THE RELIABILITY AND VALIDITY OF THE BAHASA MALAYSIA (MALAY) VERSION OF THE CARER'S FALL CONCERN INSTRUMENT (CFC-I M) AMONG CARERS OF AN OLDER PERSON

Mohd Nazmi NAS[1], Dahlan A[2], Mohd Poot EF[2], Azman NA[2], and Nurhidayah N[3].
[1]Kelantan Foundation for the Disabled and Underprivileged (YOKUK), 16100 Kota Bharu, Kelantan
[2]Occupational Therapy Programme, Faculty of Health Sciences, University Teknologi MARA, Selangor Campus, 42300 Bandar Puncak Alam, Selangor
[3]Department of Occupational Therapy, School of Health Polytechnics, Surakarta, Indonesia

Correspondence:
Akehsan Dahlan,
Centre for Occupational Therapy Studies,
Faculty of Health Sciences,
UiTM Puncak Alam Campus,
42300 Bandar Puncak Alam, Selangor, Malaysia
Email: akehsan@uitm.edu.my

Abstract

The Carers' Fall Concern Instrument (CFC-I) is a tool used to measure the level of concern caregivers have when caring for older people who may be at risk of falling. However, it has not been determined whether this tool is valid for use among caregivers of elderly persons in Malaysia. Therefore, this study aimed to translate and to establish the psychometric properties of the Malay version of the CFC-I for use among caregivers of elderly persons. The researchers used the "forward-backwards" procedure to translate the CFC-I into Malay and then conducted a pilot study to evaluate the feasibility of the translated version. The study included 86 caregivers of elderly persons who analysed the validity and reliability of the Malay version of the CFC-I. The results indicated that the content validity of the 16-item CFC-I Malay version was excellent, as evidenced by I-CVI and k* values is 1.0. Moreover, experts agreed that the items were relevant, as shown by S-CVI/Ave and S-CVI/UA values of 1.0. Concurrent validity was established by a strong, positive correlation between the total scores of the Malay and original English versions ($r = 0.762$, $p < 0.001$). The instrument's internal consistency was also high, with a Cronbach's alpha coefficient of 0.89. Overall, participants rated their understanding of the instructions and questions of the CFC-I Malay version as level 4 or 5 (agree or strongly agree). The mean inter-item correlation was 0.51, ranging from 0.18 to 0.79. In conclusion, the Malay version of the Carers' Fall Concern Instrument is a valid and reliable tool for evaluating the level of fall concern among caregivers of elderly persons in Malaysia. Healthcare professionals can use this instrument to strengthen fall prevention strategies for older people in the country.

Keywords: Carers, Fall Concern, Older Person, Translation

Introduction

The ageing of the global population is a well-established trend evident in Malaysia. This trend is characterised by an increase in the proportion of people aged 60 years or older. According to recent reports, the ageing population is one of the four "megatrends" of global demographics (1). The United Nations predicts that the proportion of older individuals worldwide will double in the next three decades, reaching over 1.5 billion people in 2050 (2).

In Malaysia, the older person population is also growing rapidly. According to the Department of Statistics Malaysia (DOSH) (2022), the proportion of the population aged 65 years and older has increased from 6.7 per cent in 2019 to 7.9 per cent in 2020, contributing to an ageing country (3). By 2030, Malaysia is expected to become an ageing nation, with 15 per cent of the overall population consisting of older individuals (4, 5). Factors such as lower birth rates, low mortality rates, an increase in life expectancy, and large significant ageing population groups contribute to the ageing of the population in Malaysia (4, 6).

Older individuals are vulnerable to falls. Falls and related injuries are widespread and significant among this population. These falls are primarily attributed to the decline in physical, cognitive, and affective capacities and co-morbidities associated with chronic diseases (7). Falls are caused by five intrinsic factors in older individuals, with the most common being neurological

illnesses (40%), musculoskeletal disorders (28.8%), visual impairment (18.8%), orthostatic hypotension (12.5%), and metabolic disorders (12.5%) (8). The risk factors for falls can be either intrinsic or extrinsic. Commonly reported risk factors to include demographic factors, medical and health conditions, physical performance, physical activity, cognitive performance, fear of falling, and environmental hazards (9). Impaired balance and gait, medication use (e.g., sedatives and antipsychotics), weakness (associated with medical problems such as Parkinson's and stroke disease), joint disorders (e.g., knee osteoarthritis), neurological dysfunction, poor perception of safety awareness, low vision (often due to cataracts), environmental factors, and unsuitable footwear are notable risk factors for falls among the elderly (10). Falls are prevalent among older persons, with 72.5% of individuals aged 60 years and above experiencing at least one fall and 27.5% experiencing two or more falls (11).

An older person who experiences falls risks developing physical, psychological, and psychosocial complications, which may reduce their ability to perform daily activities (12). However, it is important to note that falls affect the older person and their caregiver. Research has identified several complications that caregivers may experience when caring for an older person who has experienced falls. These complications include an increased risk of poor health, weight loss, anxiety, depression, and poor quality of life (13). Studies have shown that as the number of people who provide assistance to caregivers increases, their level of burden decreases (14).

Caring for an older person at risk of falls often leads to physical and psychological strain for the caregiver. A significant percentage of caregivers report inadequate support and assistance for both the caregiver and the care recipient (15). Family caregivers, in particular, experience high levels of psychological distress and moderate to severe burden (16). Caregivers frequently experience negative emotions such as frustration, anger, guilt, or helplessness due to providing care to the care recipient (17). According to a 2017 survey by the World Health Organization, caring for people with dementia is the most significant contributor to caregiver burden among all chronic diseases (18). The physical burden of caregiving can also impact the caregiver's physical health, particularly when caring for someone who is bedridden or wheelchair-bound (19)

In a qualitative interview to explore the impact of falling with ten older persons and their caregivers, it was found that caregivers experienced similar fall-related concerns as their older person did (20). Furthermore, in a systematic review of qualitative study, Shang et al. (21) found 17 qualitative studies examines caregiver fear of falling in older adults. The findings stressed the impact of internal factors, such as cognitive impairment and overprotective behavior, and emphasize the need for external support to address fear of falling and improve caregiving experiences. Similarly, the four key themes identified in previous study that led to the concern of caregivers were the view regarding fall and fall risk by caregivers, the care recipients' actions and behaviour toward the risk of fall, health and function and the care recipient's living environment (22).

Over the years, several different assessment methods of fear of falling and fall efficacy have been used to assess the psychological effect of falling or the concept of falling in older people. Several of the assessments was Falls Efficacy Scale (FES), Modified Falls Efficacy Scale (MFES), Falls Efficacy Scale-International (FES-I) and Activities Specific Balance Confidence Scale (ABC) (23). However, only a few current studies focus on the role of carers in preventing falls and their concerns for older people at risk of falling. The 16-item CFC-I was developed by Ang et al. (23) focused on assessing carers' concern for older people who are at risk of falls. In order to guarantee comprehensive coverage of different situations and to improve the validity of CFC-I, eight items were adapted from (FES-I) and modified to measure concerns associated with the care recipient's health and function and risk of falls in their living environment (23, 24) and 1 item from Fall-Related Impulsive Behaviour Scale (FIBS) (25).

Therefore, the CFC-I is a suitable assessment to be used to measure carers' level of fall concern because it assesses the concept of fall concern from the caregiver's perspective. However, the use of CFC-I and the existing evidence is limited since it was a new instrument developed in 2020. There is also no translated version of CFC-I in the Malay version. This showed the need for the translated version of CFC-I in Malay to assess the level of fall concern among caregivers taking care of the elderly in the Malaysian population. Thus, this study aims to translate and validate the Malay Version of the Carer's Fall Concern Instrument (CFC-I M). The objective of the study is based on the stages of the study. The research is divided into five stages. In Stage 1, the main objective is to translate the CFC-I into the Malay version using forward and backward translation techniques. Moving on to Stage 2, the focus shifts to conducting a pilot study to assess the level of understanding in the translated version of the CFC-I. Stage 3 objective is to evaluate the content validity of the CFC-I Malay version. In Stage 4, the objective is to establish the concurrent validity of the CFC-I Malay version by comparing its results with the original CFC-I. Finally, in Stage 5, the objective is to determine the internal consistency of the CFC-I Malay version. Each stage contributes to the overall research objective of validating and assessing the effectiveness of the CFC-I in the Malay language.

Materials and Methods

Study design

To establish the validity and reliability of the CFC-I, five phases of the study were conducted, i.e., (i) translation process, (ii) preliminary pilot testing, (iii) content validity, (iv) concurrent validity and (v) internal consistency.

Research ethics

Ethical clearance was obtained from the Universiti Teknologi Mara (UiTM), Research Ethics Committee {Ref. No. REC/06/2021 (MR/468)} prior to the study. All subjects had provided a consent form before participation in this study. Permission to translate the CFC-I into the Malay version was also obtained from the original author (23).

Participants and setting

The present study was conducted in a cross-sectional study design, and methodology was used to elaborate the study data. This study was conducted among carers caring for an older person at home living in Kota Bharu, Kelantan. A convenience sample of 86 carers taking care of an older person was identified between June 2021 and ended in December 2021. To be included in this study, the sample had to (1) have a carer who provided support or assistance for an older person with at least one activity of daily living (ADL), (2) look after an older person (care recipient) aged 60 years and above and living in their own home and (3) able to communicate and comprehend in the Malay Language. The carers who were being paid or professionally paid carers and those who were taking care of a care recipient who was bed-bound and wheelchair-bound were excluded. Self-rated and face-to-face interviews were conducted, including administration of the translated CFC-I in Malay, followed by administration of the original CFC-I and collection of demographic data of carers and older persons. Carers were asked to rate the extent of their concern about the risk of falling in older persons using a 5-point Likert scale ranging from 1 to 5 for each item (1 = not applicable/ not at all concerned, 2 = slightly concerned, 3 = somewhat concerned, 4 = moderately concerned and 5 = extremely concerned)—the scores of CFC-I range from 19 to 80. A higher score indicates a high level of fall concern.

Phase 1: The translation process

The instrument of CFC-I was forward and backwards translated into Malay Language and underwent a validation process. The original CFC-I was translated according to the guideline for translating and validating a questionnaire (26). The forward translation of the original CFC-I was translated from English into the Malay language to produce a version that was semantically and conceptually as close as possible to the original questionnaire. Two independent certified translators did the translation; both had certificates in Teaching English as Second Language (TESL). Each translator produced a forward translation of the original CFC-I into the Malay Language without any mutual interest. The two versions of the forward translated instrument were harmonised among the two translators with the involvement of researchers to produce only one translated Malay version of CFC-I.

In the backward translation, the translated Malay version of CFC-I was back-translated from Malay to English. This was done by another two independent certified translators; both had certificates in TESL. This stage may show whether there are any unclear wording or misunderstandings during the forward translation stage. Discrepancies between the two versions of backward CFC-I were discussed among two translators and resolved with the researcher's involvement in producing only one English version of CFC-I. The expert committee reviewed all of the translation versions to determine if the translated and original versions had achieved semantic, idiomatic, experiential and conceptual equivalence. Inconsistencies were resolved in a consensus meeting, and the pre-final version of the translated CFC-I in the Malay Language was ready to be used in the study.

Phase 2: Preliminary pilot testing

A pilot study was conducted during this phase to evaluate the feasibility of the translated version of the CFC-I M. The translated questionnaire was distributed to 26 carers of an older person who completed the questionnaire and commented on the question. They were recruited though convenience sampling strategy and the pilot testing of the questionnaire was conducted through face-to-face interview. The number of participants who rated the scores 4 to 5 (agree to strongly agree) for understanding was calculated. A level of clarity also was conducted to aid in identifying whether the question and instruction were clear. Green (1982) suggests that at least 70 per cent of participants are required to rate three and the median must be at 3.25 or higher (27). This pilot study was crucial in identifying problems that arise in the translated Malay version of CFC-I. The researcher and committee discussed the carers' comments. The final version of the Malay CFC-I was completed and made available for the validity and reliability study.

Phase 3: Content validity

Subsequently, a six panel of experts working as academicians or clinicians who had experience and were familiar with the field area judged the content validity of the questionnaire. Each reviewer received a demographic information sheet and translated instrument prior to review. The experts were asked to rate each item of the Malay version of CFC-I based on relevance, simplicity, clarity and ambiguity on a four-point scale. Necessary modifications were made to the translated scale based on the expert reviewers' opinions and suggestions. However, only the relevant component was considered for determining the item's representation in the instrument, while other components may aid in determining the clarity, simplicity and ambiguity of a question as the components do not impact whether an item or question is deleted or included in the assessment (28).

The content validity index (CVI) was calculated for each item based on Item Level CVI (I-CVI) and Scale Level CVI (S-CVI) (S-CVI). I-CVI values of more than 0.78 indicate excellent, despite the number of experts (29, 30). Meanwhile, the S-CVI/Ave value > 0.80 is acceptable (31). The I-CVI was calculated by computing the modified kappa statistic (k*), which is an index of expert agreement that the item is meaningful. The recommended modified kappa (k*)

value range between 0.75-1.00 were considered excellent agreement among experts that the item is relevant (29, 30, 31).

Phase 4: Concurrent validity

A concurrent validity test was conducted among 30 bilingual carers of older persons to determine the correlations between the Malay version of CFC-I and the original English version of CFC-I. The carers were recruited through a convenience sampling strategy, and the test was conducted through face-to-face meetings. The original CFC-I was administered one week prior to the Malay version of CFC-I. During this phase of the study, the carers were asked to review the original CFC-I and assess their level of understanding of the English version. If they encountered any words they did not understand, they were excluded from this stage of the study. Concurrent validity was assessed using the Pearson correlation coefficient between the scores of the original English version of CFC-I and the scores on the Malay version of CFC-I M. The strengths of the associations were determined using the following criteria: 0.10-0.29 = small, 0.30-0.49 = medium, and 0.5-1.0 = large (32).

Phase 5: Internal consistency

To investigate the reliability of CFC-I M, internal consistency analysis was conducted. This analysis involved 30 carers of older persons who were recruited through a convenience sampling strategy at elderly centres in Selangor and Kelantan. Internal consistency analysis assesses the extent to which the questionnaire items are intercorrelated and consistently measure the same constructs (26). Cronbach's alpha coefficient was used to evaluate the internal consistency of the translated scale, specifically the total score. A score of 0.70 is the accepted criterion for Cronbach's alpha (33, 34). Values closer to one indicate higher internal consistency, while values closer to zero suggest lower internal consistency (35).

Results

Results Phase 1: Translation process

Some unclear wording was identified in the translated instrument throughout the process, with four discrepancies found during this phase. In the Malay language, the word 'concerned' can mean *'kebimbangan'* or *'keprihatinan*.' After discussions, the translator agreed to use the term *'keprihatinan'* because it encompasses all aspects of caring and worrying about someone. Another word, 'walker,' was initially translated as *'alat bantuan berjalan'* in Malay, but after further discussion with the expert committee, it was changed to *'tongkat'* (stick) as it is more familiar and acceptable in the local context. Additionally, the translation of the words 'when' (*ketika*) and 'while' (*semasa*) into Malay term was reviewed by the researchers to ensure correct usage in the questions. Following discussions and reviews of the instructions, scoring, and questions of the CFC-I with committee members, the expert committee reached an agreement on the wording and produced the pre-final version of the translated CFC-I-M.

Results Phase 2: Preliminary pilot testing

A total of 26 carers of older persons participated in this phase (Table 1). The majority of the carers (n = 21; 80.8%) were between 40 and 49 years old. Among them, 15 carers were female (57.7%) and 11 were male (42.3%). In most households (n = 18; 69.2%), there were between 5 and 9 members living together. Regarding the older persons being cared for, the majority (n = 22; 84.6%) were between 60 and 69 years old. Female elderly individuals accounted for most of the care recipients (n = 16; 61.5%) compared to male elderly individuals (n = 10; 38.5%). It was also reported that 12 older persons (46.2%) had a history of falling. Table 2 presents the socio-demographic characteristics of the older persons.

Table 1: Descriptive analysis of the caregivers based on a socio-demographic characteristic according to each phase of study

CHARACTERISTIC		Pilot Study (N = 26) n (%)	Concurrent Validity (N = 30) n (%)	Internal Consistency (N = 30) n (%)
Age	20-29	-	3(10)	3(10)
	30-39	5(19.2)	8(26.7)	8(26.7)
	40-49	21(80.8)	19(63.3)	19(63.3)
	50-59	-	-	-
Gender	Male	11(42.3)	11(36.7)	11(36.7)
	Female	15(57.7)	19(63.3)	19(63.3)
Marital Status	Married	25(96.2)	28(93.3)	28(93.3)
	Widow/er	-	-	-
	Single	1(3.8)	2(6.7)	2(6.7)
Household Income	Less Than RM2500	-	-	-
	RM2500-RM7000	17(65.4)	27(90.0)	27(90.0)
	More Than RM7000	9(34.6)	3(10.0)	3(10.0)

Table 1: Descriptive analysis of the caregivers based on a socio-demographic characteristic according to each phase of study (continued)

CHARACTERISTIC		Pilot Study (N = 26) n (%)	Concurrent Validity (N = 30) n (%)	Internal Consistency (N = 30) n (%)
Level of Education	No Formal Education	-	-	-
	Primary School	-	-	-
	Secondary School	11(42.3)	4(13.3)	4(13.3)
	College/University	15(57.7)	25(83.3)	25(83.3)
	Others	-	1(3.3)	1(3.3)
Relationship	Father	8(30.8)	9(30.0)	9(30.0)
	Mother	8(30.8)	12(40.0)	12(40.0)
	Mother-in-Law	4(15.4)	4(13.3)	4(13.3)
	Father-in-Law	6(23.1)	4(13.3)	4(13.3)
	Others	-	1(3.3)	1(3.3)
Number of Households	None	-	-	-
	1-4 people	8 (30.8)	5(16.7)	5(16.7)
	5-9 people	18(69.2)	24(80.0)	24(80.0)
	> 9 people	-	1(3.3)	1(3.3)
Hours of Care/Days	< 6 hours	-	1(3.3)	1(3.3)
	7-9 hours	3(11.5)	20(66.7)	20(66.7)
	10-14 hours	22(84.6)	9(30.0)	9(30.0)
	> 15 hours	1(3.8)	-	-
Hours of Care/Week	< 69 hours	3(11.5)	-	-
	70-79 hours	7(26.9)	13(43.3)	13(43.3)
	80-89 hours	7(26.9)	17(56.7)	17(56.7)
	> 90 hours	9(34.6)	-	-
Physical Complication	Yes	26(100.0)	30(100.0)	30(100.0)
	No	-	-	
Type of Physical Complication	Back pain (BP)	1(3.8)	2(6.7)	2(6.7)
	Fatigue (F)	4(15.4)	9(30.0)	9(30.0)
	Knee Pain (KP)	-	-	-
	Stress (S)	-	-	-
	Sleep problem (SP)	1(3.8)	-	-
	Injury (I)	-	-	-
	BP + F	3(11.5)	-	-
	BP + KP	3(11.5)	-	-
	BP + SP	4(15.4)	-	-
	BP + I	1(3.8)	-	-
	BP + F + 1	-	5(16.7)	5(16.7)
	F + S	4(15.4)	9(30.0)	9(30.0)
	F + SP	2(7.7)	-	-
	F + KP	1(3.8)	-	-
	F + S + SP	-	4(13.3)	4(13.3)
	S + SP	1(3.8)	-	-
	I + F	1(3.8)	-	-
	KP + I	-	1(3.3)	1(3.3)

Table 2: Descriptive analysis of the older person based on a socio-demographic characteristic according to each phase of study

CHARACTERISTIC		Pilot Study (N = 26) n (%)	Concurrent Validity (N = 30) n (%)	Internal Consistency (N = 30) n (%)
Age	60-69	22(84.6)	24(80.0)	24(80.0)
	70-79	4(15.4)	6(20.0)	6(20.0)
Gender	Male	10(38.5)	12(40.0)	12(40.0)
	Female	16(61.5)	18(60.0)	18(60.0)
Have Illness	Yes	26(100.0)	30(100.0)	30(100.0)
	No	-	-	-
Medical History	Hypertension (HPT)	9(34.6)	-	-
	Diabetes (DM)	3(11.5)	-	-
	Cardiovascular (CVD)	1(3.8)	-	-
	Musculoskeletal (MS)	1(3.8)	-	-
	HPT + DM	-	13(43.3)	13(43.3)
	HPT + CVD	-	4(13.3)	4(13.3)
	HPT + MS	-	4(13.3)	4(13.3)
	DM + MS	-	9(30.0)	9(30.0)
	Others	12(46.2)	-	-
Have Dementia	Yes	26(100.0)	30(100.0)	30(100.0)
	No	-	-	-
Fall History	Yes	24(92.3)	27(90.0)	27(90.0)
	No	2(7.7)	3(10.0)	3(10.0)
Amount of Fall	None	2(7.7)	3(10.0)	3(10.0)
	1 fall	12(46.2)	11(36.7)	11(36.7)
	2 falls	7(26.9)	16(53.3)	16(53.3)
	3 or more falls	5(19.2)	-	-

Based on the feedback form, all participants rated three and above for their level of understanding of each instruction and question of CFC-I-M (n = 26; 100.0%). More than 70 percent of the participants rated three or higher for the level of understanding. Therefore, no modifications or changes were made. Regarding the level of clarity for each instruction and question in CFC-I-M, all of the participants rated three and above (n = 26; 100.0%). Some clarifications were made, such as if the older person did not perform certain activities, the carers were asked to answer based on what they perceived the older person's ability to perform the task would be. A discussion was held with the researchers regarding these clarifications, and no modifications were made to CFC-I-M. Overall, the participants indicated a high level of clarity for each instruction and question of CFC-I-M.

Results Phase 3: Content validity

A total of 6 panels of experts participated in this phase. Among them, 5 panels were comprised of clinicians, including four occupational therapists and one physiotherapist. Only one panel consisted of an academician specialized in the geriatric area. Most of the experts had over five years of working experience, with only one expert having more than one year of experience in the geriatric field. The majority of experts expressed high agreement on the content of the translated CFC-I-M. The I-CVI values for each question's clarity component ranged from 0.83 to 1.0, indicating excellent appropriateness. For the simplicity component, all items had an I-CVI value of 1.0, indicating appropriateness and simplicity. The I-CVI values for question ambiguity ranged from 0.83 to 1.0. The S-CVI/Ave and S-CVI/UA values for the clarity component of the 16 items in the CFC-I Malay were 0.99 and 0.94, respectively. For the simplicity component, they were 0.98 and 0.88. The ambiguity component had S-CVI/Ave and S-CVI/UA values of 1.0.

All questions regarding item relevancy for the CFC-I-M showed a k* value of 1.0, indicating excellent agreement among experts that the items were relevant. All 16 questions demonstrated excellent content validity, with an I-CVI value and k* value of 1.0. The S-CVI/Ave and S-CVI/UA values were both 1.0, exceeding the recommended threshold of 0.80 (Table 3). The researcher also considered the experts' comments and recommendations to enhance the instrument's content validity. None of the panel experts suggested including or excluding any items from the translated CFC-I-M. However, several experts provided comments, suggestions, and recommendations regarding aspects such as formatting of the scoring and instructions to ensure simpler and clearer question structures with no confusion. These suggestions were taken into account for the final modification of the CFC-I-M, considering their cultural importance and relevance.

Table 3: Evaluation of the content validity of the CFC-I Malay (n = 6)

QUESTION	Number of experts	Clarity (I-CVI)	Ambiguity (I-CVI)	Simplicity (I-CVI)	Relevancy (I-CVI)	P_c	k*	Evaluation
1. tidak pulih daripada jatuh	6	1.0	0.83	1.0	1.0	0.016	1.0	excellent
2. memerlukan penjagaan dan sokongan tambahan selepas terjatuh	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
3. terjatuh ketika mandi	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
4. terjatuh ketika cuba duduk dan bangun dari kerusi atau katil	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
5. terjatuh semasa menggunakan tangga	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
6. terjatuh semasa cuba untuk mencapai atau mengambil sesuatu di atas lantai	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
7. terjatuh semasa bergegas melakukan sesuatu	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
8. terjatuh ketika pergi ke tandas pada waktu malam	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
9. terjatuh semasa berada di rumah bersendirian	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
10. terjatuh semasa keluar bersendirian	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
11. terjatuh semasa berjalan di atas permukaan yang licin	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
12. terjatuh semasa berjalan di tempat yang sesak	6	1.0	0.83	1.0	1.0	0.016	1.0	excellent
13. terjatuh ketika berjalan di atas permukaan tidak rata	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
14. terjatuh semasa berjalan menaiki atau menuruni cerun	6	0.83	1.0	1.0	1.0	0.016	1.0	excellent
15. terjatuh ketika berjalan tanpa menggunakan alat bantuan berjalan contohnya, tongkat	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
16. terjatuh semasa cuba untuk berjalan tanpa bantuan, apabila diminta untuk tidak berbuat demikian	6	1.0	1.0	1.0	1.0	0.016	1.0	excellent
			S-CVI/Ave			1.0		
			S-CVI/UA			1.0		

I-CVI, item-level content validity index

P_c Probability of chance occurrence

k* = kappa designating agreement on relevance: k* = (I-CVI – pc)/ (1 – pc).

S-CVI/AVE, scale-level content validity index,average.

S-CVI/UA, scale-level content validity index, universal agreement

Results Phase 4: Concurrent validity

A total of 30 carers of older persons living in Kota Bharu, Kelantan, participated in this phase (Table 1). Among them, 19 carers (63.3%) were aged between 40-49 years old, eight carers (26.7%) were aged between 30-39 years old, and only three carers were aged between 20-29 years old. All participants reported experiencing physical complications during caregiving. The majority of the older people being cared for by these carers reported having a medical illness, specifically dementia (n = 30; 100.0%) (Table 2). Additionally, most of the older people reported a history of falls (n = 27; 90.0%). There was a positive, strong correlation between the total score of CFC-I-M and the original English version of CFC-I ($r = 0.762$, $p < 0.00$), indicating a strong correlation between the CFC-I-M and the original English version. Furthermore, there was a moderate to strong correlation ranging from 0.356 to 0.990 between each item of the CFC-I-M questionnaire and the original English version of CFC-I (Table 4).

Table 4: Pearson correlation coefficient, r for each activity and the total score of CFC-I M

QUESTION	Mean (SD) CFC-I M	**Mean (SD) CFC-I**	***r***	***P* value**
1. tidak pulih daripada jatuh	4.97(0.18)	4.90(0.31)	0.557	p < 0.001
2. memerlukan penjagaan dan sokongan tambahan selepas terjatuh	4.80(0.41)	4.80(0.41)	0.792	p < 0.001
3. terjatuh ketika mandi	4.93(0.25)	4.87(0.35)	0.681	p < 0.001
4. terjatuh ketika cuba duduk dan bangun dari kerusi atau katil	4.67(0.48)	4.57(0.57)	0.464	p < 0.001
5. terjatuh semasa menggunakan tangga	4.70(1.02)	4.70(1.02)	0.967	p < 0.001
6. terjatuh semasa cuba untuk mencapai atau mengambil sesuatu di atas lantai	4.70(0.47)	4.67(0.48)	0.463	p < 0.001
7. terjatuh semasa bergegas melakukan sesuatu	4.80(0.41)	4.80(0.41)	0.375	p < 0.001
8. terjatuh ketika pergi ke tandas pada waktu malam	4.83(0.38)	4.83(0.38)	0.760	p < 0.001
9. terjatuh semasa berada di rumah bersendirian	4.93(0.25)	4.90(0.31)	0.802	p < 0.001
10. terjatuh semasa keluar bersendirian	4.93(0.25)	4.90(0.31)	0.802	p < 0.001
11. terjatuh semasa berjalan di atas permukaan yang licin	4.80(0.41)	4.80(0.41)	0.792	p < 0.001
12. terjatuh semasa berjalan di tempat yang sesak	4.90(0.31)	4.83(0.38)	0.447	p < 0.001
13. terjatuh ketika berjalan di atas permukaan tidak rata	4.93(0.25)	4.90(0.31)	0.802	p < 0.001
14. terjatuh semasa berjalan menaiki atau menuruni cerun	4.93(0.25)	4.90(0.31)	0.356	p < 0.001
15. terjatuh ketika berjalan tanpa menggunakan alat bantuan berjalan contohnya, tongkat	3.93(1.80)	3.87(1.78)	0.990	p < 0.001
16. terjatuh semasa cuba untuk berjalan tanpa bantuan, apabila diminta untuk tidak berbuat demikian	4.30(1.51)	4.17(1.49)	0.713	p < 0.001
17. Total score	76.07(2.85)	75.47(2.76)	0.762	p < 0.001

r, Pearson correlation coefficient, SD, standard deviation

Results Phase 5: Internal consistency reliability

Due to constraints, only 30 carers of older persons in Kota Bahru, Kelantan were recruited to test the internal consistency of the Malay version of the CFC-I. Table 1 presents the sociodemographic characteristics of the carers. The findings show that 11 males (36.7%) and 19 females (63.3%) participated in this phase and provided their consent. Among them, 66.7% of the carers spent 7-9 hours per day caring for their older person, while 56.7% of the carers spent 80-89 hours per week taking care of them. Furthermore, 80.0% of the carers were taking care of older persons aged between 60-69 years old, and 90.0% of the elderly reported a history of falls. Table 2 presents the sociodemographic characteristics of the older persons. The Cronbach's alpha coefficient for the total score of the translated scale was reported as 0.89 (n = 30). The mean inter-item correlation was 0.51, ranging from 0.18 to 0.79. These findings indicate that the translated CFC-I-M demonstrates a good level of internal consistency.

Discussion

This study aimed to evaluate the psychometric properties of the Malay translation of the CFC-I-M questionnaire among caregivers of older persons. The translated version of the CFC-I-M exhibited high reliability and validity, consistent with the original English version (23). Establishing the validity and reliability of a newly translated CFC-I-M is crucial to promote evidence-based practices and enhance its usefulness in the Malaysian context. The 16 items of the CFC-I-M were translated by four translators in both forward and backward directions, and an expert committee was consulted to ensure the translated version fulfilled the relevant criteria for semantic, idiomatic, experiential, and conceptual similarity. The final Malay version of the CFC-I (CFC-I-M) was accepted after further discussions.

A preliminary pilot test was conducted to evaluate the feasibility of the CFC-I-M, and all participants showed a high level of understanding of each instruction and question of the CFC-I-M. More than 70% of the participants rated three or higher for the level of understanding, which is consistent with previous studies that recommended at least 70% of participants to rate three or higher on a Likert-type scale (27).

The content validity of the CFC-I-M was assessed by an expert panel, which showed strong agreement with the 16 items of the questionnaire. The involvement of an experienced panel of experts ensured the content validity of the questionnaire. The I-CVI values for each question's relevancy, clarity, simplicity, and ambiguity components indicated that the panel of experts agreed that the items of the CFC-I-M were excellent and appropriate. Overall, all the components showed I-CVI values ranging between 0.83 to 1.0, which is comparable to previous studies that recommended an I-CVI of 0.80 and above for item appropriateness and relevance (28). Meanwhile, other studies recommended a cut-off value for I-CVI of 0.75 and above (36). An I-CVI value of more than 0.78 is defined as excellent, despite the number of experts, according to Polit et al. (2006). All components showed acceptable S-CVI/Ave and S-SVI/UAS-CVI values, in which a value > 0.80 is considered acceptable (31). All questions for item relevancy for the CFC-I-M showed an excellent k* value of 1.0 since the recommended Modified kappa (k*) value range between 0.75 - 1.0 is considered excellent (29).

Concurrent validity was established by comparing the translated CFC-I-M with its gold standard, which is the CFC-I. The results of the correlational analysis showed a positive, strong correlation between the total score of the CFC-I-M and the original English version of the CFC-I ($r = 0.762$, $p < 0.00$). However, there are no definite criteria for determining concurrent validity. The scores of the measurements must be comparable and strongly correlated for the CFC-I-M to be valid as the CFC-I in its original English language (37). Additionally, Cronbach's alpha analysis demonstrated that the CFC-I was a reliable instrument for use among groups of caregivers of older persons. The internal consistency of the CFC-I-M was found to be high, with a Cronbach's Alpha coefficient of 0.89, which is comparable to a previous study that showed a Cronbach's alpha coefficient of 0.93 for the CFC-I (23). For new scales, a coefficient alpha of 0.70 is acceptable (33).

There are limited assessments that focus on fall concerns from a caregiver's perspective. Therefore, this study is essential as it can be used among Malay-speaking carers of older people. Healthcare professionals usually prioritize the medical requirements of the elderly themselves, with little recognition of the enormous responsibility of the caregiver position (38). A qualitative systematic review highlights that caregivers' fear of falling (FOF) is primarily influenced by older adults' internal factors and the mental and physical exhaustion caused by their overprotective behavior (21). Consequently, it emphasizes the critical requirement for sufficient external support to address these concerns. This study sheds light on the problems faced by caregivers, enhances understanding of elderly care, and may enable individualized solutions based on caregiver concerns (23). Addressing this concern leads to an improved quality of life for older adults and promotes healthy aging. By evaluating the caregivers' concerns, healthcare practitioners can analyse the older person's risk of falling and the caregivers' need for further help at home from a different perspective.

Furthermore, in order to determine possible influences, it is recommended that this instrument be tested among other population groups in the future, such as carers who are taking care of older people with cognitive impairment or physical frailty. The authors strongly recommend that the sample size for the internal consistency test should be larger than the one presented in this study. Moreover, conducting a test-retest reliability study with an easily accessible population is highly recommended to further support the clinical use of the instrument among carers. Assessing test-retest reliability is vital in the development of psychometric tools as it ensures that measurement variations result from consistent differences between individuals, regardless of time, target behavior, or user profile. A higher stability coefficient indicates stronger test-retest reliability, suggesting that measurement errors in the questionnaire are less likely to be caused by changes in individuals' responses over time (26).

Conclusion

In conclusion, our study demonstrates that the CFC-I-M is a valid and reliable instrument for evaluating fall concerns among caregivers of older persons, as it exhibits strong psychometric properties. The simplicity and ease of administration through self-rating make the CFC-I-M accessible to a wide range of participants, particularly Malay-speaking carers. For participants who are unable to read, healthcare practitioners can conduct face-to-face interviews to administer the questionnaire and overcome non-responses. Therefore, the CFC-I-M serves as a reliable scale for measuring carers' concerns regarding the risk of falling in older people. By utilizing this instrument, healthcare practitioners can gain a better understanding

of caregivers' needs and develop personalized solutions for elderly care.

Acknowledgement

The study was funded by the research university Grant {600-RMC/GIP 5/3 (074/2021)} from the Universiti Teknologi Mara (UiTM). We thank the original author, Ang, O'Brien & Wilson, for permission to translate CFC-I into Malay. We would also like to thank the panel of experts for reviewing the questionnaire and all participants for participating in the study.

Competing interests

The authors declare that they have no competing interests.

Ethical clearance

This study was approved by the UiTM Research Ethic Committee on Jun 24 2021 (Ref. No. REC/06/2021 (MR/468).

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