linked to both cancer-related fatigue and as a predictor of fatigue post-surgery, specifically in men who have undergone radical prostatectomy.³²

These findings may warrant considerations of a dedicated prehabilitation program for men with prostate cancer undergoing radical prostatectomy to support psychological health and improve post-operative outcomes.³³

TABLE 4 Summary of HRQoL (utility scores).

	Baseline	12 weeks	26 weeks
Mean utility scores (EQ-5D-5L)			
Complete response	17	13	16
Mean (SD)	0.92 (0.10)	0.94 (0.13)	0.95 (0.10)
EQ-VAS			
Complete response	17	13	16
Mean (SD)	76.76 (18.02)	83.85 (12.77)	81.19 (17.16)

Abbreviations: EQ-5D-5L, European Quality of Life 5 Dimensions 5 Level; SD, standard deviation; VAS, visual analogue scale.

There are a number of factors that contributed to the favourable outcomes of this pilot and are vital considerations for future virtual care programs in prostate cancer survivorship targeting rural care. Currently, post-treatment virtual care programs for men with prostate cancer largely focus on the functional aspects of follow-up care, such as symptom management,^{12,13,15} despite the potential for poorer treatment outcomes resulting from psychological distress. For example, in addition to the relationship between distress and post-surgical fatigue, elevated distress in men with prostate cancer has been linked to poorer urinary outcomes.³⁴ This program, however, included dedicated psychoeducation, stress management, problem-solving and goal-setting components underpinned by an evidence-informed framework and cognitive behavioural approach.^{4,17-19}

The literature shows that the most effective survivorship care interventions for men with prostate cancer include combinations of cognitive behavioural and educational components,³⁵ and that interventions with theoretical underpinnings have the greatest impact on distress reduction and improved HRQoL.³⁶ Additionally, nurse-led interventions have been shown to significantly improve psychological distress and HRQoL, particularly for people with cancer.³⁶ Given the prevalence of psychological distress in men with prostate cancer,²⁵ and the relationship between distress and treatment outcomes, it is critical that any virtual survivorship care models encompass routine distress screening and establish standardised escalation protocols to effectively identify distress and link men to the appropriate care.

This is especially important for men in rural communities where provision of psychosocial care is often problematic. Rural cancer survivors report a lack of rural specific information on availability of psychosocial care services and how to access them, an absence of psychosocial services as a standard part of care in the community, and a lack of knowledge by medical staff in metropolitan treatment centres of the unique needs of rural cancer survivors.^{26,27} Compounding these service provision issues are attitudinal barriers to help-seeking in rural contexts,

particularly around accessing psychosocial care, fuelled by perceived stigma and the multi-faceted nature of the relationships between health professionals and patients in small communities.^{26,27} Of note, however, rural cancer survivors acknowledge the importance of dealing with psychosocial issues post-treatment, and those who do access psychosocial support, highly value the service, reporting improved uncertainty and fear, and normalisation of their experiences.³⁷ Additionally, nurse-led psychosocial interventions delivered via virtual care are highly acceptable strategies, from the perspective of rural cancer survivors, to improve post-treatment HRQoL.²⁶

Our study also showed that it is feasible to estimate HRQoL in a rural cohort of men with prostate cancer, using a validated instrument such as EQ-5D-5L, and that improvements in HRQoL over time were evident, albeit non-statistically significant due to the small sample size. It is also feasible to collect key resources consumed in a rural HHS using the methods in this study. However, given the non-comparative nature of this feasibility study, it was not possible to conduct an economic evaluation.

4.1 | Study limitations

This pilot was conducted in a rural health service with an established virtual care infrastructure and existing delivery platform, hence findings may differ in settings without similar resourcing. Participants' e-health literacy was relatively high, which may not be representative of other similar geographic regions. This single-arm pilot did not include a control group hence changes in patient-reported outcomes cannot be directly attributed to the intervention. Additionally, the small sample size of this pilot may limit the generalisability of findings to other rural health services. Despite the small sample size, however, multiple significant findings were evident confirming the acceptability and feasibility of this virtual prostate cancer survivorship care program, and subsequent potential for program implementation, in accordance with the primary study objectives.

5 | CONCLUSIONS

There is an urgent need to make post-treatment survivorship care services available and accessible to men with prostate cancer in rural areas. Importantly, these services need to reflect the unique needs of rural prostate cancer survivors and extend beyond symptom management to include integrated psychosocial care. This pilot has shown that a tailored, nurse-led virtual care program, incorporating post-surgical follow-up and integrated low-intensity psychosocial care, is both acceptable to rural participants and feasible in terms of implementation and impact on patient outcomes. Research targeting virtual survivorship care program implementation at scale and long-term patient and service outcomes is warranted.

AUTHOR CONTRIBUTIONS

Nicole Heneka: Conceptualisation; methodology; investigation; formal analysis; writing—original draft preparation; writing—review and editing. **Suzanne K. Chambers:** Funding acquisition; conceptualisation; methodology; formal analysis; supervision; writing—review and editing. **Isabelle Schaefer:** Formal analysis; writing—review and editing. **Kelly Carmont:** Conceptualisation; investigation; writing—review and editing. **Melinda Parcell:** Conceptualisation; writing—review and editing. **Shannon Wallis:** Conceptualisation; writing—review and editing. **Stephen Walker:** Conceptualisation; writing—review and editing; **Haitham Tuffaha:** Conceptualisation; formal analysis; writing—review and editing. **Michael Steele:** Conceptualisation; formal analysis; writing—review and editing. **Jeff Dunn:** Funding acquisition; conceptualisation; methodology; formal analysis; supervision.

ACKNOWLEDGEMENTS

This project was funded by the National Health and Medical Research Council Centre for Research Excellence in Prostate Cancer Survivorship and The University of Southern Queensland. Open access publishing facilitated by University of Southern Queensland, as part of the Wiley - University of Southern Queensland agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

ETHICAL APPROVAL

Ethics approval for this study was obtained through the West Moreton Health Human Research Ethics Committee (HREC/2020/QWMS/68068).

ORCID

Nicole Heneka  <https://orcid.org/0000-0001-8102-1871>

Michael Steele  <https://orcid.org/0000-0001-9628-3057>

REFERENCES

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2021;71(3):209–49.
- Australian Institute of Health and Welfare. Cancer Data in Australia. 2022 Available from: <https://www.aihw.gov.au/reports/cancer/cancer-data-in-australia/>. [cited 2023 May 22].
- National Cancer Institute. Office of Cancer Survivorship – Definitions. 2019 Available from: <https://cancercontrol.cancer.gov/ocs/definitions>. [cited 2023 May 22].
- Dunn J, Green A, Ralph N, Newton RU, Kneebone A, Frydenberg M, et al. Prostate cancer survivorship essentials framework: guidelines for practitioners. *BJU Int.* 2021;128(S3):18–29.
- Dasgupta P, Baade PD, Aitken JF, Ralph N, Chambers S, Dunn J. Geographical variations in prostate cancer outcomes: a systematic review of international evidence. *Front Oncol.* 2019;9:238.
- George M, Smith A, Ranmuthugula G, Sabesan S. Barriers to accessing, commencing and completing cancer treatment among geriatric patients in rural Australia: a qualitative perspective. *Int J Gen Med.* 2022;15:1583–94.
- Bradford NK, Caffery LJ, Smith AC. Telehealth services in rural and remote Australia: a systematic review of models of care and factors influencing success and sustainability. *Rural Remote Health.* 2016;16(4):3808.
- LeBlanc M, Petrie S, Paskaran S, Carson D, Peters PA. Patient and provider perspectives on eHealth interventions in Canada and Australia: a scoping review. *Rural Remote Health.* 2020;20(3).
- Collins A, McLachlan SA, Pasanen L, Wawryk O, Philip J. Perceptions of telehealth in real-world oncological care: an exploration of matched patient-and clinician-reported acceptability data from an Australian cancer centre. *Cancer Med.* 2022;11(17):3342–51.
- Pye S, Webster E, Zielinski R, Honeyball F. ‘The best thing since sliced bread’: patient experiences of teleoncology in western NSW. *Australian J Rural Health.* 2023;31(1):90–7.
- Pham Q, Hearn J, Gao B, Brown I, Hamilton RJ, Berlin A, et al. Virtual care models for cancer survivorship. *NPJ Digit Med.* 2020;3(1):113.
- Chu S, Boxer R, Madison P, Kleinman L, Skolarus T, Altman L, et al. Veterans affairs telemedicine: bringing urologic care to remote clinics. *Urology.* 2015;86(2):255–61.
- Frankland J, Brodie H, Cooke D, Foster C, Foster R, Gage H, et al. Follow-up care after treatment for prostate cancer: evaluation of a supported self-management and remote surveillance programme. *BMC Cancer.* 2019;19(1):368.
- Boyajian Richard N, Boyajian Krystle R, Mackin Mark J, Kowtoniuk Ashleigh M, Gordon William J, Martin Neil E, et al. A virtual prostate cancer clinic for prostate-specific antigen monitoring: improving well visits and freeing up time for acute care. *NEJM Catalyt.* 2021;2(6).
- Viers BR, Lightner DJ, Rivera ME, Tollefson MK, Boorjian SA, Karnes RJ, et al. Efficiency, satisfaction, and costs for remote video visits following radical prostatectomy: a randomized controlled trial. *Eur Urol Oncol.* 2015;68(4):729–35.
- Kong E-H, Deatrck JA, Bradway CK. Men’s experiences after prostatectomy: a meta-synthesis. *Int J Nurs Stud.* 2017;74:162–71.
- Chambers SK. *Facing the tiger: a survivorship guide for men with prostate cancer and their partners.* Brisbane, Australia: Australian Academic Press; 2020.

18. Chambers SK, Heneka N, Dunn J. The health professionals guide to delivering psychological Care for men with prostate cancer. Brisbane, Australia: Australian Academic Press; 2021.
19. Dunn J, Galvão DA, Green A, Lazenby M, Newton RU, Oliffe JL, et al. Psychosocial care model for men with prostate cancer: an essential element of the prostate cancer survivorship essentials framework. Sydney: Prostate Cancer Foundation of Australia; 2022.
20. Proctor E, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunge A, et al. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Adm Policy Ment Health Ment.* 2011;38(2):65–76.
21. Heneka N, Chambers SK, Schaefer I, Dunn J. Acceptability of a virtual prostate cancer survivorship care model in regional Australia: a qualitative exploratory study. *Psycho-Oncol.* 2023;32(4):569–80.
22. Australian Bureau of Statistics. Income and work: census [Internet]. Canberra: ABS; 2021 Available from: <https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/income-and-work-census/2021> [cited 2023 May 22].
23. National Rural Health Alliance. Rural Health in Australia Snapshot 2021. 2021 Available from: <https://www.ruralhealth.org.au/rural-health-australia-snapshot> [cited 2023 May 1].
24. Forbes CC, Finlay A, McIntosh M, Siddiquee S, Short CE. A systematic review of the feasibility, acceptability, and efficacy of online supportive care interventions targeting men with a history of prostate cancer. *J Cancer Surviv.* 2019;13(1):75–96.
25. Hyde MK, Newton RU, Galvão DA, Gardiner RA, Occhipinti S, Lowe A, et al. Men's help-seeking in the first year after diagnosis of localised prostate cancer. *Eur J Cancer.* 2017;26(2):e12497.
26. Gunn K, Turnbull D, McWha JL, Davies M, Olver I. Psychosocial service use: a qualitative exploration from the perspective of rural Australian cancer patients. *Support Care Cancer.* 2013;21(9):2547–55.
27. Pascal J, Johnson N, Dickson-Swift V, Kenny A. Returning home: psychosocial care during the re-entry phase of cancer survivorship in rural Australia. *Eur J Cancer.* 2015;24(1):39–49.
28. Nandra K, Koenig G, DelMastro A, Mishler EA, Hollander JE, Yeo CJ. Telehealth provides a comprehensive approach to the surgical patient. *Am J Surg.* 2019;218(3):476–9.
29. Stanford JL, Feng Z, Hamilton AS, Gilliland FD, Stephenson RA, Eley JW, et al. Urinary and sexual function after radical prostatectomy for clinically localized prostate Cancer. The prostate cancer outcomes study. *JAMA.* 2000;283(3):354–60.
30. Storey DJ, McLaren DB, Atkinson MA, Butcher I, Liggatt S, O'Dea R, et al. Clinically relevant fatigue in recurrence-free prostate cancer survivors. *Ann Oncol.* 2012;23(1):65–72.
31. Langston B, Armes J, Levy A, Tidey E, Ream E. The prevalence and severity of fatigue in men with prostate cancer: a systematic review of the literature. *Support Care Cancer.* 2013;21(6):1761–71.
32. Köhler N, Gansera L, Holze S, Friedrich M, Rebmann U, Stolzenburg J-U, et al. Cancer-related fatigue in patients before and after radical prostatectomy. Results of a prospective multi-centre study. *Support Care Cancer.* 2014;22(11):2883–9.
33. Grimmett C, Heneka N, Chambers S. Psychological interventions prior to cancer surgery: a review of reviews. *Curr Anesthesiol Rep.* 2022;12(1):78–87.
34. Punnen S, Cowan JE, Dunn LB, Shumay DM, Carroll PR, Cooperberg MR. A longitudinal study of anxiety, depression and distress as predictors of sexual and urinary quality of life in men with prostate cancer. *BJU Int.* 2013;112(2):E67–E75.
35. Chambers SK, Hyde MK, Smith DP, Hughes S, Yuill S, Egger S, et al. New challenges in psycho-oncology research III: a systematic review of psychological interventions for prostate cancer survivors and their partners: clinical and research implications. *Psycho-Oncol.* 2017;26(7):873–913.
36. Suh SR, Lee MK. Effects of nurse-led telephone-based supportive interventions for patients with cancer: a meta-analysis. *Oncol Nurs Forum.* 2017;44(4):E168–E184.
37. van der Kruk SR, Butow P, Mesters I, Boyle T, Olver I, White K, et al. Psychosocial well-being and supportive care needs of cancer patients and survivors living in rural or regional areas: a systematic review from 2010 to 2021. *Support Care Cancer.* 2022;30(2):1021–64.
38. Wei JT, Dunn RL, Litwin MS, Sandler HM, Sanda MG. Development and validation of the expanded prostate cancer index composite (EPIC) for comprehensive assessment of health-related quality of life in men with prostate cancer. *Urology.* 2000;56(6):899–905.
39. Mendoza TR, Wang XS, Cleeland CS, Morrissey M, Johnson BA, Wendt JK, et al. The rapid assessment of fatigue severity in cancer patients: use of the Brief Fatigue Inventory. *Cancer.* 1999;85(5):1186–96.
40. Morin CM, Belleville G, Bélanger L, Ivers H. The insomnia severity index: psychometric indicators to detect insomnia cases and evaluate treatment response. *Sleep.* 2011;34(5):601–8.
41. Godin G. The Godin-Shephard leisure-time physical activity questionnaire. *Health Fit J Canada.* 2011;4(1):18–22.
42. Chambers SK, Zajdlewicz L, Youlden DR, Holland JC, Dunn J. The validity of the distress thermometer in prostate cancer populations. *Psychooncology.* 2014;23(2):195–203. <https://doi.org/10.1002/pon.3391195-203>

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Heneka N, Chambers SK, Schaefer I, Carmont K, Parcell M, Wallis S, et al. Acceptability of a virtual prostate cancer survivorship care model in rural Australia: A multi-methods, single-centre feasibility pilot. *Aust J Rural Health.* 2024;00:1–12. <https://doi.org/10.1111/ajr.13149>