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Research Article

Do Canes or Walkers Make Any Difference? NonUse and Fall Injuries

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Abstract

Purpose of the Study: Examine patterns of cane and walker use as related to falls and fall injuries.
Hypotheses: Among people who fall at home, most do not have an assistive device with them when they fall. Nonusers who fall sustain more severe injuries.
Design and Methods: This was a cross-sectional study using a self-administered written survey completed by 262 people aged 60 and older who were community dwelling, cognitively intact, and current cane/walker users with a history of falls. They were recruited through clinical practice sites, churches, and senior housing in central Michigan. Outcomes of interest included patterns of device use, reasons for nonuse, device use at time of fall, and fall-related injuries.
Results: Seventy-five percent of respondents who fell were not using their device at the time of fall despite stating that canes help prevent falls. Reasons for nonuse included believing it was not needed, forgetfulness, the device made them feel old, and inaccessibility. Perceived risk was not high enough to engage in self-protective behavior. However, nonuse led to a significantly higher proportion of falls resulting in surgery than among device users. Among respondents requiring surgery, 100% were nonusers. Most respondents never received a home safety evaluation (68%) and only 50% received training on proper device use.
Implications: Providers must place increased emphasis on the importance of cane/walker use for injury prevention through patient education to promote personal relevance, proper fitting, and training. New strategies are needed to improve device acceptability and accessibility.

Keywords: Assistive device use, Accessibility, Acceptability, Falls, Fall-related injuries

Trauma related to falls among older adults is a major cause of morbidity and mortality, the most common cause of nonfatal injuries and hospital admissions, and contributes to loss of independence (Centers for Disease Control, 2014; Rubenstein, 2006; Tinetti, 2003) Additionally, falls result in high private and public health care costs (Centers for Disease Control and Prevention, 2014; Stevens, Corso, Finkelstein, & Miller, 2006). The financial toll related to falls is expected to increase as the population ages, with predictions as high as $43.8 billion by 2020 (National Council on Aging, n.d.). The cause of falls is most often multifactorial and therefore, prevention, risk management, and rehabilitation measures must be as well (Kannus, Sievänen, Palvanen, Järvinen, & Parkkari, 2005; Rubenstein, 2006; Tinetti, 2003). Fall prevention programs often focus on strategies such as strength and balance training, medication reduction, cataract surgery, and environmental modifications (Kannus et al., 2005; Lovarini, Clemson, & Dean, 2013). They may also include the use of canes or walkers. Yet,

despite this knowledge and range of resources, fall prevalence remains high.

In July 2013, the National Institute on Aging (NIA) issued a notice stating that fall injuries among older persons are a substantial public health and economic burden (NIA, 2013). According to the NIA, there are multiple known barriers to reducing falls, for example, a lack of coordination among providers to implement multifactorial strategies, gaps in providers' expertise, competing demands on clinicians, and an unwillingness to commit the resources needed to facilitate and sustain changes in practice. Barriers such as these contribute to proven fall reduction strategies not being adopted or sustained in routine clinical practice (Goodwin, Jones-Hughes, Thompson-Coon, Boddy, & Stein, 2011; Lovarini et al., 2013). However, even successful practice change may not be enough to reduce falls. Attention should also focus on actual device use by patients and the consequences of nonuse. Evidence suggests that a high percentage of people end up abandoning and not using their assistive device as prescribed (Gitlin, 1995; Häggblom-Kronlöf & Sonn, 2007; Lovarini et al., 2013). Prescribing canes and walkers is futile if they are not used; more so if they do not actually minimize risk and injury.

Two factors that affect device use that have not been sufficiently addressed are older adults' lack of knowledge about fall prevention strategies including proper use of canes and walkers (Hill et al., 2011) and their rejection of fall prevention measures. Several studies have indicated reasons for nonuse including feeling that they are personally irrelevant or a threat to identity (Dollard, Barton, Newbury, & Turnbull, 2012; Yardley & Smith, 2002), purporting to not need such assistance, associated stigma (Dollard et al., 2012; Goodwin et al., 2011), social context, forgetfulness, ease of use and poor fit, and the device not being accessible at all times (Dollard et al., 2012; Luz, Bush, & Irrer, 2010). People do not consistently use their canes or walkers, especially in their own homes where most falls occur, despite believing that their device can help prevent a fall. Instead, they steady themselves by holding on to walls and furniture, in part due to believing that their device is not needed in the familiar home environment (Luz et al., 2010). For these individuals, perceived risk of falling is not high enough to engage in self-protective behavior.

Related to the belief that a device has insufficient personal value to offset costs of use is the deeper question of whether or not canes actually reduce falls and fall-related injuries. Indeed, there is little empirical evidence to support the value of cane use as a discrete fall-reduction strategy being directly associated with reduced falls. Many of the previous studies on cane and walker use have focused on the biomechanics of balance and mobility (Deathe, Hayes, & Winter, 1993; Youdas, Kotajarvi, Padgett, & Kaufman, 2005) and demonstrate that these devices increase stability by widening the base of support, reducing the weight load on lower extremities, and providing input related to the body in relation to the environment. (Ashton-Miller, Yeh, Richardson, & Galloway, 1996; Joyce & Kirby, 1991; Laufer, 2002; Milczarek, Kirby, Harrison, & MacLeod, 1993) They also increase a sense of security and safety which leads to a reduction in fall-risk (Aminzadeh & Edwards, 2000). From these studies, one could deduce that cane use is directly associated with fewer falls and fall injuries. Prior work lends theoretical support for this hypothesis although evidence is limited. However, there are also several studies which suggest that cane and walker use may actually contribute to falls and related injuries (Bateni, Heung, Zettel, McLlroy, & Maki, 2004; Bateni & Maki, 2005; Stevens, Thomas, Teh, & Greenspan, 2009). Additional research is needed on the value of cane use which requires acquiring a better understanding of actual device use and associated consequences of nonuse. If the evidence base in favor of cane use is strengthened, then minimizing abandonment and increasing device use becomes essential to the success of any plan in which canes are a key element. This study therefore addresses the fundamental question of a direct association between cane use and fall reduction by purposively examining both device use and the consequences of nonuse.

It is innovative in that it builds on previous studies focused on motives for nonuse in two ways; it more closely examines use at time of fall and it begins to tie use to fall-related consequences. Specifically, its aims are to describe and report patterns of use, reasons for nonuse, use at time of fall, and differences in fall-related injuries between device users and nonusers. The hypotheses driving this study are that (a) among people who fall at home, most do not have an assistive device with them when they fall and (b) people who do not have their device with them when they fall sustain more severe injuries

Design and Methods

A descriptive, cross-sectional survey study was conducted in two cities in central and southeastern Michigan. The research was approved by the Michigan State University Human Research Protection Program Institutional Review Board. Targeted participants were age 60 years and older, current users of a cane or walker with a history of falls, and community dwelling, that is, residing in their own home or senior housing designed for cognitively intact persons requiring minimal assistance. A history of falls was defined as having had a fall within the past year. Individuals were recruited by contacting clinical practice sites, churches, and senior apartment complexes to explain the study and request assistance with survey distribution. Over 800 surveys were distributed; 262 were returned (33%) with 218 individuals reporting at least one fall and of these 218, 162 reporting that they owned a cane or walker. Since the hypotheses and targeted pool were individuals who were both current cane/walker users and had a history of falls, those who had not

fallen in the past year and those who did not own a cane or walker were excluded from analyses. Therefore, the final sample included 162 respondents who had both fallen and owned a device which is a sufficient sample size to conduct statistical analyses and produce meaningful results. Surveys were distributed in two ways; (a) Posters were placed in reception areas with survey packets available to pick up and (b) Site staff sent packets to all potentially eligible participants via mail. Packets included a study summary, a consent form, a gift card redemption form, and a stamped, addressed return envelope. Respondents who completed the survey and chose to include their name and mailing address were sent a $10 gift card and informational material on how to conduct their own home safety assessment and reduce environmental hazards and fall risk.

The self-report survey instrument was designed for purposes of this study and aligned with major factors that have been clearly identified in the literature as contributing to fall risk such as a history of falls and number of prescription medications (Deandrea et al., 2010). Many of the survey items were drawn from well-established practice guidelines and assessment instruments including Tinetti's recommended components of clinical assessment and management for older persons living in the community who are at risk for falling, *and the Centers for Disease Control checklists* (Centers for Disease Control & National Center for Injury Prevention and Control, 2006; Tinetti, 2003). Most of these standardized instruments are designed to be administered by a clinician. Therefore, survey items relevant to the study were modified to the extent that was necessary to allow self-report. For example, questions were asked related to self-assessed difficulty with walking, getting in and out of bed or a chair, or with unsteadiness during bending, standing or turning (yes/no). The survey was field-tested with the research team and a convenience sample of older adults who used a cane or walker and had a history of falls.

Key variables of interest included demographics, self-assessment of health and functional status, perception of own fall risk, significant fall events within the past year, gait and balance, medications, diagnoses that affect falls, visual/hearing impairment, home hazards (both inside and outside), living arrangements, and the primary variables of interest; assistive device use and fall outcomes including severity of injury. Severity of injury was operationalized using four levels of injury and health care usage including (a) minor injuries with four suboptions as follows: no injuries, slight injuries such as bruises or cuts, more severe injuries such as skin tears and sprains, and "other", (b) injury warranting an emergency room or provider visit, (c) injury warranting hospitalization, and (d) injury resulting in surgery with surgical repair constituting highest severity. Respondents were able to check more than one response, for example, both fracture and hospitalization. Their highest response was used as their injury severity level for purposes of analyses.

Respondents were asked to identify their primary ambulatory device from a list of options including a single pronged cane, a four-pronged cane, a standard walker, a four-wheeled walker with a seat and handbrakes, or "other" in order to focus on cane and walker users (n = 162) versus those who used a wheelchair, power chair, or scooter as their primary mobility mode. For analyses and reporting of results, all canes and walkers were grouped together and termed "device" unless otherwise specified in the text. A number of interrelated survey questions were asked to determine patterns of device use and reasons for nonuse including the following:

- "How often do you use your assistive device?" Eight possible responses were offered including "other." Respondents were instructed to check all that applied and to elaborate with free text when checking "other."
- "When you are not using your assistive device, do you steady yourself in any of the following ways while walking?" Possible choices included, I am fine without an assistive device, I hold onto furniture, I hold onto walls, I hold onto the arm of someone, and "other" with instructions to explain further.
- "When you do not use your assistive device, please explain why." Eleven choices were offered including "other." Respondents could check multiple items, "other" and write in free text.

Respondents' use of the "other" category resulted in substantial qualitative data. For example, when asked why they did not use their device, they often checked several specific examples such as "I leave it where it is not handy" but also wrote in additional reasons such as "I want to practice for independence." Qualitative data were collected through other questions as well including "What do you think caused the fall?"

Analyses

Descriptive statistics and frequencies were tabulated. Cross tab analysis was conducted to test the associations between demographic variables such as gender, education, or income and device use/nonuse. A Pearson chi-square test was conducted, using R (statistical software), as a preliminary test of the association between cane/walker use and injury severity, with the association considered significant if the p-value was less than .05. As stated, injury severity was operationalized using four categories of injury and health utilization, with surgery denoting the highest level of severity. These categories are not mutually exclusive such that a respondent may have checked "laceration" and "went to see a doctor." Therefore, for analyses purposes, each person's highest score was considered to be their level of severity. In addition to chi-square, the sample size of 162 was sufficient to also conduct logistic regression as an added test of the association of cane/walker use with fall injury severity. This analysis was conducted to test whether $\beta_1 = 0$,

using a normal *Z*-test with a *p*-value less than .05 was considered significant.

A proportional odds model was used to find the relationship between other variables and severity of injury. An ordinal variable (Inj) for level of injury was created using 0–4 with 0 indicating no injuries after the fall and 4 indicating surgery after the fall The proportional odds model $(\log (\text{Inj} \leq i)/(1 - P (\text{Inj} \leq i)) = \alpha\_i + H\beta + \varepsilon$, i = 1, 2, 3, 4) was then established where H represents the different health indicators (e.g., ADL needs) and α_i the corresponding intercepts with ε representing random error. Significant association between severity of injury and health indicators was determined by testing whether or not $\beta = 0$.

A proportional odds model was used to conduct ordinal regression analysis in R, using a *t*-test with the *p*-value set at less than .05, to test a potential association between overall health status and injury severity. This was undertaken to address the possibility that initial overall health, versus device use, could account for severity of fall-related injuries. An overall health status score was created for each respondent based on five different indicators of a person's self-reported overall health:

- Self-rating of own health on a 5-point scale: 1 for *excellent* and 5 for *poor*;
- Self-rating of 5 ADL needs: 1 for *no assistance* and 5 for *complete assistance*;
- Self-rating of 6 IADL needs: 1 for *no assistance* and 5 for *complete assistance*;
- Self-rating on three questions related to walking abilities (difficulty walking, difficulty getting in and out of a chair or bed, and feeling unsteady when standing, turning or getting up/down from a bed, chair, kneeling, or bending: 0 for *no difficulty* and 1 for *having difficulty*;
- Number of prescription medications

Qualitative data from all open-ended questions were analyzed using narrative analyses techniques and NVivo10 qualitative software (QSR International Pty. Ltd., Melbourne, Australia). Text was read line by line and coded by two readers from the research team for inter-relater reliability. Coding was iterative, that is, it was first guided by survey questions and then by additional concepts which emerged from the data. Concepts were then organized into discrete categories with shared attributes from which common patterns and points of divergence could be identified.

Results

Respondent Characteristics

Of 800 surveys distributed, 262 were returned (33%) with 162 meeting both key selection criteria, for example, had fallen and owned a device. Among the final sample of 162, the majority (74%) was age 75+ with 51% among the oldest-old (85+). Respondents were primarily White (86%), women (69%), widowed (53%), or married (27%) and had a college degree or at least some college education (68%). The majority was retired (86%) and had health insurance through Medicare (84%). This reflects the composition of respondents who lived in their own home as well as those in senior apartment complexes (Table 1).

Hypothesis 1: Device Use

Among those who reported owning a cane or walker, 74 (46%) used a cane as their primary device (41% single pronged cane; 5% four-pronged cane) and over half (60%) used a walker with 54 (33%) using a standard walker and 43 (27%) using a four-wheeled walker with a seat and handbrakes. Nine people reported using both. Sixty-eight percent of respondents never had a home evaluation conducted. Only 43% had received physical therapy and half (50%) of respondents stated they never received any training on how to use their cane or walker even though the majority of device-owners received their device from a medical supply company, hospital, physician, or therapist (68%). Twenty-nine (18%) received their device from a family member or friend and 27 (17%) purchased their device from a pharmacy, drug store, or supermarket. Device ownership increased with age, that is, the older a person was, the more likely they were to have a device. However, less than half of the respondents (43%) reported using their device all the time and 13 (8%) reported never using their device. Cross-tab analyses indicated no significant associations between demographic variables such as gender, education, or income and device use/nonuse.

Reasons for Nonuse of Device

The majority (64%) stated that they use their device only when needed or under specific circumstances such as only when they left the house, only when they were in the house, and only when standing for extended periods of time. One-fifth (20%) felt they did not need assistance to steady themselves. The majority (80%) reported that when they were not using their device to steady themselves, they held onto something else, for example, furniture (57%), walls (40%), or someone's arm (45%).

When respondents were asked why they did not always use their device, 41% reported they didn't always need it (Table 2). Respondents were instructed to select all responses that applied. "Other" reasons for nonuse included statements such as "false pride," and "You have to get up to get it." Qualitative data supported these findings. Through iterative coding and narrative analyses, a major theme emerged: the majority of respondents felt that *their device was not needed*. Reasons for this fell into three categories. The first was the idea that the cane/walker was needed for a limited time due to pain or injury that had since subsided. As one person stated, "I had hip-trouble but my hips are fine now." A second set used their cane/walkers but only at certain times. Illustrative quotes include: "I don't always use it when I don't hurt.", "I do not use a cane

Table 1. Characteristics of Respondents Who Owned Device and Had Fallen (n = 162)

Characteristic	n (%)	Characteristic	n (%)
Age		Education level	
60–64	9 (5.6)	<High school	5 (3.1)
65–69	9 (5.6)	High school grad/GED	33 (20.4)
70–74	10 (6.2)	Some college	38 (23.5)
75–79	11 (6.8)	College/professional degree	72 (44.4)
80–84	27 (16.7)	Unreported	14 (8.6)
85–89	36 (22.2)	Annual income	
90–94	35 (21.6)	<$10,000	2 (1.2)
95–99	9 (5.6)	$10,000–19,000	16 (9.9)
>99	2 (1.2)	$20,000–29,000	29 (17.9)
Unreported	14 (8.6)	$30,000–39,000	30 (18.5)
Gender		$40,000–59,000	26 (16.0)
Men	38 (23.5)	>$60,000	29 (17.9)
Women	111 (68.5)	Unreported	30 (18.5)
Unreported	13 (8.0)	Insurance status	
Marital status		None	0 (0)
Married/partner	43 (26.5)	Medicare	136 (84)
Widowed	86 (53.1)	Medicaid	7 (4.3)
Separated	0 (0)	Private health insurance	58 (35.8)
Divorced	12 (7.4)	Medicare supplement plan	70 (43.2)
Single/never married	9 (5.6)	Veteran's Administration	8 (4.9)
Unreported	12 (7.4)	Other	20 (12.3)
Race/ethnicity		Unreported	11 (6.8)
African American/Black	6 (3.7)	Work status	
Asian/Pacific Islander	1 (0.6)	Retired/not working	140 (86.4)
Am. Indian/Alaska Native	1 (0.6)	Part-time outside home	5 (3.1)
Caucasian/White	140 (86.4)	Full-time outside home	5 (3.1)
Multi/Bi-racial	0 (0)	Other	5 (3.1)
Hispanic, Latino, Spanish	0 (0)	Unreported	9 (5.6)
Other	1 (0.6)		
Unreported	14 (8.6)		

Table 2. Reasons Cited for Nonuse (n = 162)

Reason	n (%)
I don't always need it	66 (41)
I hold onto other things such as the furniture or walls	60 (37)
I forget to use it or forget where I left it	26 (16)
It makes me feel old	21 (13)
It is too big, heavy, or too bulky to put in car	17 (10)
I leave it where it is not handy	9 (6)
I just don't like it	9 (6)

or walker in my apartment.", "I only use it when I'm hiking outside.", and "I don't use it for short distances." Finally, many respondents stated that they don't need a cane/walker when they have something else to hold onto, for example, grocery carts, handrails, the car, or "whatever else is available." Several rely on other people to steady them, stating they did not use their device "when I am accompanied by my daughter who is nearby" or "I hold onto a friend's arm." One person stated she "balances with my head against the wall".

A second major reason for nonuse is that of proximity or inaccessibility. A full 75% (122) of respondents did not have any device with them when they fell (Table 3) despite the fact that 78% of them thought they needed their device and 81% of them believed that their device could reduce falls. In other words, the vast majority believed canes/walkers would reduce falls but chose not to use them themselves because they did not find them personally relevant. Regarding where the device was specifically at the time of the fall, device-owners were allowed to check more than one answer and most commonly reported that it was "in the same room but not near me" (12%). Eighteen (11%) stated it was in a completely different room, closet or attic, 12 (7%) said it was not in the house at all, and at least 6 (4%) had set it down to use their hands and it was not in reach. Combined, at least 34% of the respondents did not have their device in reach at the time of their fall. The majority of respondents specified the location as "other."

Qualitative analyses supported this second major theme of *inaccessibility*. Multiple respondents provided reasons why their device was not with them when they fell. For

Table 3. Device Ownership and Use at Time of Fall (n =162)

Respondents	n (%)
Owned device	162 (100)
• had device with them when fell	33 (20)
• no device with them when fell	122 (75)
• missing data	7 (4)

example, one individual who was golfing when he fell explained that he intentionally left his cane on the golf cart because he thought the club served the same purpose. Another "got off the tractor to move a log." Again, several categories of explanations exist. One is directly related to the first theme of believing the device is not needed. Many of the canes and walkers were nowhere near the person when they fell. The device was "stored in the attic," "out in the car," or "loaned to a friend." A second group had the cane with them but temporarily left it in order to complete a task such as the examples listed previously or "getting out of the shower." This is especially prevalent when the task requires two hands. Illustrative quotes cited "washing the car," "walking the dogs," "mopping the floor," "pressing a garment," and "taking flowers into my daughter's house." Regarding reasons for falls, the most common reasons cited are listed in Table 4. Among the 33 device owners who had their cane or walker with them when they fell, 10 (25%) believed the device played a role in their fall, citing reasons such as their cane caught on a rug or their walker leg caught on a footstool.

Hypothesis 2: Consequences of Nonuse and Severity of Injuries

A critically important finding was the association between use/nonuse and severity of injury, specifically surgery. Respondents were represented in all four levels of injury severity (Table 5). Statistical analyses demonstrated that the percent of nonusers was significantly higher than device users in every single injury severity level. Among the 19 who reported that their fall resulted in surgery, 100% were not using a device at the time of their fall which is a significantly higher proportion ($p < .001$) than falls resulting in surgery among people who were using their device when they fell (Table 5).

One might argue that those with greater severity injury were in poorer health at the time of their fall. However, this was not supported by analyses. Ordinal regression analyses shows no associations between initial overall health status and injury severity (p-value = .493) using the five different indicators of a person's self-reported overall health outlined under *Analyses* section. In other words, those respondents requiring less assistance with ADLs and IADLs, who have less difficulty walking, are less unsteady, and who take fewer prescription medications were just as likely to require surgery as those who were in poorer health. They were, however, less likely to use their assistive device. The poorer respondents rated themselves on measures of health, the higher the odds were that they were using their device when they fell.

Table 4. Primary Reasons for Falling in Rank Order

Reason	Examples
Environmental hazards	Slipped on ice, uneven ground, tripped on rug/dog, bad lighting
Physical	Felt weak, pneumonia, bad knees, stroke, dizzy, tired, couldn't see
Awareness	Hurrying, wasn't paying attention
Poor fitting shoes	Too big, just had socks on
Nonuse of device	My walker wasn't near me
Medications	Too much blood thinner

Table 5. Severity of Injuries and Health Service Utilization (Total n = 162)

Injury or health service utilization	n (%)	Nonusers, n (%)	Users, n (%)
1. Slight injuries			
a. Head trauma	11 (7)	10 (6)	1 (1)
b. Lacerations, bruises, cuts, skin tears	54 (33)	43 (27)	10 (6)
c. Fractures or sprains	30 (19)	22 (14)	7 (4)
d. Other	18 (11)	12 (7)	6 (4)
2. Went to see a doctor	72 (44)	56 (35)	15 (9)
3. Was hospitalized	32 (20)	27 (17)	4 (2)
4. Had surgery	19 (12)	19 (12)	0 (0)

Discussion

These findings support both study hypotheses; among people who fall at home, most do not have an assistive device with them when they fall and people who do not have their device with them when they fall sustain more severe injuries. Moreover, respondents undervalued the relevance of cane-use to their own safety. The data indicated that believing a device reduces falls doesn't necessarily guarantee device use, that is, attributed importance of device use did not appear to be related to use at time of fall. The perceived risk of falling again was not high enough to merit engaging in the self-protective behavior of using a cane. There is a body of research based on theories of preventive behavior that may help explain nonuse of canes. Although applied to fall-risk in only one study, this research suggests that people will not take necessary precautions to avoid an adverse event (such as a fall) until they believe the risk presents a significant threat to them personally. Further, a precautionary behavior (such as using a cane) needs to be relevant enough to their own safety that it trumps all possible reasons for not engaging in this behavior. (Novak, 2010; Weinstein, 1988;

Weinstein, Lyon, Sandman & Cuite, 1998) This suggests that the success of any rehabilitation program may depend on moving people toward accepting their own risk to the extent that they are willing to take protective action.

Regardless of why respondents did not use their devices, or where their device was at the time of their fall, the fact remains that they were unable to use it when they fell because it was not accessible. At least 60 (37%) of the respondents did not have their device in reach at the time of their fall and qualitative responses suggest that even when "in reach," respondents may not have been able to get their device in time to stop a fall. For example, one respondent reported that her cane had been lying on the floor next to her.

An important implication of these findings is the need to increase both accessibility and use. Equally important, since any benefit of canes or walkers is contingent on people actually using them, an increased understanding of patterns associated with nonuse can then serve as the basis for developing new strategies and improved devices to increase cane and walker use. This will require multipronged initiatives that supplement current fall-reduction strategies and programs and address reasons for nonuse. New educational programs are needed that motivate people to recognize their own fall-risk as well as the personal benefits of cane/walker use and to take proactive steps toward reducing their risk are needed. These could include campaigns to reduce the stigma of assistive devices, tips on how to remember devices and keep them more readily accessible, and systematic, coordinated efforts by health care providers to ensure that patients are properly fitted, trained, and are willing to use the device. As half (50%) of the respondents who received a device from a medical supply company, physician, or therapist did not receive any training, and 68% had never had a home evaluation conducted, these are two areas in which improved provider care and fall prevention strategies could potentially increase patient safety. Instructions on how and when to use assistive devices could be implemented at the point of patient care, point of purchase or, for the web savvy consumer, through an internet video with instructions detailed or indicated on the packaging.

New strategies need to be developed and tested to improve social acceptability. Equally important to address in future work is the issue of accessibility; a mobility device cannot be used unless it is accessible, for example, within reach of a person. Even people who accept cane and walker use often find themselves without their device. Among the reasons cited for nonuse among respondents was forgetting the device when moving from one location to another or leaving it behind and relying on walls and furniture for support. In these situations, the individuals no longer had a choice of whether or not to use the device, even if the need arose, because their device was nowhere near them. As most study respondents believed their device could prevent falls, it can be posited that increasing accessibility and thereby choice, has the potential to also increase use, especially in times of need.

Study Limitations

This study sets the stage for additional research. However, one of its limitations is that the survey did not sufficiently differentiate between cane and walker ownership and use. A similar study is needed that separates out the two types of aides for comparative purposes. Additionally, the majority of the sample had a college education and was potentially more educated than the general public. Future studies with greater diversity in terms of race, ethnicity, socioeconomic status, and education among participants could increase generalizability. This would also enrich knowledge about potential variations across subpopulations related to cane use and nonuse.

Conclusion

In summary, the study findings suggest that there is room for relatively simple quality improvements that have the potential to reduce fall related injuries. Currently, when people fall in their own homes, they do not have their assistive device with them or it is not easily accessible. Additionally, people who do not have their assistive device with them when they fall sustain more severe injuries. Patient education about the association between device use and fall-related injuries could increase perceptions of personal risk and the relevance of device use that could potentially outweigh the associated negative psychosocial context and stigma which discourages use. Additional research is needed on the association between cane usage and clinical health outcomes. Moreover, development and research of creative ways in which to maximize optimal device use are needed such as environmental reminders, reducing social stigma attached to device use, increasing accessibility, and utilizing cutting edge technology to develop new types of canes and walkers. All of these new strategies should be developed and tested as they hold promise for addressing a major public health concern by reducing falls and related injuries.

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