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Evaluation of two cane instruments in older adults with knee osteoarthritis

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Abstract—The objectives of this study were to describe the psychometric properties of the Cane Cognitive Mediator Scale (CCMS) and the Psychosocial Impact of Assistive Devices Scale (PIADS) in adults with knee osteoarthritis (OA) and to determine the feasibility of applying these instruments as screening tools to identify patients with the propensity to use a cane. Data from a randomized crossover trial were analyzed for 53 older adults with knee OA. Perceptions on using a cane were measured at baseline using the CCMS and PIADS. The CCMS was repeated 1 wk later. At 6 mo, subjects rated their intention to use a cane. The findings indicated that 1 wk test-retest reliability was acceptable for the CCMS Attitudes and Subjective Norms subscales (r = 0.48 to 0.93) and low for the CCMS Perceived Behavioral Control subscale (r = 0.15). Internal consistency reliability was good for each CCMS and PIADS subscale. The CCMS Subjective Norms subscale demonstrated acceptable predictive validity across all subgroups (r = 0.53 to 0.88). The PIADS Adaptability subscale demonstrated acceptable predictive validity for the 45 to 64 yr-old age group (r = 0.54). The findings indicate that the CCMS Subjective Norms subscale exhibits good psychometric properties and has potential application as a screening tool.

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Key words: assistive device, cane use, knee, older adults, osteoarthritis, psychosocial, rehabilitation, reliability, screening, validity.

INTRODUCTION

An estimated one-third of all older adults currently use an assistive device [1]. As the older adult population continues to grow, the demand for assistive devices will likely increase. Despite the widespread use of assistive devices, studies have found high rates of abandonment ranging from 8 to 75 percent [2]. From a clinical standpoint, assistive devices such as canes and walkers are prescribed to patients to minimize disability. The extent to which an older adult chooses to use a prescribed assistive device may influence how long he or she will remain functionally independent. One may speculate that an older adult who chooses to adopt a prescribed assistive device may develop the ability to better cope with future physical and mental challenges.

Abbreviations: CCMS = Cane Cognitive Mediator Scale, OA = osteoarthritis, PIADS = Psychosocial Impact of Assistive Devices Scale, QUEST = Quebec User Evaluation of Satisfaction with Assistive Technology, VA = Department of Veterans Affairs, WOMAC = Western Ontario and McMaster Universities Osteoarthritis Index.

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Psychosocial factors may influence older adults' use of commonly prescribed assistive devices. Furthermore, these psychosocial factors may ultimately determine device adoption, retention, and/or abandonment [3]. Thus, clinicians must evaluate psychosocial factors influencing assistive device use because patients' personal beliefs often influence their ongoing compliance with use of the device [4].

A review of the literature yielded several survey instruments that have been developed to measure psychosocial factors influencing assistive device use. The Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST) was developed by Demers and colleagues [5] and targets current users of an assistive device. The QUEST is designed to measure satisfaction with a broad range of assistive technology and asks respondents how satisfied they are with specific features such as weight, height, length, width, and some characteristics of the services related to the device, i.e., repairs and servicing [5]. In another study, Roelands and colleagues developed separate subscales for community-dwelling older adults living in Belgium to measure awareness, possession and use of assistive devices, attitudes toward use, self-efficacy, and intention to use assistive devices [6].

The Psychosocial Impact of Assistive Devices Scale (PIADS) [3] and the Cane Cognitive Mediator Scale (CCMS) [4] also measure perceptions of assistive device use in older adults. Both these instruments can be administered to individuals even if they are not current assistive device users, thus providing information on how an assistive device would affect them. The PIADS was developed to measure the effect of an assistive device (e.g., all categories of assistive technology and not limited to any one type) on quality of life and sense of well-being [3]. The PIADS may also be used to assess a respondent's expectations of using a device before its actual use. In contrast, the CCMS was developed to assess psychosocial factors specifically related to using a cane. The CCMS was developed based on the theory of planned behavior, which may be applied to explain the performance or nonperformance of a health behavior [4]. The theory states that the intention to perform a behavior is determined by attitudes toward the behavior, perceived social pressure, and perceived behavioral control in engaging in the behavior. For example, the use of a cane by an older adult (behavior performance) may be influenced by what his or her family thinks (perceived social pressure) and the costs of obtaining a cane (behavioral control).

The aim of this study was to compare simultaneously the psychometric properties of the PIADS and CCMS in older adults with osteoarthritis (OA) of the knee. Specifically, we examined the test-retest reliability (CCMS only), internal consistency reliability, and predictive validity of these instruments in order to identify which of these instruments, or subscales of these instruments, could assist the clinician in determining a patient's willingness to use an assistive device before training.

METHODS

Setting and Participants

The data used for this analysis were derived from a randomized crossover trial whose overall aim was to investigate the effects of cane use on spatiotemporal gait parameters in patients with knee OA. This study was conducted at the Department of Veterans Affairs (VA) West Los Angeles Healthcare Center, an urban tertiary academic hospital.

Fifty-three community-dwelling subjects with knee OA were recruited for the study. The diagnosis of knee OA was made based on clinical and radiographic criteria [7]. Inclusion criteria included unilateral knee pain on movement, which was scored at ≥35 mm on a 100 mm visual analog scale for most days of the previous month [8–10]; age 45 to 85 yr; ability to walk 30 ft without noticeably severe postural sway that might indicate the need for additional support such as a walker; ability to stand unaided; no cane use in past 30 d; body mass index >25 kg/m^2; weight <300 lb; fulfillment of the American College of Rheumatology criteria for knee OA [11]; and radiographic Kellgren-Lawrence scale knee OA grade ≥1 [7]. Individuals were excluded if they had prior knee trauma or surgery, including arthroscopic surgery, within the past 6 mo; upper-body weakness; injury or amputation to the lower-limb joints; symptomatic spine, hip, ankle, or foot disease that would interfere with assessment of the knee; poor health that would impair compliance or assessment, such as shortness of breath with exertion; neurological disease including vestibular dysfunction; or impaired vision. Subjects who were taking acetaminophen or nonsteroidal anti-inflammatory drugs at study entry were permitted to continue taking these medications as they had previously.

Self-Report Cane Surveys

The properties of the two surveys are outlined in **Table 1**. The PIADS was originally developed to measure the effect of glasses and contact lenses on quality of life in college students. The instrument went through two iterations of development. The final version consists of 26 items, with each item describing a possible effect of using the assistive device. The user is asked to rate how he or she feels about each item on a scale from –3 (indicating the most negative impact) to +3 (indicating the most positive impact). For example, the user is asked to rate how the assistive device affects his or her "sense of control" or

Table 1.
Summary of Cane Cognitive Mediator Scale (CCMS) and Psychosocial Impact of Assistive Devices Scale (PIADS) cane use measures.

Variable	CCMS	PIADS
Intended Application	Measures intention to use cane based on theory of planned behavior constructs: attitude, perceived social pressure, and ease/difficulty of engaging in behavior of using cane.	Measures effect of assistive device (all categories of assistive technology) on quality of life and sense of well-being. Specifically, measures effect on competence (functional independence, performance, and productivity), adaptability (willingness to try new things), and self-esteem (extent to which assistive device affects emotional well-being).
Mode of Administration	Self-administered or interviewer-administered.	Self-administered.
Time to Complete	5 to 10 min.	5 to 10 min.
Number of Items	24 items (13 measuring attitude, 4 measuring social pressure, and 7 measuring ease/difficulty of using cane.	26 items.
Scoring	Each item scored on 5-point Likert scale ranging from –2 (very unlikely) to +2 (very likely), with negative items having reverse scoring. Motivational items are scored on scale of 1 (very little) to 5 (a great deal).	Each item scored on 7-point scale ranging from –3 (most negative impact) to +3 (most positive impact). Reverse score 3 items (confusion, frustration, embarrassment).
Derived Measures	3 subscales: • Attitudes (sum of 13 beliefs about psychosocial, functional, and safety consequences of cane use. Total subscale score ranges from –26 to +26). • Subjective Norms (score on 4 normative belief items times corresponding motivation to comply. Total subscale score ranges from –40 to +40). • Perceived Behavioral Control (sum of 7 beliefs about cane use. Total subscale score ranges from –14 to +14).	3 subscales: • Competence (items ask about competence, productivity, usefulness, performance, and independence. Subscale score is mean of 12 items and ranges from –3 to +3). • Adaptability (items ask about ability to participate, willingness to take chances, eagerness to try new things, and ability to take advantage of opportunities. Subscale score is mean of 6 items and ranges from –3 to +3). • Self-esteem (items ask about self-esteem, security, sense of power and control, and self confidence. Subscale score is mean of 8 items and ranges from –3 to +3).
Original Development and Testing Sample	Items generated based on focus groups with older adults, expert panel review, and pilot testing on 10 community-dwelling older adults. Resulting instrument validated in cross-sectional survey of 106 older adults in Ontario, Canada.	Originally derived from 3 sources: empirical explorations with the Pleasure-Arousal-Dominance Scale, focus groups exploring assistive devices and quality of life, and literature on self-efficacy and personal control. Originally developed on college students with eyeglasses or contact lenses (n = 36 in first test and n = 153 in second test).
How to Obtain Instrument	Aminzadeh and Edwards [4].	Free from Department of Physical Medicine and Rehabilitation, University of Western Ontario.

"willingness to take chances." Scoring on the PIADS yields three subscale scores that were derived through factor analysis and a total score. The Competence subscale consists of 12 items, the Adaptability scale consists of 6 items, and the Self-Esteem scale consists of 8 items. Each of the subscales, as well as the total score, is computed by obtaining the mean of all items within that subscale or full scale, so that each subscale score ranges from –3 to +3. Internal consistency reliability is high, as demonstrated by a Cronbach alpha of 0.95 for the total score and 0.92, 0.88, and 0.87 for the Competence, Adaptability, and Self-Esteem subscales, respectively [12].

The CCMS was developed for older adults in order to assess beliefs about the consequences of cane use. The instrument consists of three subscales measuring attitude (13 items), social pressure (4 items), and ease/difficulty of engaging in the behavior of using a cane (7 items). Each item is scored on a 5-point Likert scale ranging from –2 (very unlikely) to +2 (very likely). Three subscale scores are derived: the Attitudes subscale is the sum of 13 beliefs, the Subjective Norms subscale score is the sum of item scores on 4 social pressure items multiplied by the corresponding motivation to comply with these referents, and the Perceived Behavioral Control subscale score is the sum of 7 beliefs about ease/difficulty in engaging in cane use. Known-groups validity of the CCMS has been demonstrated on a sample of community-living seniors in which significant differences ($p < 0.001$) were found between cane users and cane nonusers [4]. Cane users reported more positive attitudes, perceived greater social expectations to use a cane, and anticipated fewer difficulties in successfully using a cane. Internal consistency reliability is high, as demonstrated by Cronbach alpha coefficients ranging from 0.81 to 0.96 for all subscales [4].

Procedure

Subjects (n = 53) were measured at baseline on the PIADS and CCMS, and the CCMS was repeated at week 1 (n = 53) before randomization to cane and no-cane user groups. Baseline knee OA symptoms were evaluated at baseline using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), a validated and disease-specific questionnaire separately addressing severity of joint pain, stiffness, and limitation of physical function experienced during the 24 h before assessment [13]. Each item on the WOMAC Pain, Stiffness, and Functional Activity subscales asks subjects to rate their degree of pain, stiffness, or difficulty in performing activities on a scale ranging from 0 (no pain, stiffness, or difficulty) to 100 (extreme pain, stiffness, or difficulty). At the 2 mo visit, all participants were given single-point canes to use as often as they desired. At the 6 mo visit, each subject was asked to rate his or her intention to continue to use a cane in the next month on a 5-point Likert scale ranging from very unlikely to very likely.

Data Analysis

Descriptive statistics, including frequencies and measures of central tendency and dispersion, were conducted to evaluate the distributional characteristics of each demographic variable. Descriptive statistics for each CCMS and PIADS subscale score were calculated for the total sample and by subgroup (cane users/cane nonusers and sex). Pearson correlation coefficients were calculated to assess the 1 wk test-retest reliability of the CCMS. Cronbach alpha coefficients were calculated to determine the internal consistency reliability of both the CCMS and PIADS. Predictive validity was assessed by calculating Pearson correlation coefficients between each CCMS or PIADS subscale at baseline and use of the cane at 6 mo for the total sample and by subgroup. All analyses were conducted using PASW, version 18 (IBM Corporation; Armonk, New York) [14].

RESULTS

Sample Characteristics

Demographic and clinical characteristics of the sample are presented in **Table 2**. There were significant associations between cane use/cane nonuse with sex, race, education, and OA involvement ($p \leq 0.05$). Of the 26 subjects who were cane nonusers, 19 had never used a cane before enrolling in this study. The average age of the total sample was 59.5 yr, with a range of 46 to 84 yr. The majority of the sample (70.3%) was male. The racial breakdown of the participants was 40.6 percent black, 28.1 percent white, and 14.1 percent other race. Sixty-eight percent of all respondents had education greater than high school level. In the total sample, 76.5 percent had bilateral knee involvement. The mean total WOMAC subscale scores for Pain, Stiffness, and Functional Activity were 244.3 out of 500, 119.9 out of 200, and 902.1 out of 1,700, respectively.

Descriptive statistics for the CCMS and PIADS are displayed in **Table 3**. Mean scores on each CCMS or

Table 2.
Subject demographic and clinical characteristics.

Demographic/Characteristic	Cane Users (*n* = 27)	Cane Nonusers (*n* = 26)	Total Sample (*n* = 53)
Age (yr)			
Mean ± SD	59.1 ± 8.9	59.9 ± 8.4	59.5 ± 8.6
Range	49–84	46–78	46–84
Sex (*n*, %)*			
Male	20 (76.9)	25 (92.6)	45 (70.3)
Female	6 (23.1)	2 (7.4)	8 (12.5)
Race (*n*, %)*			
White	5 (19.2)	13 (48.1)	18 (28.1)
Black	17 (65.4)	9 (33.3)	26 (40.6)
Other	4 (15.4)	5 (18.5)	9 (14.1)
Education (*n*, %)*			
Less than High School	3 (11.5)	5 (18.5)	8 (15.0)
High school	6 (23.1)	3 (11.1)	9 (17.0)
More than High School	17 (65.4)	19 (70.4)	36 (68.0)
BMI (kg/m^2)			
Mean ± SD	32.7 ± 7.9	30.4 ± 6.0	31.5 ± 7.0
Range	23.5–51.4	22.8–46.1	22.8–51.4
OA Involvement (*n*, %)*			
Unilateral Knee	8 (30.8)	4 (14.8)	12 (23.5)
Bilateral Knee	16 (61.5)	23 (85.2)	39 (76.5)
WOMAC			
Pain†			
Mean ± SD	250.0 ± 104.1	238.7 ± 124.1	244.3 ± 113.8
Range	42–422	38–500	38–500
Stiffness‡			
Mean ± SD	121.2 ± 51.8	118.6 ± 49.3	119.9 ± 50.1
Range	5–186	10–200	5–200
Functional Activity§			
Mean ± SD	909.8 ± 371.6	894.7 ± 351.8	902.1 ± 358.2
Range	151–1,408	91–1,500	91–1,500

*Significant associations between cane users and cane nonusers at $p \leq 0.05$.
†Pain subscale score ranges from 0–500.
‡Stiffness subscale score ranges from 0–200.
§Subscale score ranges from 0–1,700.
BMI = body mass index, OA = osteoarthritis, SD = standard deviation, WOMAC = Western Ontario and McMaster Universities Osteoarthritis Index.

PIADS subscale were not significantly different between cane users and cane nonusers or between males and females.

Reliability

Test-Retest Reliability

One-week test-retest reliability results for the CCMS are displayed in **Table 4**. Generally speaking, the CCMS Attitudes and Subjective Norms subscales demonstrated moderate to high test-retest reliability across cane use and sex. For all subjects across CCMS subscales, the Attitudes subscale had the highest test-retest reliability (Cronbach alpha = 0.64). Conversely, the Perceived Behavioral Control subscale had poor test-retest reliability for all subjects (Cronbach alpha = 0.15). The Attitudes subscale demonstrated good test-retest reliability in cane users (Cronbach alpha = 0.82) and females (Cronbach alpha = 0.88). The Subjective Norm subscale demonstrated good test-retest reliability in cane nonusers (Cronbach alpha = 0.85) and

Table 3.
Scores on Cane Cognitive Mediator Scale (CCMS) and Psychosocial Impact of Assistive Devices Scale (PIADS).

Measure	All Subjects (*n* = 53)	Cane Users (*n* = 27)	Cane Nonusers (*n* = 26)	Males (*n* = 45)	Females (*n* = 8)
CCMS					
Attitudes*					
Mean ± SD	6.5 ± 8.5	6.7 ± 9.5	6.2 ± 7.6	6.0 ± 8.6	8.9 ± 8.3
Range	–22.0–22.0	–22.0–22.0	–7.0–20.0	–22.0–20.0	–5.0–22.0
Subjective Norms†					
Mean ± SD	5.6 ± 15.1	7.4 ± 13.6	3.8 ± 16.4	4.87 ± 15.40	9.5 ± 13.6
Range	–32.0–40.0	–24–40	–32.0–38.0	–32.0–38.0	0–40.0
Perceived Behavioral Control‡					
Mean ± SD	–5.3 ± 7.2	–5.4 ± 7.2	–5.1 ± 7.3	–5.2 ± 7.6	–5.4 ± 4.2
Range	–14.0–14.0	–14.0–14.0	–14.0–14.0	–14.0–14.0	–14.0–(–2.0)
PIADS					
Competence§					
Mean ± SD	0.77 ± 1.33	0.94 ± 1.49	0.62 ± 1.15	0.65 ± 1.31	1.46 ± 1.28
Range	–2.25–3.00	–2.25–3.00	–1.83–2.75	–2.25–2.83	–0.50–3.00
Adaptability§					
Mean ± SD	0.75 ± 1.36	0.99 ± 1.53	0.52 ± 1.14	0.66 ± 1.41	1.27 ± 0.91
Range	–3.0–3.0	–3.0–3.0	–2.00–2.83	–3.0–3.0	0–2.5
Self-Esteem§					
Mean ± SD	0.48 ± 1.30	0.46 ± 1.46	0.51 ± 1.14	0.42 ± 1.25	0.83 ± 1.60
Range	–3.0–3.0	–3.0–3.0	–2.25–3.00	–3.0–3.0	–1.38–3.00
Total Score¶					
Mean ± SD	0.67 ± 1.22	0.80 ± 1.39	0.55 ± 1.03	0.58 ± 1.22	1.19 ± 1.16
Range	–2.58–2.94	–2.58–2.94	–1.89–2.25	–2.58–2.94	–0.10–2.83

*CCMS Attitudes subscale score ranges from –26 to +26.
†CCMS Subjective Norms subscale score ranges from –40 to +40.
‡CCMS Perceived Behavioral Control subscale score ranges from –14 to +14.
§PIADS Competence, Adaptability, and Self-Esteem subscale scores range from –3 to +3.
¶PIADS total score ranges from –3 to +3.
SD = standard deviation.

females (Cronbach alpha = –0.93). The Perceived Behavioral Control subscale demonstrated fair test-retest reliability only for cane users (Cronbach alpha = 0.59).

Internal Consistency Reliability

Internal consistency reliability coefficients are also displayed in **Table 4** for all subjects, by cane use group and by sex. For all subjects, the internal consistency reliability of the CCMS subscales ranged from 0.79 for the Attitudes subscale to 0.93 for the Perceived Behavioral Control subscale. Internal consistency reliability for the PIADS was high on all subscales, ranging from 0.92 for the Adaptability and Self-Esteem subscales to 0.96 for the Competency subscale. Generally, internal consistency was high for both scales across cane use and sex. However, the CCMS Attitudes subscale demonstrated slightly lower coefficients ranging from 0.72 to 0.84.

Predictive Validity

Correlations of the CCMS and PIADS subscales with use of a cane at 6 mo are displayed in **Table 5**. For all subjects, the CCMS Subjective Norms subscale was moderately correlated with use of a cane at 6 mo (Pearson correlation coefficient = 0.53). When examined by subgroup, the CCMS Subjective Norms subscale demonstrated moderate to high correlations for cane nonusers (r = 0.72), males (r = 0.76), females (r = –0.88), and the 45–64 yr-old age group (r = 0.74). For the PIADS, only the Adaptability

Table 4.
Test-retest and internal consistency reliability coefficients of Cane Cognitive Mediator Scale (CCMS) and Psychosocial Impact of Assistive Devices Scale (PIADS).

Measure	All Subjects (n = 53)	Cane Users (n = 27)	Cane Nonusers (n = 26)	Males (n = 45)	Females (n = 8)
CCMS: 1-Week Test-Retest Reliability					
Attitudes	0.64	0.82	0.49	0.58	0.88
Subjective Norms	0.48	–0.50	0.85	0.79	–0.93
Perceived Behavioral Control	0.15	0.59	–0.13	0.15	0.19
Internal Consistency Reliability					
CCMS					
Attitudes	0.79	0.84	0.72	0.78	0.87
Subjective Norms	0.92	0.89	0.94	0.94	0.58
Perceived Behavioral Control	0.93	0.95	0.92	0.94	0.89
PIADS					
Competency	0.96	0.97	0.95	0.96	0.96
Adaptability	0.92	0.94	0.88	0.94	0.68
Self-Esteem	0.92	0.94	0.90	0.92	0.91

Table 5.
Predictive validity correlations of Cane Cognitive Mediator Scale (CCMS) and Psychosocial Impact of Assistive Devices Scale (PIADS) with 6 mo of cane use.

Validation Measure	All Subjects (n = 35)	Cane Users (n = 14)	Cane Nonusers (n = 21)	Males (n = 31)	Females (n = 4)	Age (yr)	
						45–64 (n = 22)	65+ (n = 13)
CCMS							
Attitudes	0.223	0.206	0.247	0.323	–0.550	0.468*	–0.178
Subjective Norms	0.533*	0.213	0.721*	0.756*	–0.883	0.735*	0.324
Perceived Behavioral Control	0.096	0.189	0.038	0.186	–0.197	0.337	–0.358
PIADS							
Competence	0.222	0.138	0.311	0.281	–0.196	0.404	0.133
Adaptability	0.240	0.272	0.225	0.248	0.284	0.544*	–0.093
Self-Esteem	0.171	–0.044	0.365	0.277	–0.204	0.351	0.122

*$p < 0.001$.

subscale demonstrated a moderate correlation with use of a cane at 6 mo for the 45–64 yr-old age group (r = 0.54). Both the CCMS and PIADS subscales demonstrated low predictive validity in adults 65 yr and over, with correlation coefficient absolute values ranging from 0.17 to 0.35 for the CCMS subscales and from 0.09 to 0.13 for the PIADS subscales.

Because the CCMS Subjective Norms subscale demonstrated moderate to high predictive validity, we calculated the sensitivity and specificity of this subscale in identifying subjects who were using a cane at 6 mo. At a cutpoint of 6, this subscale had a sensitivity of 81 percent and a specificity of 67 percent.

DISCUSSION

The aim of this study was to evaluate the reliability and validity of the CCMS and PIADS in a sample of older adults with knee OA. Both the CCMS and PIADS may be used to assess attitudes toward assistive devices regardless of whether the individual currently uses an assistive device or not. If our preliminary study demonstrates that these instruments have acceptable psychometric properties, then they might be considered for use by clinicians in screening for psychosocial factors influencing adoption of a cane or assistive device and in developing interventions to promote the use of walking aids in people with knee OA.

The findings indicated that the CCMS Attitudes and Subjective Norms subscales demonstrated acceptable test-retest reliability, with reliability coefficients ranging from 0.48 to 0.93. The test-retest reliability was low for the CCMS Perceived Behavioral Control scale (r = 0.15). Test-retest reliability of the PIADS was not assessed in this study because of the data collection schedule established in the main study; however, prior studies have documented good test-retest reliability, with intraclass correlation coefficients ranging from 0.77 to 0.90 [12]. Our findings indicated that internal consistency reliability was acceptable for all CCMS and PIADS subscales for all subjects and across groups, although slightly higher for the PIADS. Our findings are consistent with prior studies that have found correlations ranging from 0.87 to 0.95 for the PIADS subscales and total score [15]. Only the CCMS Subjective Norms subscale demonstrated good predictive validity for all subjects and across subgroups. The Subjective Norms subscale measures the influence of others, such as doctors, other healthcare workers, family, and friends, on the subject's propensity to use a cane. Consistent with prior studies, our findings found that a physician's recommendation and interdisciplinary approach to evaluation significantly influence compliance [16].

Our study is the first to evaluate the psychometric properties of the CCMS and PIADS in a sample of subjects with OA and, thus, provides a starting point to investigate strategies for recommending assistive devices based on initial patient screening using these instruments. Our study results demonstrate that some subscales exhibit better psychometric properties than others, and thus, these subscales deserve further consideration for use as a screening tool. Other instruments, such as those developed by Roelands and colleagues measuring self-efficacy and intention [6], can also be explored for use as screening tools because they may be administered before actual assistive device use. Finally, because adherence requires active involvement of the patient in managing the device, initial patient screening may be combined with subsequent training strategies that are based on psychosocial factors associated with compliance.

There are several limitations to our study. First, our study was conducted on primarily male obese or overweight older adults with OA of the knee. Therefore, the results cannot be generalized to patients with normal weight or with other medical conditions. Future studies should explore the psychometric properties of these instruments in non-OA populations and across different settings. In addition, prior studies have found obesity to increase the use of assistive devices [1], so our sample may have had a greater propensity to use assistive devices than a nonobese sample.

CONCLUSIONS

Based on our findings, the application of these instruments as screening tools to identify patients with the propensity to use an assistive device for ambulation deserves further exploration. These instruments required 5–10 min for patients to complete and, therefore, are relatively easy to apply in the clinic. Their use may identify patients who are likely to be compliant with ongoing assistive device use. However, before these scales are incorporated into practice, clinicians may wish to further validate them in different patient populations and across settings. Finally, the incorporation of additional items based on other instruments may improve the ability of these instruments to determine a patient's willingness to use a device.

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