European Journal of Oncology Nursing 79 (2025) 103002

Contents lists available at ScienceDirect

European Journal of Oncology Nursing

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

Informing the development of a nurse-led survivorship intervention for men with prostate cancer treated with androgen deprivation therapy: A qualitative exploratory study

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ARTICLE INFO

Keywords:
Nurse-led care
Prostate cancer
Androgen deprivation therapy
Psychoeducation intervention
Survivorship

ABSTRACT

Purpose: To inform the development of a nurse-led survivorship intervention for men with prostate cancer treated with androgen deprivation therapy (ADT).

Methods: Qualitative exploratory study using semi-structured interviews with men undergoing ADT and specialist nurses. Recruitment occurred purposively via Prostate Cancer Foundation Australia networks. Interview recordings were transcribed and thematically analysed. Reporting adheres to COREQ guidelines.

Findings: Ten men and ten nurses were interviewed. Thematic analysis of interviews identified four key themes related to the importance of tailored information provision; the value of timely, personalised and accessible support from health professionals; men's preparedness for managing the impact of ADT; program preferences for a survivorship program for men on ADT.

Men felt inadequately prepared for the side-effects of ADT and called for clearer, tailored information and personalised support extending beyond initiation of treatment. Nurses acknowledged that ADT side-effects are debilitating and challenging to manage and called for a guided education and support program targeted to individual needs with evidence-based resources, tools and checklists.

Conclusions: ADT has a debilitating impact on physical and psychological health, and quality of life. Nurse-led survivorship interventions are needed that are flexible and tailorable to individual needs that men themselves express, incorporating nurses' delivery preferences in order to maximise effectiveness. Men prescribed ADT should be provided with a tailored education and support program and connected to a trained Prostate Cancer Specialist Nurse for ongoing, personalised support.

1. Introduction

Prostate Cancer is the second most commonly diagnosed cancer globally in men and a leading cause of mortality and morbidity (Sung et al., 2021). Androgen Deprivation Therapy (ADT) is a mainstay treatment for intermediate to high-risk prostate cancer (Mottet et al., 2020) with an estimated 30 %–50 % of men with prostate cancer undergoing ADT at some stage in their treatment pathway (Bolla et al., 2009; Meng et al., 2002; Nead et al., 2017). Despite its effectiveness in reducing tumour volume and disease progression by blocking the production of testosterone, ADT is associated with debilitating impacts on physical, psychological, metabolic, and sexual health, and overall quality of life (QoL) (Rhee et al., 2015; Edmunds et al., 2020a). Side-effects include loss of bone strength and muscle mass, hot flushes, night sweats, genital shrinkage, changes to cognition and mood, loss of sexual function and libido, weight gain, cardiovascular and endocrine issues and growth of breast tissue (Rhee et al., 2015; Edmunds et al., 2020a).

While there is sound evidence that exercise medicine interventions improve QoL for men on ADT (Edmunds et al., 2020b), there is sparse evidence of other intervention types that address men's psychosocial and informational needs and QoL on ADT (Sara et al., 2024). A recent systematic review of randomised controlled trials (Sara et al., 2024) reported only two such interventions demonstrating a statistically

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https://doi.org/10.1016/j.ejon.2025.103002
Received 14 July 2025; Received in revised form 1 October 2025; Accepted 7 October 2025

significant improvement in health-related QoL (HRQoL), one of which was underpowered. A nurse-led educational intervention (Templeton and Coates, 2004) delivered as a single, one-on-one session to men on ADT and supplemented by a written information package, demonstrated a statistically significant improvement in HRQoL, with additional significant changes in emotional and functional wellbeing. However, it did not report power size and had a short follow up (of 4 weeks) between pre and post-test questionnaires. A four session, multidisciplinary (nurse and physical therapist) led educational intervention (Dieperink et al., 2013), with psychoeducation components, tailored to individual needs, and supplemented by a written education package, demonstrated statistically significant HRQoL outcomes in relation to physical components and small to moderate effect size on prostate cancer-specific symptom bother and physical HRQoL. The majority of included studies had small sample sizes and/or were inadequately powered which impacted ability to determine effectiveness, however those interventions that seemed to work best were educational one-on-one sessions with a psychoeducation approach, supplemented by written resources for self-guided homework including individual needs assessments enabling personalised care and support.

Many men on ADT experience poorer mental and physical quality of life outcomes (Nguyen et al., 2018; Chipperfield et al., 2013) and report significant unmet supportive care needs, especially in relation to distress and psychological, informational and sexual needs (Mazariego et al., 2020; Paterson et al., 2020; Chambers et al., 2018). Contemporary prostate cancer guidelines (European Association of Urology, 2025) highlight the importance of taking quality of life factors into consideration when determining treatment goals, and strongly recommend men undergoing radical treatment and systemic therapies have access to specialist nurse-led care that incorporates patient goals. With global prostate cancer incidence predicted to double to 2.9 million cases by 2040 (James et al., 2024), the decremental impact of ADT on physical and psychological wellbeing and QoL in growing numbers of men is a major health concern. Quality survivorship care prioritises wellbeing by integrating the psychosocial, physical, emotional, financial and spiritual aspects of cancer care. Specialist prostate cancer nurses are well placed to deliver effective, evidence-informed survivorship care interventions to men with prostate cancer (Sara et al., 2023), however there is a lack of purpose-designed programs that guide nurses through the process of educating, supporting and preparing men to manage the impacts of ADT on their lives (Sara et al., 2024).

In order to design a nurse-led survivorship intervention ('program') for men undergoing androgen deprivation, we sought the lived-experiences of men prescribed ADT, and nurses who care for men on ADT, to understand what they felt was required to design and implement a purpose-built program. Therefore, the aims of this study were to: 1) explore the experiences of men within 3 months of commencing ADT with regards to information provision, health professional support and preparedness for side-effects; 2) examine the experiences of nurses caring for men on ADT in relation to the delivery of information, education and support.

2. Methods

Ethical approval for this study was obtained through the University of Southern Queensland Human Research Ethics Committee (HREC: H22REA002). Study reporting was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist (Tong et al., 2007) (supplementary material S1) and the study conforms to ethical standards set out in the Declaration of Helsinki (World Medical, 2001).

2.1. Study design

A qualitative exploratory study (Busetto et al., 2020) was conducted using semi-structured interviews to gain the insights and perspectives of men with prostate cancer undergoing ADT, and nurses caring for men on ADT.

2.2. Study setting and population

Study participants comprised men diagnosed with prostate cancer (n = 10) who were within three months of commencing ADT, and prostate cancer specialist nurses (n = 10) with a minimum twelve months experience caring for men treated with ADT. Participants were purposively sampled to ensure representation in locations across metropolitan and regional and rural areas in Australia. Interviews were conducted by phone, digitally recorded, transcribed and thematically analysed inductively. Previous studies (Hawkes et al., 2010; Chambers et al., 2015) have reported a preference for the convenience and anonymity of a phone-based conversation as opposed to a video or face-to-face format, particularly when men are discussing personal topics such as psychological distress or sexual dysfunction hence this approach was considered appropriate in conducting the interviews. It was also considered preferable in terms of accessibility for regionally based participants.

2.3. Recruitment and data collection

Participants were recruited purposively through health services and prostate cancer nursing networks nationally and were able to self-refer through media promotion and the Prostate Cancer Foundation of Australia (PCFA) community networks.

Taking a broad thematic analysis approach, exploratory interview questions (supplementary material S2) were developed and underwent pilot testing by representatives from PCFA's consumer and health professional networks. Demographic data was also collected. All interviews were conducted between April and June 2022. Interviews were conducted by phone, audio-recorded and transcribed by an external transcription service. One cancer nurse researcher with extensive interviewing experience conducted all the interviews, with all participants providing written consent prior to participating.

2.4. Data analysis

All recordings were checked for accuracy through concurrently reading the transcripts and listening to the original audio recordings. Data familiarisation was obtained through multiple readings of the transcripts and the process of thematic analysis (Braun and Clarke, 2006). Inductive identification of preliminary themes and constructs were identified independently (SS, NH), and were refined collaboratively (SS, NH, SC, JD, VT). The researchers/authors come from nursing, psychology and behavioural and social science backgrounds with extensive experience ranging from 10 to 35 years working in nursing, psycho-oncology and prostate cancer research.

3. Findings

A total of twenty participants took part in semi-structured interviews. The participants on ADT (n = 10) had a mean age of 66.5 (±7.7yrs) and had been diagnosed with localised or locally advanced (60 %, n = 6) or metastatic disease (40 %, n = 4). Interviews averaged 24.83 (±7.6) minutes. Participants came from both regional and metropolitan areas.

The nurse participants (n = 10) had a mean age of 48.9 (±7.1 yrs), a mean of 26.6 (±6.6) years of experience as a registered nurse and were based in a range of regional and metropolitan areas. Refer Table 1.

Quotes from men on ADT are represented as (ID_00). Quotes from nurses experienced in caring for men on ADT are represented as (RN_00). Supplementary quotes supporting each theme are provided in supplementary material S3.

Thematic analysis identified four key themes: the importance of tailored information provision; the value of timely, personalised and accessible support from health professionals; men's preparedness for

Table 1
Participant demographics.

Demographics Men on ADT			
		N = 10	(100 %)
Age (years)	Mean (SD) Range	66.5 (±7.7) 53–85	
Cancer stage	Localised or locally advanced Metastatic	6 4	(60) (40)
Modified Monash Model [a]	MM1 (metro area) MM3 (large rural town) MM4 (medium rural town) MM5 (small rural town)	7 1 1 1	(70) (10) (10) (10)
Interview duration (minutes)	Mean (SD) Range	25.1 17.5–35.1	(±6.5)
Demographics Nurses			
		N = 10	(100 %)
Age (years)	Mean (SD) Range	48.9 (±7.1) 30–55	
Registered Nurse Experience (years)	Mean (SD) Range	26.6 10–33	(±6.6)
Highest Nursing Qualification	Undergraduate Degree Graduate Certificate Graduate Diploma Masters Degree	3 3 2 2	(30) (30) (20) (20)
Modified Monash Model [a]	MM1 (metro area) MM2 (regional centre) MM3 (large rural town) MM5 (small rural town)	4 2 3 1	(40) (20) (30) (10)
Interview duration (minutes)	Mean (SD) Range	24.8 15.4–40.2	(±7.6)

[a] Australian Government Department of Health (2024). Modified Monash Model. https://www.health.gov.au/topics/rural-health-workforce/classifications/mmmAccessedNovember2024.

managing the impact of ADT; and program preferences for a survivorship program for men on ADT.

3.1. The importance of tailored information provision

Men described feeling unprepared when starting ADT with very limited knowledge of what lay ahead.

> Why and what ADT is doing … that should have been the priority … my doctor didn't explain that to me, I was going in there with no knowledge whatsoever. You really do need to have a full and comprehensive understanding of what the actual side-effects could be. (ID_01)

Many men felt they received either too little or inconsistent information about their treatment, which led to feelings of confusion and frustration.

> I am sort of semi-medical literate because of time spent as a paramedic … And I've found there's a hell of a lot to find, and it's hard to find it … so at a time when you're absolutely smashed with information, you don't end up getting much. (ID_02)

Others were overwhelmed by the volume of information they received with little direction as to how it applied to their personal situation.

> I took a photo of the table. It was covered. And I am meant to read all this and absorb all this into my head … I'm a carpenter. I just have to rely on the doctor but the doctor talks over you. He said, "Do you want it or don't you". It's hard to comprehend it all … to get everything to sink in. (ID_03)

Nurses cautioned against providing too much information at once, reinforcing the need to know and understand the informational needs and preferences of each individual to minimise overwhelming men at a time of great stress.

> I go through the side effect profile and give information about ways to manage. I ask men whether they like to read, whether they would like more information. Some do, some don't, so I target it based on the person's wishes. (RN_04)

Moreover, nurses viewed tailoring and personalising any information provided to men as critical to meeting men's educational and informational needs.

> We need to be mindful of the person we're giving information to, how much information they actually want, what they can comprehend, there's lots of things to take into account. Some men will just go "I don't want all this stuff", but we'll say, "well there could be someone in your family who may like to read it". Information needs to be tailored to the individual at the time. (RN_08)

When men didn't have their informational needs met, they felt they had little choice but to search for information themselves and had concerns about the accuracy or quality of what they found. The most critical information men wanted was an explanation, in plain language, about why ADT was prescribed for them, how it would work for them, expected treatment duration, what side-effects they could expect and where they could go for help and support to manage them when they arose.

3.2. The value of timely, personalised and accessible support from health professionals

Men described varied experiences regarding health professional support. The majority felt that they were not provided with adequate time or opportunities with a health professional to talk through the specific aspects of ADT that applied to their personal circumstances.

> So when you get this kind of high level advice from an oncologist … it's academic … and he gave me one of these booklets … but it's all pretty generalised to a large degree until you are sort of in the middle of it. You need a bit of tailoring … a very targeted, tailored conversation or set of conversations. (ID_08)

Men described timely, accessible health professional support as essential in empowering them to manage their own health situation, '*… you need to get the underlying message into people's brains … they've really got to be on the front foot thinking seriously about how to manage the implications'* (ID_08). However, several men felt that some health professionals lacked the listening skills to recognise their issues and provide tailored referrals to other support services such as counsellors, '*… just listening and recognising where we're coming from … and being referred to support without having to hunt around … when the whole emotional rollercoaster ride is happening*' (ID_02).

Men who had access to a prostate cancer specialist nurse (PCSN) at commencement of ADT, felt great benefit from being able to access support when needed, and valued the provision of personalised information and repeated opportunities for longer term support, '*… a specialist nurse has been ringing me on a regular basis … knowing that was a good feeling. She has been a phenomenal resource … the most informative resource of any*' (ID_09). However, several nurses described how late referrals hindered their ability to provide comprehensive education and support at treatment initiation, highlighting the critical need for men to have health professional support early in order to be adequately prepared for life on ADT.

> We don't have radiation done locally … they go straight to radiation therapy 3 hours away and at this point they haven't been referred to me yet and they've been started on ADT … by the time I'm catching

> them they're already suffering all the toxicities. Side-effects are huge because most men just aren't warned or given appropriate information … I've had quite a number of patients say "why hasn't anyone told me this before? Why wasn't I told before starting ADT?" (RN_07).

Men expressed confusion as to which health professional is responsible for what part of their care, *' … the Specialist said, "Go and see your GP about this sort of thing" … but I don't think many GPs are the full bottle on hormone treatment' (ID_ 07)*. Men provided examples of poor communication between specialists and/or treatment centres and their local GPs, where GPs were not adequately informed about the patient's clinical situation, and were unsure of the management plan.

Several nurses described in detail their approach to supporting men on ADT and stressed the importance of building a strong therapeutic alliance to facilitate open, honest conversations. They described incorporating a thorough nursing assessment, including distress screening, in order to provide supportive care tailored to individual patient needs.

> I run a survivorship clinic twice a week … we cover everything, sexual health, weight gain issues, pain … looking at the patient as a whole. We go through their side-effects, how to manage those side-effects. We do referrals … ask the GP to do the bone density scans, blood tests. We don't just manage the ADT, we manage the whole patient. (RN_06)

Nurses also stressed the importance of longer term follow-up consultations with men on ADT, building self-efficacy, and incorporating problem solving strategies to address issues identified through screening for distress and side-effects of treatment.

> There needs to be a greater amount of follow-up with men who've been on ADT for a while. Focus and energy is put into newly diagnosed men, but the longer term follow-up is often when they're running into troubles with side-effects like mood changes, loss of muscle mass, depression. That's when you really need in-depth discussions … it's one thing to be providing information in the beginning, but unless you're following through, you don't know if men are falling through the cracks … the focus changes from just information provision to wellbeing reviews. (RN_03)

Many nurses also commented on how complex it is to guide a man through understanding the impact of ADT and help them manage a broad range of challenging side-effects.

> ADT is quite a complex area … You'll find a lot of the time you need to go back to the start and go this is what it is, this is what it does, these are the side effects, have you noticed any of these? … Heart health, bone health … risk of diabetes … making sure we identify all those risk factors and we're educating the patients on how to identify those potential risks. (RN_06)

3.3. *Men's preparedness for managing the impact of ADT*

Men were asked about side-effects they had experienced since commencing ADT, and whether they felt they had been adequately prepared to deal with them. Men identified the side-effects most commonly causing bother as hot flushes, night sweats, body shape changes (including genital shrinkage), erectile dysfunction, loss of libido, insomnia, loss of fitness and weight gain. By far, those who felt best prepared to manage side-effects were those who had received ongoing health professional support, in addition to written information about ADT.

Many men said that they expected hot flushes to occur, as that was commonly mentioned by clinicians but felt completely blind-sided by the impact ADT had on their sense of masculine identity, strength, and sexual wellbeing. A number of men commented that if they had received more comprehensive education and better health professional support, they would have had a heightened understanding of the impact of ADT, which would have enabled earlier recognition of side-effects, and early intervention with strategies to manage.

> I didn't recognise and never thought ahead to the impact of lack of testosterone on physical ability … they put me on a bike to look at my fitness level. I noticed then just how much it had really impacted me. Pre-warning of that sort of thing would've been really good. (ID_02)

On reflection, a number felt strongly that they had not been provided with sufficient information to understand the seriousness of the ADT side-effect profile, and felt unprepared and lacked coping strategies to employ when the side-effects began to set in. In particular, men felt unprepared for the impact of ADT on their sexual wellbeing, a topic they felt was avoided by their health care team.

> Nobody has, in any discussion or anywhere said "considering your sex life moving forward, this is what happens," … I'm thinking "wow, nobody even says anything". They just stick it in and go "off you go". (ID_02)

In addition, men described insufficient information provided by health professionals to prepare them for insomnia, fatigue, and endocrinological impacts, and shared the view that they would have been better prepared for ADT if they had personal access to a key health professional, such as a PCSN, as a primary contact for information and support.

> Number one, having someone to call, a single point of contact, to be able to have a really good chat with about everything that's going on, as compared to re-running your story, discussing things with a new person each time … My oncologist is too busy, he emailed me my PSA results at 12.30 AM this morning. (ID_ 02)

While men tended to focus on the physical impacts of ADT, nurses expressed strong concerns that men were not prepared for the psychological effects such as distress, depression, anxiety, mood swings and cognitive changes, *' … they're struggling with their side-effects, and don't know what to do … I especially worry about the emotional side-effects, and their psychological wellbeing'* (RN_04). Nurses also felt that the impact ADT has on masculine identity often went unrecognised, with many men hesitant to seek support for emotional changes from their health-care team and the psychological impacts of treatment often not discussed, or missed, in specialist consultations.

> You generally find there's emotional changes, sometimes men can become quite sad about their body shape and how that changes on ADT, and perhaps the things they used to be able to do that they can't now … there's a myriad of things that cause men to have those emotional changes, and it's all related to ADT. (RN_08)

3.4. *Program preferences for a survivorship program for men on ADT*

Men called for a program that delivers practical, easy to understand information that is tailored to their situation and delivered by health professionals specialising in prostate cancer care, to better prepare them for the impact of ADT on their lives.

> Information that is reliable, valid, easy to understand, presented in layman's terms … the raw facts of what's going to happen. This is how it's done … side-effects … basic day to day living stuff … a bit of back-up support, someone to ask questions of, sort of get a bit of reassurance about what's happening … that would be handy. (ID_06)

Men and nurses collectively favoured a multi-session arrangement given the complexity of the education and support required, with *' … various topics, three to four sessions about half an hour each, allowing time for Q&A'* (ID_ 08), with staggered intervals enabling men to build on their knowledge base between sessions and providing opportunities to break the content into blocks or themes, spaced *'I would say every couple* *of weeks or maybe once a month … if something happens along the way, you've got some contact or help*' (ID_04). Using the telephone as mode of delivery was acceptable for the majority of participants, offering greater access and flexibility in session scheduling accommodating work, treatment and travel commitments, ' … *most people have landlines these days. You probably won't have any problems on the phone front … it's a well tried and tested model. (ID_08)*.

Nurses wished for access to a structured program designed to make it easier to educate and support men on ADT, *' … if we had a formal structure for program delivery, via phone, that would be great (RN_03)*. In addition, they called for templates or checklists to reduce the risk of some aspects of ADT education and management being missed.

> Templates help a lot because they keep you on track, they make sure you're not missing anything … and I think having a cheat sheet with recommended referral pathways or management plans, in a simple way, would be helpful for nurses. (RN_02)

Nurses also recommended *' … a follow-up session to make sure they're actually doing what you suggested, just to say, "just checking, have you done this and that" (RN_02)*. Both groups preferred having the same nurse deliver each session, noting that continuity of care helps build rapport and trust, and fosters growth in self-efficacy and personal agency.

> Continuity of care is a definite, it helps build rapport, which means they're more likely to talk about their issues openly with you, rather than meeting you once … identifying what they can do to try and be self-driven, or proactive in managing that for themselves. (RN_02)

Further, establishing a trusted therapeutic relationship early leads to more open and honest conversations on how ADT is impacting on a man's quality of life.

> Look, the cold hard facts around ADT is that it can be very debilitating, you have to spell it out straight. Men need to know how it's going to affect them physically and emotionally … if you set the scene early, men don't have to be brave, they don't have to say that everything's okay when it's not, they realise that "oh, these people are here to help me, and I can get the best out of this". (RN_08)

Men expressed a preference for the sessions to be run in a one-to-one format, as opposed to group sessions, *' … I've never been into the group thing. I'm a pretty independent thinker and I've always felt that groups don't lift me* up' (ID_10). Others felt men may be hesitant to talk about personal feelings in front of other men in a group, due to *' … embarrassment … some of the personal stuff … that might be a barrier'* (ID_02). Some also felt that group sessions would minimise the ability for the presenter to tailor content to their own personal needs. Men highlighted the need for sensitivity in session delivery, and the need to tailor information and support needed, but not so confronting that participation could cause distress, and potential withdrawal from the program.

> I think there's a sweet spot, a sort of goldilocks moment between being realistic about what the implications of various treatments are going to be and not getting to the point where everybody goes, "oh shit". You don't want catastrophic thinking to sort of invade people … you need to be realistic. You don't want to sugar-coat it, but on the other hand, you don't want to add to what is already a significant psychological and physical challenge. You need a bit of tailoring, trying to get people to talk openly, it's about people's psychological make up, the profile of the person … the person [delivering the program] has got to be able to demonstrate a degree of empathy and understanding but be businesslike about it … these challenges can be overcome by having the right material. (ID_08)

In terms of content, men preferred information that was ' … *concise, clear and not too blokey … not trying to be friendly for the sake of thinking that is helpful' (ID_09)*. They stressed the importance of supplementing the sessions with easy to understand written material that can be referred back to.

Nurses agreed with the men's views on content but also favoured a strong focus on the psychological impacts of ADT, ' … *the health and wellbeing side of things … definitely management of mood changes, anxiety, depression, strategies to help manage that'* (RN_03).

> Tools for patients are really important … distress screen before the consult … they can have a look at it and tick the things that are bothersome for them currently, and how much out of it is impacting on them … this frames the consult as each person is an individual. (RN_04)

In addition, a number of nurses expressed a desire for written resources to be supplemented with a personalised survivorship care plan that includes an outline of which health professional is managing what aspects of care. This request was supported by the men too as a means of helping them understand their treatment and follow-up plan and minimising their confusion over who they should contact for particular issues or concerns relating to their cancer treatment and their overall wellbeing.

> The GP can think the specialists are doing everything … and then things get missed … I think what gets confusing, is who's in control of prescribing and then looking after these patients. For instance, we know that long-term use of ADT can cause bone destruction. So, who's in charge of putting the person on supplements, who's in charge of checking the bone mineral density … some specialists think "oh well, maybe the GPs ordering the bone mineral density test, so I don't need to do that" and vice versa. It gets confusing for the patient. (RN_08)

4. Discussion

This study has shown that men on ADT continue to have unmet information, education and supportive care needs, and feel inadequately prepared for the impact ADT has on their lives. Trying to understand the intricacies of treatment and find relevant information and support at a time of great stress is challenging for men, and their loved ones. Throughout the interviews men appealed for personalised information; education and support programs tailored to their individual needs; improved access to specialised support (extending beyond treatment initiation); and strategies for identifying and managing the significant physical and psychosocial decrements that come with ADT. They prefer information that is tailored to their individual health situation and opportunities for one-on-one consultation and support with trusted health professionals who specialise in prostate cancer.

As noted in the introduction, only two previous interventions (Templeton and Coates, 2004; Dieperink et al., 2013) have shown statistically significant improvements in HRQoL for men on ADT. Both were delivered in one-on-one format and supplemented by information and homework packages. Based on the findings from these interventions, important implementation considerations include individual as opposed to group sessions, multi-session format and intervals between follow-up sessions.

To educate and support men on ADT, nurses require unique, specialised skills and knowledge that is well beyond the scope of a generic cancer nurse, including expert training in the delivery of psychological care to men with prostate cancer (Chambers et al., 2021). Nurses acknowledged through the interviews that ADT side-effects are multi-factorial, debilitating and can be challenging to manage. They called for standardised approaches to delivering care, through the design of guided nurse-led programs targeted to individual needs, with evidence-informed resources, assessment tools and checklists. In the face of increasing calls for greater psychological support for men on ADT, early access to quality support provided by highly skilled specialist nurses with expert knowledge in the psychological and physical impacts of ADT for prostate cancer is paramount to equipping men to manage the deleterious impact ADT has on masculine identity, QoL and overall physical and psychological health. This includes regular assessment and early intervention to manage side-effects, plus equitable and affordable access to ongoing survivorship care.

A key goal in designing an intervention for men on ADT is to improve personal agency, self-efficacy, and coping and problem solving skills. In previous studies the development of trusted therapeutic relationships with skilled, specialist nurses has been critical to the delivery of these goals (Heneka et al., 2023; Chambers et al., 2015). Moreover, nurses play an important role as a conduit between treating specialist clinicians, patients and General Practitioners (GPs), a relationship that can be enhanced through the initiation and regular review of Survivorship Care Plans that empower men to play a greater role in understanding their health care needs and who is responsible for what aspect of care. Equitable and affordable access to GP services can vary (Gardiner et al., 2020), highlighting even further the key role PCSNs play across both urban, and regional and remote areas of Australia.

In order to develop effective interventions, researchers must understand and take into account the views and experiences of men on ADT, and specialist nurses involved in their care. Failure to consider their concerns, needs and preferences, risks the acceptability and sustainability of programs designed to address these very concerns (Dunn et al., 2020). Men cannot be adequately prepared for the impact ADT will have on their lives in a single discussion with a health professional, or an information booklet alone. Men on ADT require ongoing care and support and regular contact with trusted health professionals, as their needs change over time. Specialist nurses are ideally placed to efficiently and effectively deliver survivorship programs designed to address the debilitating physical and psychosocial impact of ADT. A recent social return on investment study confirmed the high value delivered by a prostate cancer specialist nursing program with improvements in health related quality of life, gains in system efficiencies, improved coordination of care and gains in patient empowerment (Edmunds et al., 2025). However not all men are fortunate enough to have access to a PCSN in their local health service with many of the men interviewed in this study not having access to this level of care. There is an urgent need for more PCSNs, with demand set to grow substantially over the next 15 years with a doubling of prostate cancer incidence predicted globally (James et al., 2024).

4.1. Recommendations

Based on the findings of this study, there are several key recommendations for the development of a nurse-led survivorship program for men undergoing androgen deprivation. Firstly, access to specialist prostate cancer nurses improves outcomes for men with prostate cancer. All men treated with ADT for prostate cancer should be connected to a trained specialist prostate cancer nurse as early as possible for education, support and tailored survivorship care. Nurses caring for men on ADT should be provided with tools guiding the assessment of distress, psychosocial and supportive care needs, and survivorship care planning.

Secondly, men on ADT should also have access to evidence-based personalised survivorship programs that incorporate strategies to manage the impact ADT has on QoL and overall physical and psychological health. This recommendation is supported by contemporary international prostate cancer guidelines (European Association of Urology, 2025) with a strong recommendation that men receiving systemic therapy for prostate cancer (including ADT) should have access to nurse-led evidence-based rehabilitation interventions that take into account patients' personal goals.

Finally, given the severe decrements ADT can have on quality of life, it is recommended that men participate in a detailed consultation with their clinical specialist prior to commencing ADT, to discuss and formulate a personalised treatment plan, outlining ADT type and treatment intent, dosage regime, expected duration, and potential side-effects. The provision of a prescription, and an information booklet alone does not adequately prepare men for life on ADT. This consultation should include early referral to a prostate cancer specialist nurse and involvement of allied health support tailored to the individual's clinical context and physical and psychological needs.

4.2. Study limitations

While the sample size for this study was small, there are valuable findings about preferences for interventions focusing on limiting the debilitating impact ADT has on overall QoL, both from the perspective of men undergoing androgen deprivation, and from nurses who specialise in the care of men with prostate cancer.

5. Conclusions

ADT has a debilitating impact on physical and psychological health, and overall quality of life for many men. Specialist nurses are well placed to deliver nurse-led survivorship interventions for men on ADT when provided with evidence-informed programs and resources that are flexible and tailorable to individual needs. Nurse-led programs should be designed to meet the needs of participants, and also the nurses delivering the programs, in order to maximise effectiveness.

CRediT authorship contribution statement

Sally A.M. Sara: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Nicole Heneka:** Writing – review & editing, Supervision, Methodology, Formal analysis, Conceptualization. **Suzanne K. Chambers:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Jeff Dunn:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Victoria R. Terry:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors have no conflicts of interest to declare.

Acknowledgements

We gratefully acknowledge the contribution of Sally Fielding, cancer nurse research assistant, who conducted the interviews. We also acknowledge and thank the study participants who gave their time to share their experiences and valuable insights through the interviews.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ejon.2025.103002.

References

Bolla, M., De Reijke, T.M., Van Tienhoven, G., Van Den Bergh, A.C., Oddens, J., Poortmans, P.M., Gez, E., Kil, P., Akdas, A., Soete, G., 2009. Duration of androgen suppression in the treatment of prostate cancer. N. Engl. J. Med. 360, 2516–2527.

Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. Qual. Res. Psychol. 3, 77–101.

Busetto, L., Wick, W., Gumbinger, C., 2020. How to use and assess qualitative research methods. Neurol. Res. Pract. 2, 14.

Chambers, S.K., Occhipinti, S., Schover, L., Nielsen, L., Zajdlewicz, L., Clutton, S., Halford, K., Gardiner, R.A., Dunn, J., 2015. A randomised controlled trial of a couples-based sexuality intervention for men with localised prostate cancer and their female partners. Psychooncology 24, 748–756.

Chambers, S.K., Hyde, M.K., Laurie, K., Legg, M., Frydenberg, M., Davis, I.D., Lowe, A., Dunn, J., 2018. Experiences of Australian men diagnosed with advanced prostate cancer: a qualitative study. BMJ Open 8, e019917.

Chambers, S., Heneka, N., Dunn, J., 2021. The Health Professionals Guide to Delivering Psychological Care for Men with Prostate Cancer. Australian Academic Press.

Chipperfield, K., Fletcher, J., Millar, J., Brooker, J., Smith, R., Frydenberg, M., Burney, S., 2013. Predictors of depression, anxiety and quality of life in patients with prostate cancer receiving androgen deprivation therapy. Psychooncology 22, 2169–2176.

Dieperink, K., Johansen, C., Hansen, S., Wagner, L., Andersen, K., Minet, L., Hansen, O., 2013. The effects of multidisciplinary rehabilitation: RePCa—a randomised study among primary prostate cancer patients. Br. J. Cancer 109, 3005–3013.

Dunn, J., Ralph, N., Green, A., Frydenberg, M., Chambers, S.K., 2020. Contemporary consumer perspectives on prostate cancer survivorship: fifty voices. Psychooncology 29, 557–563.

Edmunds, K., Tuffaha, H., Galvão, D., Scuffham, P., Newton, R., 2020a. Incidence of the adverse effects of androgen deprivation therapy for prostate cancer: a systematic literature review. Support. Care Cancer 28, 2079–2093.

Edmunds, K., Tuffaha, H., Scuffham, P., Galvão, D., Newton, R., 2020b. The role of exercise in the management of adverse effects of androgen deprivation therapy for prostate cancer: a rapid review. Support. Care Cancer 28, 5661–5671.

Edmunds, K., Wang, Y., Sara, S., Riley, B., Heneka, N., Tuffaha, H., 2025. Prostate cancer specialist nursing program: a social return on investment analysis value for money of the prostate cancer specialist nursing program. Psychooncology 34, e70181.

European Association of Urology, 2025. Prostate cancer guidelines. Presented at the EAU Annual Congress Madrid 2025. ISBN 978-94-92671-29-5.

Gardiner, F.W., Bishop, L., De Graaf, B., Campbell, J.A., Gale, L., Quinlan, F., 2020. Equitable Patient Access to Primary Healthcare in Australia.

Hawkes, A.L., Hughes, K.L., Hutchison, S.D., Chambers, S.K., 2010. Feasibility of brief psychological distress screening by a community-based telephone helpline for cancer patients and carers. BMC Cancer 10, 14.

Heneka, N., Chambers, S.K., Schaefer, I., Dunn, J., 2023. Acceptability of a virtual prostate cancer survivorship care model in regional Australia: a qualitative exploratory study. Psychooncology 32, 569–580.

James, N.D., Tannock, I., N'dow, J., Feng, F., Gillessen, S., Ali, S.A., Trujillo, B., Al-Lazikani, B., Attard, G., Bray, F., 2024. The lancet commission on prostate cancer: planning for the surge in cases. Lancet 403, 1683–1722.

Mazariego, C., Juraskova, I., Campbell, R., Smith, D., 2020. Long-term unmet supportive care needs of prostate cancer survivors: 15-Year follow-up from the NSW prostate cancer care and outcomes study. Support. Care Cancer 28, 5511–5520.

Meng, M.V., Grossfeld, G.D., Sadetsky, N., Mehta, S.S., Lubeck, D.P., Carroll, P.R., 2002. Contemporary patterns of androgen deprivation therapy use for newly diagnosed prostate cancer. Urology 60, 7–11.

Mottet, N., Bellmunt, J., Briers, E., Bolla, M., Bourke, L., Cornford, P., De Santis, M., Henry, A., Joniau, S., Lam, T., Mason, M., Van Den Poel, H., Van Den Kwast, T., Rouvière, O., Wiegel, T., 2020. AU – ESTRO – ESUR – SIOG Guidelines on Prostate Cancer.

Nead, K.T., Sinha, S., Yang, D.D., Nguyen, P.L., 2017. Association of androgen deprivation therapy and depression in the treatment of prostate cancer: a systematic review and meta-analysis. Urol. Oncol. 35, 664.e1–664.e9.

Nguyen, C., Lairson, D.R., Swartz, M.D., Du, X.L., 2018. Risks of major long-term side effects associated with androgen-deprivation therapy in men with prostate cancer. Pharmacotherapy 38, 999–1009.

Paterson, C., Primeau, C., Howard, N., Xiberras, P., Pillay, B., Crowe, H., 2020. Experiences of unmet need and access to supportive care for men receiving androgen deprivation therapy for prostate cancer: a Bi-national study. Semin. Oncol. Nurs. 36, 151049.

Rhee, H., Gunter, J.H., Heathcote, P., Ho, K., Stricker, P., Corcoran, N.M., Nelson, C.C., 2015. Adverse effects of androgen-deprivation therapy in prostate cancer and their management. BJU Int. 5, 3–13.

Sara, S.A., Chambers, S.K., Briggs, R., Heneka, N., Dunn, J., 2023. A vanguard approach to the design and delivery of nurse-led survivorship care. Seminars in Oncology Nursing. Elsevier, 151366.

Sara, S.A., Heneka, N., Green, A., Chambers, S.K., Dunn, J., Terry, V.R., 2024. Effectiveness of educational and psychological survivorship interventions to improve health-related quality of life outcomes for men with prostate cancer on androgen deprivation therapy: a systematic review. BMJ Open 14, e080310.

Sung, H., Ferlay, J., Siegel, R.L., Laversanne, M., Soerjomataram, I., Jemal, A., Bray, F., 2021. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J. Clin. 71, 209–249.

Templeton, H., Coates, V., 2004. Evaluation of an evidence-based education package for men with prostate cancer on hormonal manipulation therapy. Patient Educ. Counsel. 55, 55–61.

Tong, A., Sainsbury, P., Craig, J., 2007. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int. J. Qual. Health Care 19, 349–357.

World Medical, A., 2001. World medical association declaration of helsinki. Ethical principles for medical research involving human subjects. Bull. World Health Organ. 79, 373–374.