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The assessment, management, and reporting of falls, and the impact of falls on cancer treatment in community-dwelling older patients receiving cancer treatment: Results from a mixed-methods study

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ABSTRACT

Background: Falls are major health issues among older adults and even more so in those with cancer due to cancer and its treatment. Delays in cancer treatment caused by fall injuries may have significant implications on disease trajectory and patient outcomes. However, it is not known how falls impact cancer treatment in this population.
Methods: We conducted a convergent-parallel mixed-methods study at the Princess Margaret Cancer Centre in Toronto, Canada, to examine how falls impact cancer treatment in community-dwelling cancer patients aged ≥ 65, patients' fall reporting, and how falls were assessed and managed in oncology clinics. Data were collected by self-reported survey, chart review, and open-ended interviews.
Results: One hundred older adults and fourteen oncologists participated. Falls were not commonly reported by patients to their oncologists (72 of 168 falls [43%] reported to researchers by patients were also reported to oncologists). One of fourteen oncologists routinely assessed falls. In 7% of all 72 reported falls, cancer treatment was impacted (e.g. treatment delay/cessation, dose reduction). Fifty-seven patients perceived their fall as minor incident not worth mentioning (amounted to a total of 72 falls not reported). When a participant reported their fall to the oncologist, actions were taken to assess and manage the fall. Oncologists indicated that the majority of patients were not forthcoming in reporting falls.
Conclusion: One in twenty who fall appear to lead to change in cancer management. However, falls were not commonly reported by patients nor prioritized by oncologists. Incorporating routine fall assessment in oncology clinic appointments may help identify those at risk for falls so that timely interventions can be triggered.

1. Introduction

Falls are common among older adults and the incidence rises with increasing age [1]. Each year, one-third of older adults living in the community experience a fall [2]. Older adults with cancer are at higher risk of fall-related injuries compared to those without cancer [3] as cancer itself and cancer treatments could bring unique risks of a fall and fall injuries in this population [4–7]. We hypothesized that a fall may lead to an injury and subsequent hospitalization, and, in turn, could lead to delay in cancer treatment. Delay in treatment, in turn, can have significant implications for cancer progression and survival of older cancer patients. Research shows that delay in cancer treatment is linked to a significantly higher risk of cancer-related mortality among late-stage breast cancer patients [8]; and poor prognosis among patients with non-small cell lung cancer [9].

A recent systematic review [10] of 27 studies found that no studies examined the impact of a fall on cancer treatment delivery in the older adult population. Therefore, the aim of this study was to explore how falls were assessed, managed, and reported during clinic appointments to provide context. The research questions were:

1. How do falls impact cancer treatment in community-dwelling older cancer patients?
2. How do oncologists assess and manage falls in older patients?
3. Do older patients report their falls to their oncologists?

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4. How forthcoming are older patients in reporting falls from oncologists' perspectives?

2. Methods

2.1. Study Design

This was a cross-sectional study with a convergent parallel mixed methods design [11]. Quantitative and qualitative data were collected concurrently and analyzed independently before they were merged for interpretation and discussion [11] A mixed methods design was chosen to help gain a more in-depth understanding of the research questions compared to using either quantitative or qualitative approach alone [11].

2.2. Study Population and Sample

As there were no prior data to inform sample size calculation, a sample size of 100 was chosen in this pilot study based (primarily) on feasibility considerations.

Patient-participant inclusion criteria:

- community-dwelling adults aged 65 and above;
- referred to the medical or radiation oncology clinics of Princess Margaret Cancer Centre, University Health Network, Toronto, Ontario, Canada;
- diagnosis of any solid tumor (except primary brain tumor and brain metastases) or hematological malignancies;
- had a fall within the past 12 months (during cancer treatment or when treatment had already been planned but not yet started);
- physician-estimated life expectancy >6 months; and
- able to communicate in English.

Patient-participant exclusion criteria:

- Significant cognitive impairment (as determined by patient's treating oncologist).

Oncologist inclusion criteria:

- treating oncologist of the patient-participant

Patient recruitment occurred between October 27, 2016 and November 29, 2017. Clinic staff of the medical and radiation oncology clinics, and an older adult with cancer clinic (OACC) were approached five days a week (Monday to Friday) to inquire if there were older patients deemed eligible. Those who fit the inclusion criteria were asked by a member of the patient's circle of care team for permission to approach the patient to explain the study. Patients who agreed were approached by the first author (a registered nurse) while waiting for their appointment.

2.3. Data Collection

Data were collected using a 103-item self-reported survey (completed in person) that included open-ended questions (patients), chart review, and face-to-face interviews with open-ended questions (oncologists). The survey collected social demographic information, history and frequency of falls, circumstances of falls, and communication with oncologists (see Online Supplementary 1). The chart review collected information on type of cancer and treatment. The open-ended interviews (patients) explored patients' perceptions about falls. Data collected from patients and oncologists were linked during the analysis to answering the research questions. As there was no existing validated tool to assess impact of falls and patient fall reporting, the patient survey, as well as the patient and oncologist interview guides, were developed by the authors, who have expertise in geriatric oncology and falls. See Online Supplementary 2 for older patient interview guide and Online Supplementary 3 for oncologist interview guide.

2.4. REB Approval and Informed Consent

Ethics approvals were obtained from the Research Ethics Boards at the University Health Network (UHN) and the University of Toronto prior to the start of the study. Patients were invited to participate by the PI (SS). Participants provided written informed consent prior to data collection. Participants were also asked in the informed consent to give permission to contact their oncologists. All participants agreed to have their oncologists contacted to discuss their treatments. Oncologists were contacted by email by the PI to participate in an in-person interview. The oncologist interviews occurred after obtaining informed consents and after all data collection from patient-participants had been completed to minimize oncologists' burdens.

2.5. Data Collection Procedures

The time to complete data collection for participants (in-person survey and interview) ranged between 20 and 30 min. For the surveys, older adults had the option to self-complete or to have the interviewer administer the survey. The open-ended interviews were conducted by the PI, and were audio recorded and transcribed verbatim.

2.5.1. Patient-Participant Characteristics

Age, sex, years of education, and living arrangement were collected from the chart. Use of walking aids (yes/no) and number and types of medication use were also asked in the survey.

Comorbidities and cancer related information were collected from the participants' electronic charts. Treatment received, including intent, type, class, and drug name, was obtained from the patients' charts. Depression was recorded if noted in the chart. Functional status was assessed using the 7-item, validated Older Americans' Resources and Services [OARS] instrumental activities of daily living scale [IADL]) scale [12] that was included in the survey. A total score of <2 on any item was used to indicate IADL impairment [12].

2.5.2. Fall History & Impact of Falls

Fall history was collected using patient self-report on a survey developed based on the assessment recommended in the American Geriatrics Society/British Geriatrics Society clinical guideline for fall prevention [13]. Information on type of injuries, whether and how the injuries were reported was collected from patient. Furthermore, it was asked whether treatment was sought/received for the injury; and, if yes, what type. Lastly, the participant was asked how their cancer treatment was affected by the fall. Impact on cancer treatment was defined as any interruption, stoppage, cancellation, or change in type and/or doses of chemotherapy treatment.

2.5.3. Patient Fall Reporting

The patient was asked to whom he/she reported their fall in the survey as well in the open-ended interview to obtain more details on the reporting and subsequent action taken by the oncologist.

2.5.4. Oncologist Interview

The oncologists were asked if the older adult had reported their fall to them and, if yes, what action they had taken in response to the fall. For participants who had their treatment impacted, the interview also included impact of the fall(s) on the cancer treatments and their observations of how the fall(s) had altered the disease trajectory and prognosis. Questions regarding how the oncologists normally assessed and

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responded to fall were also asked. Description of the oncologist's action (if any) in response to a reported fall were also collected via chart review. Oncologist interviews were conducted in the oncologist's office at a time chosen by the oncologist and ranged from 5 to 20 min.

2.6. Data Analysis

2.6.1. Quantitative Data Analysis

Descriptive statistics (means, frequencies, and proportions) were used to examine sample characteristics, impact of falls, fall management and fall reporting. Analyses were conducted utilizing SPSS version 20.

2.6.2. Qualitative Data Analysis

Patient-participant and oncologist interviews were analyzed using thematic analysis following the 6-phase step-by-step guide as outlined by Braun & Clarke [14]. To ensure quality and rigor, the Good Reporting of a Mixed Methods Study (GRAMMS) framework [15] guided this study at every stage of its development and execution.

3. Results

A total of 100 (response rate 92%) older adults participated (62% men). A total of 14 oncologists participated in the study (response rate 58%). See Table 1 for older adult participants' characteristics. Age ranged from 62 to 95 (median 76) years. Of the 110 eligible patients, 92% (100) participated. Reasons for refusal to participate included family refusal ($n = 4$), 'not interested' ($n = 4$), and 'in another study' ($n = 1$). One eligible patient was deemed by his treating oncologist to not be well enough to participate and was not invited. One participant under 65 was recruited in error due to miscommunication with clinic staff. Twenty-eight oncologists were invited to participate, and 50% ($n = 14$) agreed. Reasons for declining participation were not known as responses were not received following the invitation or when a reminder email was sent.

Of the 100 participants, 44% ($n = 44$) had one fall in the past 12 months while 56% ($n = 56$) had ≥ 2 falls. A total of 168 falls were recounted by these 100 participants. The most common cancer site was prostate (34%) with advanced stage (IV) predominant (66%). The majority of the participants (62%) had been treated prior to the falls with multiple types/combinations of oncologic treatments. Of these 168 falls, 76 (45%) resulted in injuries; with fractures and head injury accounting for 13%. (Table 2 shows the details on types of injuries).

3.1. Research Question 1: How Do Falls Impact Cancer Treatment?

Based on the 76 injurious falls, five cases of treatment interruption were identified (7%) (95% CI 3–14%). This included three cases of interruption of chemotherapy treatment (ranging from three weeks to three months) due to hip/leg fractures; one case of chemotherapy dose reduction due to chemotherapy side effects, and one case of androgen deprivation therapy cessation due to hip fracture. While chart review and/or oncology interviews revealed five participants had experienced impact on treatment, only two participants recalled/reported impact on treatment in the survey. Additionally, one participant reported that chemotherapy was interrupted for one week while chart review and the oncologist interview confirmed the treatment interruption was three weeks.

The five cases of treatment interruptions involved four oncologists of which two did not consent to participate. The two oncologists reported their respective patients' falls led to interruptions in their cancer treatments. However, the oncologists reported that the interruption in treatment had no impact on the patients' disease trajectory and prognosis (they had metastatic diagnoses).

Table 1
Participant characteristics.

Participant characteristics	$n = 100$ (%)
Median age, years	76 (Range 62–95, SD^ 7.5)
Women	38 (38%)
Living alone	18 (18%)
Years of education	
0–4	6 (6%)
5–8	8 (8%)
9–12	29 (29%)
13 or more	57 (57%)
Fall frequency	
1 fall	44 (44%)
≥ 2 falls	66 (66%)
Injurious fall rate*	45 (45%)
Cancer diagnosis	
Prostate	34 (34%)
Gynecological	14 (14%)
Breast	12 (12%)
Hematological	10 (10%)
Others	10 (10%)
Lung	7 (7%)
Head & neck	5 (5%)
Pancreatic	5 (5%)
Skin Melanoma	2 (2%)
Colorectal	1 (1%)
Cancer stage	
I-III	34 (34%)
IV	66 (66%)
Treatment at time of fall**	
Chemotherapy	38(38%)
Hormone	31(31%)
Targeted therapy	9(9%)
Radiation	8(8%)
Others	3(3%)
Chemoradiation	3(3%)
Radiation + hormone	2(2%)
Chemotherapy + targeted therapy	2(2%)
Pre-treatment	2(2%)
Chemotherapy + hormone	1(1%)
Hormone + targeted therapy	1(1%)
Functional status	
Use of walking aid***	55 (55%)
IADL[a] impairment	66 (66%)
Comorbidities & medications	
Median number of comorbidities	3 (SD 2.4)
Depression	12 (12%)
≥ 5 medications	65 (65%)

* Based on 76 injurious falls out of 168 total falls.
** Based on 100 participants.
*** At time of survey.
^ SD – Standard deviation.
[a] IADL – Instrumental Activities of Daily living.

Table 2
Types of injuries sustained from falls.

Injury type	Out of 76 injurious falls
No injury	N/A
Bruise	22 (28.9%)
fracture	19 (25.0%)
Laceration	12 (15.8%)
Open wound bleeding	8 (10.5%)
Abrasion	6 (7.9%)
Sprain	3 (3.9%)
Retinal tear	1 (1.3%)
Cranial bleed	1 (1.3%)
Broken tooth	1 (1.3%)
Tumor bleed	1 (1.3%)

Note: some participants sustained more than one type of injury.

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Table 3
Themes and quotes from oncologist interviews.

Theme	Quotes
Fall assessment not a priority/not feasible	"It isn't something like every single time that I ask." (Oncologist X)
Only certain patients are asked about falls.	"It's not really……. I think this is where geriatricians may take it slightly differently— as somebody who treat patients at any age— is that we focus on the medical diagnoses; and of course falls is not really a medical diagnosis – unless you actually go out and said–have you ever fallen?-- I don't think it will come up in our standard screening questions." (Oncologist Y)
Not all patients are asked about falls - only those who are very vulnerable/have history of falls/mobility issues/bony metastases/something comes up in conversations that suggests fall risk factors	"(Fall assessment) not as a general routine. So if I have concerns in patients with bone metastases, osteoporosis, I may pay attention to that; but often times there are many other things to discuss, so that may be one thing that I don't think about as often as I should. (Oncologist Z). "But you know, is not a standard part of our oncologic assessment, we usually ask patients questions about how they're feeling, if they have any symptoms, and we have them fill out these symptoms surveys. Sometimes it's like do you have any worsening pain, shortness of breath, or if they are feeling anxious; but, falls are not really a part of our routine assessment. But obviously for some of our patients it's important – it should be (part of the routine assessment)." (Oncologist H) "There isn't enough time to ask all of the different questions." (Oncologist R) "The issue is having the time to ask about so many different possible symptoms." (Oncologist S) I think it's a great idea to ask the nurses if THEY ask these kinds of questions. Because that should be part of their assessment as well. I think that it is one of the reasons that they're (nurses are) physically IN the clinic. I'm not satisfied with how much they are actually screening patients….. because, the clinics are getting busier and busier, and the province is not giving adequate nursing staff. So they're not really monitoring the patients as well as they should. (Oncologist T)
Lack of resources for referral/follow-up	"….and to highlight sort of like an institution viewpoint, we have no physiotherapy or occupational therapy in outpatient, there's a few clinics that would probably have someone from inpatient or may be doing some sort of research program etc., I think the Older Adults clinic I think that may have some PT OT potential for assessment; other clinics don't. There's no way….. there's no outpatient as a resource whatsoever. The only way as a resource we use only when we mark it is usually 2 to 3 week turnaround time or sometimes 4 to 6 week, so if I ask for home safety assessment it will trigger OT, PT and triggers for looking at the home environment to decrease risk of falls and to get assistive devices etc., I'm not happy with the turnaround time." (Oncologist Z)
Oncologists voiced that often they were not sure where to refer fallers, as well as the problem with long wait-times for Falls Clinic, and lack of resources for referring outpatients (e.g. occupational therapists)	"And for recommendations other than the geriatric team I don't know what else, PT or OT through home care? I don't know if there are other options. There is no access to like, like a walk in clinic where they can do assessment for safety. (Oncologist C) "I don't know where I would refer the patient if they were having some frailty falls, if there is geriatric assessment that could be done I guess that would be the only…..coz most of them would fall into the geriatric category – not all of them – most of them were. Um, there's one of my patients who had falls and she was admitted to the Hospital X because of falls, she was discharged because they were short of beds, then she fell and then broke something and then went into the Hospital Y, and I think it may have finally been addressed, but it was known that she had been having recurrent falls, unrelated to her cancer or its treatment. But it was unfortunate because that was an orthopedic problem that was preventable……(I'm) quite annoyed." (Oncologist X)
Not forthcoming and tend to downplay falls	"I think if you don't ask them specifically, they won't tell you." (Oncologist Y)
Older patients are not forthcoming in reporting falls during clinic appointments, and do not usually voluntarily mention about falls unless they are asked directly or if their injuries required care. Normally caregivers/family members report falls more than patients do	"Not unless they are injured to the point where they had some impact upon their treatment. I mean, frequently, I mean on more than one occasion…uh….I noticed a bruise on the patient's forehead, and I say 'what's that?', And then they will tell me. But they would never have mentioned it otherwise. Falls don't seem to appear on anyone's radar. Either patients, family members, or staff, to be honest. I rather suspect that patients are very un-forthcoming both to their family and to their caregivers; unless the falls are actually witnessed, it goes undocumented." (Oncologist A) "Not unless you specifically ask, or they sustain some kind of injury. And sometimes you even have to ask very pointed questions. I recall some patients come in with bruises or lacerations and things like that, and I'd ask: 'have you fallen?' But they wouldn't report it unless we ask." (Oncologist D) "They usually downplay it." (Oncologist X) "There's no doubt the patients try to downplay it. 'I tripped over this', or 'this happened' or 'that happened', as a way of explaining it…. so…. and I'll be honest with you some cases I'm sure that's actually it's a true reflection of what actually happened, um, but there is a little bit of inconsistency sometimes, yes." (Oncologist B) "Most of them are dismissive of it, I don't know if it's because they have recurrent episodes, or they're embarrassed, or the word about being frail and not being able to function independently…. especially when their caregivers in front of them….. So, I think that's generally the reaction, yeah. (Oncologist Y)

3.2. Research Question 2: How Do Oncologists Assess Falls?

Of the 14 oncologists interviewed, 93% ($n = 13$) indicated that they do not routinely assess falls. This was supported by chart review, in which only 11 participants had fall assessment recorded in their charts. Of the 40 participants who reported that they had told their oncologists about their falls, only 24 of these participants' charts had documentation of such falls. Of note, one oncologist indicated use of an early-referral approach [16], with referral of patients with metastatic disease to palliative care early in that phase of care. The oncologist assumed that issues such as falls would be addressed by the palliative care physicians. Based on our thematic analysis, key themes from oncologist interviews related to this research question were "fall assessment not a priority/not feasible" ($n = 13$) and "lack of resources for referral/follow up" ($n = 3$) (see Table 3 for quotes). The majority of oncologists (93%) stated that falls were not routinely assessed in their clinics. However, they did ask about falls in patients who were visibly frail, those with gait/balance difficulties, or those with bone metastases. Out of the total of 72 falls reported (by 40 participants) to oncologists, the most common actions when a fall was reported included determining cause of falls (64%), asking circumstances surrounding falls (36%), eliciting consequences of a fall (36%), referrals to manage after a fall (29%), and physical

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examination (21%). Online Supplementary Table 4 shows details on actions taken by the oncologist in response to a fall. This is in agreement with data from patient surveys ($n = 72$ falls), in which oncologists responses to the falls included asking circumstances of falls (51%), performing physical examination (14%), and making referrals (13%). From chart reviews, the most common responses to falls documented in the charts were referrals (e.g., falls clinic, geriatrician) (26%), ordering tests (7%), and asking about circumstances (7%). Oncologist interviews also revealed uncertainty of where to refer patients as well as frustration with regard to inadequacy of resources for follow-up and referral after a fall.

3.3. Research Question 3: Do Older Patients Report Their Falls to Their Oncologists?

Fifty-seven patients perceived their fall as minor incident not worth mentioning. This amounted to a total of 72 falls not reported. Online Supplementary Table 5 provides an overview of fall-reporting. From the interviews with participants, the main themes with regarding to fall reporting were "Perception of falls" and "Communication". Over half the participants had the perception that falls are something insignificant to mention, something that comes along with aging, and that it is not the job of oncologists to hear about falls. Many of these participants also indicated that their family physicians (FP) did not know

Table 4
Themes, subthemes and quotes from older adult interviews.

Themes and subthemes	Quotes
Perception of fall: 1. **Not a fall** Patients attributed the fall to external causes or frame it as something else	"Now, it wasn't what I'd really call a fall." (Male, 83, pancreatic cancer) Interviewer: within this past 12 months how many times did you fall? Participant: well, I guess only that one…. Family: Two. The one in July, and the one at my house. So two. Participant: well that was a little……that was your nails sticking out (from floor). (Female, 80, gynecological cancer) Participant: I didn't fall…..I didn't go all the way down but I didn't have enough muscle power to get myself back up…… I couldn't get up to a kneeling position…..well actually I was on my bum, I couldn't get all the way up Family: So you did fall…. so you were falling down. Participant: Well…..yeah. (Male, 83, prostate cancer)
Perception of fall: 2. **Accepting the fact that one is aging** The belief that functional decline/falls are inevitable as one ages	"You know I have no control over… There's nothing that I can do because no matter how careful I am for some reason I just go down at times you know. (Female, 83, breast cancer) "I am upset with myself, I should have prevented it, be careful. What can you do? I'm 81. (Male, 81, prostate cancer) "When you get old, you balance less". (Male, 95, head and neck cancer)
Perception of fall: 3. **Exercising extra caution to avoid further falls** Participants exercising extra caution in the post fall-context or taking steps to increase/-maintain strength to avoid further falls	"More careful nowadays." (Male, 90, prostate cancer) "I'm more cautious. I try to be more careful when walking, this and that, yeah. I mean just prudent." (Male, 74, lung cancer) "The only thing is that, I'm really concerned about going to the gym by myself..… because uh, I really don't know how much I should be pushing myself. Because I'm accustomed to pushing myself, I'm concerned about going to the gym by myself, that's why one of my clients – he used to be my client – he's now my workout partner….we go together." (Male, 68, hematological cancer)
Perception of fall: 4. **Fall was more funny than scary** Participants approached the subject with a light-hearted attitude	Interviewer: And you mentioned you weren't feeling dizzy or weak or…. Participant: I was feeling stupid (laughs). (Male, 68, prostate cancer) Interviewer: And were you able to get up yourself? Participant: I dragged myself upstairs, just scooting and pushing, and I took the sewing machine with me too. Interviewer: That must've been so difficult! Participant: it was fun. (Male, 80, hematological cancer) "That's pretty funny. Why are you so concerned about this 'fall'? …….Don't make a big deal about it, that's not something…….why don't you just interview my dog!" (Male, 68, prostate cancer) "……nothing was broken. My pride was hurt that that was it. But that can be fixed with a compliment." (Male, 80, prostate cancer)
Communication: 1. **Minor thing** Fall was not reported to oncologists because participants considered the fall as something insignificant or 'no big deal'	"(Laughs).These falls, you know, once they are over, and if there's no damage done, tend to go out of my mind you know." (Male, 80, prostate cancer) "I was in a car accident in 1958 and the doctor told me I would never walk ever again. I didn't complain back then. If you don't complain about that, it's hard to complain here now about these little things." (Female, 74, breast cancer) "I didn't think it was significant." (Male, 75, prostate cancer)
Communication: 2. **Oncologist did not ask** Participants indicated that oncologist did not ask about falls/do not routinely ask about falls	"You are the first person who asked me (about falls)." (Male. 82, prostate cancer) "I don't think anyone's ever asked me that." (Male, 70, prostate cancer) "They never ask." (Female, 81, skin melanoma)
Communication: 3. **Not oncologist's specialty** Participants did not report falls to their oncologists because they felt it was not the oncologist's job to hear about falls	"He's a cancer doctor, not a fall doctor." (Male, 82, prostate cancer) "It had nothing to do with cancer." (Male, 71, head and neck cancer) "No, because this is not the hospital, this is a *cancer* hospital." (Female, 76, breast cancer)
Communication: 4. **Not seeing family doctor** Participants did not report falls to their family doctors because they rarely go back to see the family doctor ever since they began receiving care at the cancer centre.	"I see enough doctors, you know, I'm 83." (Male, 83, prostate cancer) "I spend my life in the hospital (cancer centre) now, I don't need to see my family doctor." (Male, 70, hematological cancer) "I'm not seeing him right now. I…..the clinic is looking after me. I assume he might've gotten the report about it from the clinic; but I didn't mention to him directly." (Male, 65, hematological cancer) "I didn't go see my family doctor; I got enough doctors down here now." (Female, 69, lung cancer)

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about the fall as they had not gone back to see the FP ever since they had started receiving care at the cancer centre.

3.4. Research Question 4: How Forthcoming Are Older Patients in Reporting Falls from Oncologists' Perspectives

The key theme pertaining to this research question was "not forthcoming and tend to downplay falls" ($n = 13$). Oncologists indicated that many older patients rarely mention their falls unless they are directly asked. Even when the subject does come up (e.g., oncologist asks/family member bring it up), older patients tend to minimize their falls. When falls are reported it was usually by family members rather than older patients themselves. This corroborates with findings from patient surveys, which showed that at least half the falls were not reported to oncologists.

4. Discussion

Findings from this study seem to suggest that falls were not commonly reported by older cancer patients to their oncologists, oncologists rarely asked about falls, and falls did not impact their cancer treatment regimens very often. Many participants do not see their FP regularly nor have they visited their FP since the cancer diagnosis. Many falls reported by older adults to their oncologist were not documented. Previous evidence also shows that falls in older patients with cancer are rarely recorded or responded to [17].

The seemingly small percentage of impact on treatment found in this study should not negate the importance of fall assessment in the outpatient oncology setting. It is important to consider the high prevalence of injuries (45%) and the prevalence of falls in older cancer patients, which can be as high as 74% [10]. This rate is much higher compared that of the general older population, which is at about 30% [18]. A systematic review found fracture rates were 3.2% – 78.3% [10]; and the rate in this study (11%) was within this broad range. Additionally, while recent research shows that fracture risk in older patients with cancer is almost three times higher than that of the general older adult population [19], this study also found a higher rate of fracture (11%) compared to that of the general geriatric population (1–2%) [20,21]. Notably, evidence shows that prior injurious falls are predictive of future injurious falls [22]. That means at least half of our participants will continue to fall and potentially sustain injuries.

Discrepancy was noted in terms of patient self-report of impact on treatment. This may have been due to recall bias or lack of understanding of one's own treatment plan. Our findings align with research on community-dwelling older adults with cancer, which shows that falls in this population may go undetected during clinic appointments unless the persons are directly asked about it [23]. Evidence shows that falls in older adults in general often goes unnoticed by clinicians due to a number of reasons including: 1) avoidance of discussion of falls for fear of loss of independence; 2) little or no injury was incurred from the fall; 3) clinicians fail to ask about falls; and 4) the perception of falls as part of the aging process [24]. All of which are similar to our findings. This not only elucidates an underestimation of personal perceived fall risk [25] but also possibly of disconnect in communication regarding falls in the oncology setting. Oncologists and patients alike did not usually bring up the subject, and both expressed that the other party did not bring up the subject of falls. Moreover, reluctance to report falls may also be in part explained by existing evidence which shows that many older adults tend to reject the notion of "being at risk for falls" because they consider it as a suggestion of dependency and incompetence [26]. The oncology team should take this into consideration when bringing up the subject of falls or when promoting exercises. Additionally, it is important to be cognizant that patients often 'put on a good face' at clinic appointments. Therefore, asking specific questions, particularly regarding a fall, is essential [23]. Missed opportunities to prevent future incidents will exist if falls are not specifically asked [27]. Fall assessment is of particular importance since evidence from this study as well as from existing literature [17] demonstrates that many older patients with cancer rarely go back to their family physicians and increasingly utilize their treating oncologists as their primary care physician [17]. In fact, older patients may even expect their oncologists to effectively take on the role of their primary care physician even though oncologists may not be aware of such expectations [28]. Although oncologists should not be expected to function as geriatricians, the oncology community is facing mounting pressure to incorporate geriatric principles into their daily practices [29]. Given the imposed time constraints within oncology clinics, asking older patients whether a fall has occurred since the last visit (by the oncology clinic nurse/clinical nurse specialist) to triage for those who may require follow-up with the falls clinics or geriatrician could be a simple and important start.

5. Strengths and Limitations

We enrolled patients from one comprehensive cancer centre in an urban area; therefore, generalizability is an issue. Second, referral bias in which healthier older patients are connected with major cancer centres [30] may to some extent explain our findings. Frail, weaker patients who might experience more serious injuries and more pronounced impact on functional status (and vice versa) and impact on cancer treatment might not have been referred. Third, we only explored falls in relation to impact on cancer treatment for the past 12 months; thus it is possible that older adults with falls that impacted their treatment prior to the past year were missed. Additionally, some who had a fall who sustained fractures were receiving hormonal treatment, which often involved oral medications or depot injection every few months; this may in part explain the paucity of treatment interruptions. This mode of treatment at the time of the fall made it less likely to affect their treatment regimen, as opposed to weekly chemotherapy or radiation treatment – which some of these patients had also received at different time points in the past. Therefore, the true impact of a fall on treatment may not have been fully explored. In light of the above, we cannot safely exclude the possibility that the number and magnitude of impact of falls on cancer treatment in this population may have been underestimated in this study. Lastly, since this study involved retrospective recalling of falls, therefore, we cannot exclude the possibility of recall bias, which is common in retrospective study designs [31].

6. Conclusion

At least one in three older adults with cancer will fall in a year, and one in twenty who falls appear to have a change in cancer management. However, falls are not commonly reported by patients nor prioritized by oncologists. Incorporating routine fall assessment in oncology clinic appointments may help identify those at risk for falls so that timely interventions to manage after a fall or prevent a future fall can be triggered.

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Conflict of Interests

None.

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Study Design: SS, SA, SP, MP
Data Acquisition: SS
Quality Control of Data and Algorithms: SS
Statistical Analysis: SS
Data Analysis and Interpretation: SS, SA, SP, MP
Manuscript Preparation: SS, SA, SP, MP
Manuscript Editing: SS, SA, SP, MP
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References

[1] Government of Canada PHA of C. Seniors' Falls in Canada: Second Report – Public Health Agency of Canada [Internet]. 2014 [cited 2015 Aug 29]. Available from: http://www.phac-aspc.gc.ca/seniors-aines/publications/public/injury-blessure/seniors_falls-chutes_aines/index-eng.php
[2] Ageing WHO, Unit LC. WHO global report on falls prevention in older age. World Health Organ; 2008.
[3] Ward PR, Wong MD, Moore R, Naeim A. Fall-related injuries in elderly cancer patients treated with neurotoxic chemotherapy: a retrospective cohort study. J Geriatr Oncol 2014 Jan 1;5(1):57.
[4] Drake MT. Osteoporosis and cancer. Curr Osteoporos Rep 2013;11(3):163–70.
[5] Silbermann R, Roodman GD. Bone effects of cancer therapies: pros and cons. Curr Opin Support Palliat Care 2011 Sep 1;5(3):251.
[6] Balducci L. Pharmacology of antineoplastic medications in older cancer patients: [1]. Oncology 2009 Jan;23(1):78–85.
[7] Klepin HD, Rodin M, Hurria A. Treating older adults with cancer: geriatric perspectives. Am Soc Clin Oncol Educ Book ASCO Am Soc Clin Oncol Meet 2015;35:e544–52.
[8] McLaughlin JM, Anderson RT, Ferketich AK, Seiber EE, Balkrishnan R, Paskett ED. Effect on survival of longer intervals between confirmed diagnosis and treatment initiation among low-income women with breast cancer. J Clin Oncol 2012;30(36):4493–500.
[9] Myrdal G, Lambe M, Hillerdal G, Lamberg K, Agustsson T. St\a ahle E. Effect of delays on prognosis in patients with non-small cell lung cancer. Thorax 2004;59(1):45–9.
[10] Sattar S, Alibhai SM, Spoelstra SL, Fazelzad R, Puts MT. Falls in older adults with cancer: a systematic review of prevalence, injurious falls, and impact on cancer treatment. Support Care Cancer 2016:1–11.
[11] Creswell JW, Clark VLP. Designing and conducting mixed research methods. SAGE: Thousand Oaks, California; 2011.
[12] Fillenbaum GG, Smyer MA. The development, validity, and reliability of the OARS multidimensional functional assessment questionnaire. J Gerontol 1981;36(4):428–34.
[13] American Geriatrics Society BGS. AGS/BGS clinical practice guideline: prevention of falls in older persons. New York, NY: American Geriatrics Society; 2010.
[14] Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol 2006 Jan 1;3(2):77.
[15] O'Cathain A, Murphy E, Nicholl J. The quality of mixed methods studies in health services research. J Health Serv Res Policy 2008 Apr;13(2):92–8.
[16] Zimmermann C, Swami N, Krzyzanowska M, Hannon B, Leighl N, Oza A, et al. Early palliative care for patients with advanced cancer: a cluster-randomised controlled trial. The Lancet 2014;383(9930):1721–30.
[17] Guerard EJ, Deal AM, Williams GR, Jolly TA, Nyrop KA, Muss HB. Falls in older adults with cancer: evaluation by oncology providers. J Oncol Pract 2015;11(6):470–4 JOP–2014.
[18] Ward RE, Leveille SG, Beauchamp MK, Travison T, Alexander N, Jette AM, et al. Functional performance as a predictor of injurious falls in older adults. J Am Geriatr Soc 2015;63(2):315–20.
[19] Edwards BJ, Sun M, Zhang X, Holmes HM, Song J, Khalil P, et al. Fractures frequently occur in older cancer patients: the MD Anderson Cancer Center experience. Support Care Cancer 2017:1–8.
[20] Goldacre MJ, Roberts SE, Yeates D. Mortality after admission to hospital with fractured neck of femur: database study. BMJ 2002;325(7369):868–9.
[21] Milat AJ, Watson WL, Monger C, Barr M, Giffin M, Reid M. Prevalence, circumstances and consequences of falls among community-dwelling older people: results of the 2009 NSW Falls Prevention Baseline Survey. N S W Public Health Bull 2011;22(4):43–8.
[22] Pohl P, Nordin E, Lundquist A, Bergström U. Community-dwelling older people with an injurious fall are likely to sustain new injurious falls within 5 years – a prospective long-term follow-up study. BMC Geriatr 2014;14(1):120.
[23] Mir F, Zafar F, Rodin MB. Falls in older adults with cancer. Curr Geriatr Rep 2014 Jun 19;3(3):175–81.
[24] Enderlin C, Rooker J, Ball S, Hippensteel D, Alderman J, Fisher SJ, et al. Summary of factors contributing to falls in older adults and nursing implications. Geriatr Nurs (Lond) 2015;36(5):397–406.
[25] Nyman SR. Psychosocial issues in engaging older people with physical activity interventions for the prevention of falls. Can J Aging Rev Can Vieil 2011;30(1):45–55.
[26] Gardiner S, Glogowska M, Stoddart C, Pendlebury S, Lasserson D, Jackson D. Older people's experiences of falling and perceived risk of falls in the community: a narrative synthesis of qualitative research. Int J Older People Nurs 2017;12(4):e12151.
[27] Soriano TA, Decherrie LV, Thomas DC. Falls in the community-dwelling older adult: a review for primary-care providers. Clin Interv Aging 2007;2(4):545.
[28] Grunfeld E, Earle CC. The interface between primary and oncology specialty care: treatment through survivorship. J Natl Cancer Inst Monogr 2010;2010(40):25–30.
[29] Klepin HD. Are we falling short? Incorporating falls assessment into cancer care for older adults. J Oncol Pract 2015;11(6):475–7.
[30] Townsley CA, Naidoo K, Pond GR, Melnick W, Straus SE, Siu LL. Are older cancer patients being referred to oncologists? A mail questionnaire of Ontario primary care practitioners to evaluate their referral patterns. J Clin Oncol 2003;21(24):4627–35.
[31] Coughlin SS. Recall bias in epidemiologic studies. J Clin Epidemiol 1990;43(1):87–91.

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