

A Qualitative Study Exploring the Perceptions of Sedentary Behavior in Prostate Cancer Survivors Receiving Androgen-Deprivation Therapy

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Androgen-deprivation therapy (ADT) is associated with acute and chronic side effects (e.g., fatigue) and risk of developing comorbidities (e.g., osteoporosis) (Flaig & Glodé, 2008; Grossmann & Zajac, 2011; Kim & Freedland, 2010). *Sedentary behavior* (SED) is defined as any waking behavior characterized by an energy expenditure of 1.5 metabolic equivalents or less while in a sitting or reclining posture (Sedentary Behaviour Research Network, 2012). The adverse health effects of SED for cancer risk are distinct from the beneficial effects of moderate to vigorous physical activity (PA) (Lynch, 2010). Drawing from epidemiologic findings, SED has been independently associated with central adiposity, elevated blood glucose and insulin, and other cardiometabolic biomarkers in apparently healthy adults (Owen, Healy, Matthews, & Dunstan, 2010). The role of SED remains largely unexplored in survivors of cancer, but excess adiposity has been associated with prostate cancer aggressiveness, progression, and mortality (Hsing, Sakoda, & Chua, 2007) and poorer quality of life (Lynch, Dunstan, Vallance, & Owen, 2013). This emerging research agenda is of particular importance for survivors, many of whom spend less than 1% of their waking hours engaged in PA (Lynch et al., 2011, 2013) and, on average, 69% in SED (Lynch et al., 2011). Instead of focusing on activities that comprise only a portion of an individual's day, examining the benefits of SED and light-intensity PA on health outcomes is warranted.

Despite the established health benefits of PA (Baumann, Zopf, & Bloch, 2012; Galvao & Newton, 2005; Mishra et al., 2012; Thorsen, Courneya, Stevinson, & Fosså, 2008), less than 20% of men with prostate cancer are meeting public health PA guidelines (Harrington, Schwenke, & Epstein, 2013; Kushi et al., 2012; Rock et al., 2012). Targeting SED may be a more feasible and appropriate approach for a wider proportion of sur-

Purpose/Objectives: To describe and understand the perceptions of sedentary behavior (SED) and the interests and preferences for a SED intervention of men on androgen-deprivation therapy (ADT) within a two-phase (formative and intervention research) feasibility study.

Research Approach: Qualitative, descriptive.

Setting: Princess Margaret Cancer Centre and Odette Cancer Centre, both in Toronto, Ontario, Canada.

Participants: 27 men on ADT.

Methodologic Approach: Men were recruited from prostate cancer clinics. Nine focus groups were conducted from November 2013 to April 2014 until data saturation was reached. Probe questions assessed perceptions regarding SED and preferences for a mobile SED intervention. Data were transcribed verbatim, and a thematic analysis was conducted.

Findings: Twenty-seven men with a mean age of 73.5 years (SD = 8.1 years) volunteered for the study. Most men were aware of the health risks associated with SED, but most discussed SED in terms of increasing physical activity (PA). Many men were interested in a mobile application to reduce SED and expressed that the design should be easy to use, have an alerting function to interrupt sitting, have the ability to track and monitor PA levels, be tailored to the individual, and involve social support.

Conclusions: These findings will inform the development and evaluation of a novel SED intervention to improve health outcomes in this population.

Interpretation: Oncology nurses may serve as a motivational factor in encouraging men on ADT to reduce SED.

Key Words: prostate cancer; sedentary behavior; mobile intervention; physical activity; androgen-deprivation therapy
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vivors (Gardiner, Eakin, Healy, & Owen, 2011; Lynch et al., 2013).

Seven studies have examined the role of SED on health outcomes in cancer survivorship with mixed

findings regarding the association between SED and quality of life (Lowe et al., 2014; Lynch, Cerin, Owen, Hawkes, & Aitken, 2011; Rogers, Markwell, Courneya, McAuley, & Verhulst, 2011). In a longitudinal study, Sabiston, Brunet, Vallance, and Meterissian (2014) found a moderating effect of weight status on SED among a cohort of 177 survivors of breast cancer. Healthy-weight survivors decreased their SED early in the post-treatment period, but survivors with an unhealthy weight increased their SED. In addition, only one intervention has focused on multiple behavior changes, including SED, among survivors of colorectal cancer. Lynch, Courneya, Sethi, Patrao, & Hawkes (2014) examined the effects of a randomized, controlled trial comparing a telephone-delivered health behavior change intervention (i.e., PA, diet, weight, tobacco and alcohol use, and SED) versus usual care among 410 survivors of colorectal cancer during a six-month period. A potentially meaningful, but non-significant, between-group difference was seen in total SED (net difference of 39 minutes per day). Subgroup analyses suggested that survivors of colorectal cancer who were older than 60 years, male, and not obese were more likely to reduce their SED. Only one study has addressed the determinants of SED in apparently healthy older women (Chastin, Fitzpatrick, Andrews, & DiCroce, 2014). This qualitative investigation highlighted some of the barriers, motivation, and strategies to reduce one aspect of SED—sitting time.

Although research of SED and cancer is in its infancy, mounting evidence suggests that SED has deleterious associations with health outcomes in survivors (Wijndaele et al., 2009). Because of the high levels of SED that exist among survivors, interventions targeting SED appear justified. The researchers are developing and testing an innovative mobile-based SED intervention, Reducing Sitting Everyday for Treatment (RiseTx), for men receiving ADT. Guidance from the Medical Research Council suggests a systematic approach to intervention development for maximum impact, which includes the iterative processes of identifying the evidence, developing a theoretic understanding, and using pilot work to inform intervention modifications prior to evaluation (Craig et al., 2008). The findings from the current phase (phase I, formative research) will not only inform the structure of the RiseTx intervention, but also inform future interventions with SED in patients with cancer. Based on these findings, the researchers will tailor and conduct a phase II feasibility trial to examine changes in time spent in SED at 12 and 24 weeks postintervention.

The purpose of this qualitative study was to describe and understand awareness of SED, its associated health risks, perceptions of SED, and interests and preferences for a SED intervention among men on ADT.

Methods

Participants

Twenty-seven men on ADT were recruited from prostate cancer clinics at two cancer centers, Princess Margaret Cancer Centre and Odette Cancer Centre, both in Toronto, Ontario, Canada, from November 2013 to April 2014. Eligibility for the study included (a) being 18 years of age or older, (b) having localized or asymptomatic metastatic prostate cancer, (c) currently receiving or previously having received ADT (continuous and/or intermittent) for at least six months, and (d) not being physically active (less than 150 minutes of moderate-intensity PA per week). Ethics approval was obtained through the Research Ethics Board of the University of Toronto, the University Health Network Research Ethics Board (Princess Margaret Cancer Centre), and the Sunnybrook Odette Cancer Research Ethics Board.

Measures

Twenty-seven men took part in one of nine focus groups at the cancer centers. An experienced qualitative facilitator presented a set of questions that were adapted from existing items and derived through a comprehensive review of the literature (see Figure 1). The themes were grouped based on questions asked in the researchers' interviews, which focused on the following.

- Awareness of SED, including hours spent sitting
- Perceptions of SED, including the health risks associated with prolonged sitting, perceived benefits of reducing SED, and reasons for engaging in SED
- Interest in and preferences for a SED intervention

The focus of the researchers' questions was on one specific SED—sitting. Regular meetings were held between the researchers and facilitator to discuss important themes and to determine whether adequate information was collected and the point at which saturation was reached. Each session lasted 60–90 minutes and was audio-recorded. Field notes were taken by the facilitator for data interpretation.

Data Analyses

Qualitative data were transcribed verbatim. Pseudonyms were assigned to men to ensure they could not be identified. Sampling occurred until responses proved to be redundant, and a satisfactory saturation point was reached after the ninth focus group, during which no relevant data emerged. Data from the focus groups were analyzed using thematic analysis, as outlined by Braun and Clarke (2006), which included becoming familiar with the data, producing initial codes, searching for main themes and subthemes, reviewing and refining the main themes and subthemes, and defining and

Awareness of Sedentary Behavior

- On average, how many hours do you spend sitting on a typical work day? (Do not include time spent sleeping.)
- On average, how many hours do you spend sitting on a typical weekend? (Do not include time spent sleeping.)
- Have you heard of the health hazards of extended bouts of sitting time? From which sources?

Perceptions of Sedentary Behavior

Perceived Risks of Sedentary Behavior

- What are your perceptions about sitting for long periods of time? Do you perceive any health risks associated with sitting for long periods of time?

Benefits of Reducing Sedentary Behavior

- What would be the most important benefits for you if you were to break up extended bouts of sitting time?

Reasons for Engaging in Sedentary Behavior

- What factors would make breaking up extended bouts of sitting time difficult for you?

Interests and Preferences for a Sedentary Behavior Intervention

Interest in a Sedentary Behavior Intervention

- What is your level of interest and general attitude toward an intervention that uses an iPad to help you break up extended bouts of sitting time (e.g., standing up every 30 minutes for 2 minutes)?

Mode of Delivery

- If you had a choice in the method of delivery, would you prefer a mobile application for breaking up extended bouts of sitting time? If not, what other method(s) would you prefer?
- What kind of activities do you prefer for breaking up extended bouts of sitting time?

Desirable Features of a Sedentary Intervention

- What kind of features or characteristics would you like to see in a mobile application for breaking up extended bouts of sitting time?

Social Support

- Which people or groups who are important to you would support you in breaking up extended bouts of sitting time?
- Which people or groups who are important to you are currently breaking up extended bouts of sitting time themselves?
- Would you like to interact with other survivors of prostate cancer who are in the same intervention? If so, what strategies can you think of to connect you with other participants in the intervention (e.g., discussion board, chat function)?

Rewards System

- What kind of reward system or incentives would you like to receive if you achieve your goals (e.g., air miles, coupons, vouchers)?

Figure 1. Structured Focus Group Questions

naming the themes. The process followed a deductive approach in which themes were informed by the interview guide. Subthemes then were identified through an inductive, data-driven analysis of the transcribed text. For example, in exploring preferences for a SED intervention, results were thematically organized around modes of delivery, preferred features of the intervention, and the importance of social support. In checking the credibility of the researchers' key themes (Elliott, Fischer, & Rennie, 1999), the last author reviewed the interpretations of the coder (first author) for discrepancies or overstatements. The researchers agreed on the

key themes and their interpretation of the meaning from the ideas conveyed in the focus groups.

Findings

The demographic and medical profile of men with prostate cancer on ADT is reported in Table 1. A number of themes and subthemes emerged from the focus groups.

Awareness of Sedentary Behavior

Many men had difficulty recalling how much time they spent sitting, but, on average, men self-reported spending about eight of their waking hours engaged in sitting time.

Most of the men indicated that they had some awareness of SED. One participant mentioned his general sense of awareness of SED.

Well, you know that there has always been that negative connotation of the couch potato, and I knew that there were health hazards coming from not moving about. Because moving is good, even if you just get up occasionally and move about.

A few men indicated that they did not have any awareness of the health risk associated with SED. One participant, who was not aware of the associated risks, said, "I never thought that, when I talked about it, that sitting is bad for your prostate. I thought if you're young, you're active, [it doesn't] really affect the prostate when you are sitting too much."

Men did not have a clear understanding of SED, and the majority felt that SED was synonymous with physical inactivity and approached their discussions of SED with the health risks associated with not exercising. This was illustrated by one participant's account.

[The doctors discussed] more about the exercise, how much you should do. . . . They didn't seem to care how much sitting you were doing, as long as you got that certain amount of physical exercise. It's the same experience . . . when they talk about sitting; they talk to you about doing a certain amount of exercise.

The confusion between SED and PA was illustrated further by one participant for whom questions targeting SED immediately prompted responses related to PA. "You see it on TV, on the radio. You see it in the newspaper. You have to be almost like . . . brain dead not to know that exercise is important."

The majority of the men felt that if they were engaging in enough exercise, sitting for prolonged periods would not be harmful to their health. As one participant described, "Well, anything I've heard about . . . sitting

too long always seemed to be related to the fact that if you're sitting, you're not exercising. It's not the sitting, it's the not exercising that is the problem."

Perceptions of Sedentary Behavior

Perceived risks: Most men expressed that specific health risks were associated with prolonged sitting time, which included compromised heart health, higher levels of leg and back pain, and weight gain. Many men expressed that the perceived health risks of SED varied individually, but the presence of pain was the most important aspect. This was illustrated by one participant.

I've got this sciatic problem [and] arthritis. I've noticed that the longer I sit, the worse it gets. I get out, and I start moving around, and I go around, and the pain in my leg or my lower back completely disappears. So . . . the incentive is get up and start moving around.

Perceived benefits of reducing sedentary behavior: All men were able to describe potentially beneficial aspects of reducing time spent sitting, but many of their perceived benefits of reducing sitting time were similar to those of being physically active (e.g., having more stamina, sleeping better, reducing joint pain). However, the men were able to convey their feelings regarding the importance of interrupting prolonged bouts of sitting time. For example, one participant listed numerous benefits of reducing sitting time.

It makes me more alert, and if I sit for a long period . . . if I watch a program, and it gets not interesting, I tend to fall asleep, but as soon as I feel that, I get up and walk around or do something else. I read the paper. I read one page, and I have to put it down. I can't sit there and read the whole paper all the way through because I find that I get pain, then it takes me a while to get straightened up again.

Reasons for engaging in sedentary behavior: Most men reported their reasons for sitting, which included habit, competing interests, and bad weather. For example, one participant mentioned how prolonged sitting was habit forming.

When you start to sit for long periods of time every day, it gets longer and longer. So if you don't get into that habit of sitting for long periods of time, you don't get to experience sitting for long periods of time.

Another participant's account highlights how prolonged sitting time is habitual, causing loss of time.

So, if I'm sitting on the computer for an hour or two, and that's probably worse than anything because you think you're on for 10 minutes, and it's an hour later, and you can't believe that it was that long.

Another participant cited competing interests as the primary reason he engaged in sitting.

You're competing with a movie or a good book. I'm not going to get up unless I have to. I guess it's a habit formed around the things that you're interested in . . . that you want to do. That's what

Table 1. Sample Characteristics (N = 27)

Characteristic	n
Age (years)	
Younger than 70	9
70 or older	17
Declined to answer	1
Marital status	
Married or common-law	19
Not married	7
Declined to answer	1
Education	
Some high school	3
Completed high school	3
Some university or college	5
Completed university or college	7
Some or completed graduate school	9
Employment status	
Employed full- or part-time	5
Retired	21
Other	1
Ethnicity	
Caucasian	24
Other	3
Body mass index	
Healthy weight	6
Overweight	13
Obese	4
Missing data	4
Months since diagnosis	
Less than 24	3
24–59	6
60 or more	18
Disease stage	
Localized	16
Metastatic	10
Unsure	1
Androgen-deprivation therapy administration	
Continuous	16
Intermittent	8
Unsure	3
Current or prior treatment^a	
Surgery	12
Radiation	23
Chemotherapy	9
Current treatment status	
Completed treatment	23
Receiving treatment	4
Recurrence	
Yes	16
No	11
Current disease status	
Disease-free	4
Existing disease	23

^a Could have had more than one type of treatment

determines the sitting part. Well, I want to read. I want to watch a movie. I want to work at something at my desk. But is there something that draws me away, except, you know, lunch or a dinner, but then I go and sit somewhere else.

Seasonal changes in weather also were a major factor for engaging in sitting for him.

I think it's also seasonal because, basically in the winter time, there's a tendency [for] the human to kind of hibernate, sit down more inside—you can't go out and do a lot more. As the weather gets right, everybody wants to get outside . . . and enjoy the weather.

As seen in these accounts, the discussion became focused on being physically active rather than reducing sitting time, which should be modifiable irrespective of the season.

Interests and Preferences Regarding a Sedentary Behavior Intervention

The men were asked about their preferences for a SED intervention in terms of mode of delivery, features, social support, and rewards. Men initially were resistant to using technology to reduce SED because they were unaware of the specifics of the intervention. However, after further explanation by the facilitator that the intervention would be tailored to the needs of the individuals and that it would be based on the preferences of this population, the men were interested in at least trying the intervention to reduce sitting time.

Mode of delivery: The preferred mode of delivery for the SED intervention was a portable device, such as a tablet or cell phone, by most men. One participant expressed the convenience of having something that can be carried easily.

It would be easier for me because I have this thing [cell phone] attached to me all the time; it would be easier to be on a smart phone than on an iPad. Because the iPad's sitting over there somewhere, and if it buzzes or rings, I may not hear it. But if it's on a smartphone . . . bam, it's got my attention.

For another participant, convenience was a major factor for the delivery of a SED intervention.

Portable would be the main thing, but I don't consider that [iPad®] portable. I mean, portable will go with you, but it's . . . you've got your car keys, you've got this [iPad], and you've got a bag of groceries. It's in the way; I want something I can slip in my pocket. If I was interested at all, it would have to be something that's not inconvenient.

In terms of the design of the SED intervention, one participant expressed the importance of simplicity.

Simplicity is very important. . . . I mean, to build this, tune that one, push that button, and after then, when it's green, push that button . . . this is "OK forget about [it]." It should be plug and play, we say, but just do its job.

Most men also expressed that having a customized and tailored platform based on their preferences and PA levels would be useful, particularly for one participant, who said, "I don't know if it's possible, but I guess there should be available options that he can choose. The big deal is to download something with different attitudes of the people, different kinds of options available."

Desirable features of a sedentary behavior intervention: The key features of a proposed SED intervention included a goal-setting function, an alerting function (i.e., alarm, vibration), self-monitoring (i.e., distance, steps), ease of use, and having social support. One participant expressed his preference for a reminder function to break up sitting time.

I'm imagining that I'm looking at your iPhone®, or whatever that device is, and I'm thinking that if there's some program running in the background there. So it just measures a very modest amount of movement for a period of 45 minutes or something like that. But it just kind of goes, "ding, ding, ding," or something like that. That would probably be very helpful. That would be pretty simple, too.

Another participant further specified a type of alerting system that would include a vibration to break up SED. "A vibrating thing on your belt or something . . . like the old phones . . . well, I guess some phones still vibrate, too."

Being able to self-monitor daily activities and have a routine or plan were other preferences mentioned. One participant's account illustrated the importance of being able to keep track of daily activities.

I work for the Ministry of Health. There was a walking program. You come back at lunch time, put in your daily steps, and it would show you how many steps you've taken over the past month. That was an incentive, to be able to see it. . . . They make you keep a record—the time you went, the time you came back, and how far you went. And even want to know your heart rate, immediately following the walk. You made yourself go every day because you didn't want to have a blank day.

Social support: The majority of the men expressed having social support from their family members, spouse, and friends, encouraging them to break up sitting time. One participant expressed that his family members, particularly his wife, were a factor in reminding him to break up prolonged bouts of sitting time.

"Yeah, my children and wife, they encourage me, too. Even my wife sometimes, 'Why are you sitting? Go and do these things.' . . . This is much more important because after that, you get the encouragement . . . you'll do that."

When asked about their interest level in being able to interact with other men, most expressed their desire to have an interactive discussion board. However, the majority of the men did not express the idea of using the discussion board to motivate one another to achieve their lifestyle goals, but rather to share their prostate cancer experiences. One participant expressed that a discussion board would be very supportive.

Yeah, that would be fabulous. I've never been part of a group, a support group. And, so, this today is the first time that I'd ever sat down and talked to somebody else about what they've gone through. And I'm finding it very interesting, very supportive. You're not the only one out there, and I know that, but I find it hard to talk to people if they haven't been through it.

Rewards

In terms of a reward system for achieving daily goals, the majority of the men did not require tangible rewards to motivate them to reduce SED. Rather, experiencing health benefits, learning new things, and helping others through research were incentives to reduce SED, as illustrated by one participant's account. "I would rather participate just by learning new things than the monetary things."

Overall, many men were interested in a mobile application to reduce SED and expressed that the design should be easy to use, have an alerting function to interrupt sitting, have the ability to track and monitor PA levels, be tailored to the individual, and involve social support.

Discussion

To the best of the researchers' knowledge, the current study is the first to describe perceptions about SED in men with prostate cancer and in the cancer population in general. The men reported spending the majority of their day in sedentary pursuits, and some were aware of the health risks associated with SED, as well as the health benefits of reducing SED. The main reasons that the men engaged in SED were habit and competing interests. Some preferred features of a SED intervention included ease of use, customizable, self-monitoring, alerting function, portable, and a social support feature.

The majority of men were aware of the health risks of SED, but they often reported the health risks associated with inactivity rather than SED alone. However, they

still were able to identify pain as a negative outcome of sitting too long. Chastin et al. (2014) also found that increased duration of sitting was associated with increased pain, stiffness, and depressive mood among older adults, who were more inclined to break up their sitting time to alleviate these symptoms. Aside from these outcomes, the men perceived many negative outcomes related to physical inactivity and perceived SED and physical inactivity as the same concept. This is not surprising because evidence regarding SED for cancer risk and progression has only started accumulating in recent years (Lynch et al., 2013). Only a few guidelines have been published by the American Cancer Society (Kushi et al., 2012) and U.K. Department of Health (2011) addressing the need to reduce SED for cancer prevention, but they provide no information regarding quantitative estimates and strategies to reduce SED. Additional research is warranted to build the evidence for the deleterious health effects of SED for cancer risk and survival to inform SED guidelines for the cancer population.

Identifying reasons why men with prostate cancer engage in SED also is useful for intervention development, particularly for providing insight into contexts that lead to extended bouts of sitting. Some reasons include habit, competing interests (e.g., reading), and bad weather. This is somewhat consistent with a study of older adult women (Chastin et al., 2014) in which SED time was reported to often be centered on activities that have a social nature or provide mental stimulation (e.g., reading). These activities are perceived to be positive, pleasurable, and beneficial to patients' well-being. Therefore, breaking up sitting time during these enjoyable activities needs to involve other activities that are at least as enjoyable, if not more, than the existing task. In addition, poor weather was another reason to engage in SED in the current study, which is consistent with the findings among older adult women in which it was described as a reason to sit more (Chastin et al., 2014). Taken together, the reasons for engaging in SED are similar to the barriers reported for PA. Instead of frequently replacing SED pursuits with light-intensity PA (e.g., walking), having men engage in small ambulatory movements (e.g., standing) while still completing their existing activity may be more realistic. For example, a helpful strategy may be for men who enjoy reading to stand up every six pages to reduce their SED, while still being able to read simultaneously.

The men also were asked about their interests and preferences for a SED intervention. The majority of the men expressed their interest in at least trying this type of intervention. They were accepting of a SED intervention delivered through a mobile-based platform on a portable device (e.g., cell phone), which is aligned with the researchers' mode of delivery in phase II of

Knowledge Translation

Men on androgen-deprivation therapy reported spending the majority of their day in sedentary pursuits, and some were aware of the health risks associated with sedentary behavior (SED) as well as the health benefits of reducing SED.

Some preferred features for a SED intervention include delivery via web-based and mobile technologies and a range of self-regulation strategies aimed at reminding men of their time spent sitting, indicating a time to break the SED, and offering goal-setting and self-monitoring tools.

Helping men with prostate cancer reduce the time they spend sedentary is an important public health priority given the known and emerging evidence that SED leads to specific negative health outcomes.

the intervention development. In a formative study used to design a mobile-enabled web application to increase PA, more than 80% of older adult survivors indicated that they would participate in a PA promotion program, and many had access to the Internet through their own tablets or mobile devices (Hong et al., 2013). In addition, some of the desirable features of a SED intervention in the current study included a goal-setting function, an alerting function (e.g., alarm, vibration), a self-monitoring function (e.g., distance, steps), and ease of use. These features of a SED intervention are similar to those of other PA interventions, such as an online PA promotion program among older adult survivors of cancer (Hong et al., 2013). Within the SED context, Bond et al. (2014) tested a smartphone-based intervention to monitor and decrease SED in overweight or obese individuals. The key features in the design of their intervention that led to reductions in SED included real-time monitoring of SED, goal setting, prompting, and feedback. Because SED is highly habitual and occurs frequently and in different contexts throughout the day, the men in the current study consistently discussed the need for an alerting system. Therefore, having a device that is able to monitor daily SED and is able to provide sensory feedback to interrupt prolonged bouts of sitting (e.g., 2-minute walking break after 30 continuous minutes of sitting) is advantageous.

Another useful strategy that men identified to break up sitting time was the presence of social support in an intervention. Some men reported that their family and spouse encouraged them to replace SED with light-intensity activities such as going for a walk or doing household chores, which is consistent with strategies to reduce sitting time among older adult women (Chastin et al., 2014). Community and social opportunities that were more active and tailored were thought to decrease sitting time. For example, many

men expressed the desire to have a discussion board to interact with others, which is consistent with older adult survivors of cancer in the PA domain desiring a “community” in web-based applications to offer social support through virtual networking (Hong et al., 2013). In terms of rewards that would motivate men to reduce sitting time, the majority of men did not require incentives to motivate them to reduce SED. Many felt that the health benefits of reducing SED and helping others were motivation, which is consistent with a lifestyle intervention among survivors of prostate cancer in which many took part in a study because of their own health benefits and contributing to something that was beneficial to others (Bourke et al., 2012).

The current study should be interpreted within the context of its limitations. The researchers’ sample included highly educated, predominately Caucasian men on ADT, with the majority of men having localized prostate cancer that can limit the transferability of the findings. The purpose of the current study was to inform the development of RiseTx; therefore, men were prompted with a specific SED intervention involving a mobile application. This may have limited additional subthemes that could have emerged for understanding SED and related intervention development. Finally, no indication was seen that these factors reported in men with prostate cancer would apply to the female cancer population.

Implications for Nursing

Based on the current findings, men on ADT are quite sedentary, understand some outcomes associated with SED, and perceive SED and physical inactivity as synonymous behaviors. Based on the findings, interventions should be web-based, be delivered using mobile technologies, and include a range of self-regulation strategies aimed at reminding men of their time spent sitting, indicating a time to break from prolonged sitting, and offering goal-setting and self-monitoring tools. RiseTx will provide a platform to evaluate the acceptability and feasibility of delivering a SED intervention among men with prostate cancer. This will generate preliminary evidence in the design of future SED interventions in various survivor groups. Helping men with prostate cancer to reduce the time they spend sedentary is an important public health priority given the known and emerging evidence that SED leads to specific negative health outcomes. In this way, men on ADT can live healthier, less sedentary, and more active lives. Implementing this SED intervention will be the first step in providing valuable information that high levels of PA can coexist with high levels of SED and improving the distinction between these two behaviors for men on ADT. Oncology nurses are involved in all

aspects of patient care across the cancer care trajectory. Nurses are in a unique position to help men with prostate cancer understand the negative health outcomes associated with SED, as well as reduce the time they spend in SED. Oncology nurses are well-positioned to advocate for not only including PA promotion, but also including a reduction in SED, as part of the cancer survivorship care plan for men on ADT.

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