IJCRR
Section: Healthcare
ISI Impact Factor
(2019-20): 1.628
IC Value (2019): 90.81
SJIF (2020) = 7.893

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Developing a Questionnaire to Determine Risk Factors Associated with Fear of Falls

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ABSTRACT

Background: Fear of Falls (FOF) in the elderly reduces physical activity and predisposes them to falls, disability, and premature death. The prevention and management of FOF are important to improve function and the quality of life of the older individual. This study aimed to develop a questionnaire to determine the factors associated with FOF in community-living senior citizens.

Method: Items in the questionnaire were obtained from the literature and from interviewing the elderly and physiotherapists who work with them. Content validity of the questionnaire was established by Lawshe's method using a Delphi process with five gerontology and survey research experts. The internal consistency was determined using Cronbach's alpha.

Result: Content Validity Index and Cronbach's alpha were found to be 0.80 and 0.85 respectively.

Conclusion: This questionnaire is a valid tool with good internal consistency. It can be used to determine factors associated with FOF in the elderly.

Key Words: Fear of Falls, Elderly, Falls, Ageing, Risk factors, Questionnaire

INTRODUCTION

Falls are a common problem in the elderly and are a deterrent to an active ageing process.¹ They not only result in physical injury but also have a significant psychological impact, as the individual develops a fear of falls (FOF), also known as 'Ptophobia' or post-fall syndrome.² Paradoxically, FOF is also found to be present in elderly who have never fallen,³ with a reported global prevalence rate of almost 50%,⁴ and approximately 25-45% in India.⁵⁻⁷

Given these significant prevalence numbers and their debilitating effect on functional independence and consequently a poor quality of life, FOF has gained recognition as a major health problem in the elderly.⁷ It is important to note that fear of fall, when temporary, refers to a momentary state of apprehension towards the threat of a fall and may help prevent falls to a certain degree.⁸ However, if the fear is persistent, it will lead to a decrement in a desire to move, a reduction in activity levels, an increase in sedentary behaviour, social isolation, physical decline, and depression. Consequently, FOF itself becomes a risk factor for recurrent falls and other health problems.⁹

FOF is a modifiable risk factor, and thus reducing it, is of high priority in the rehabilitation and management of disability in the elderly. A principal goal of rehabilitating the elderly is to prevent and reduce risk factors, such as FOF, that are deterrents to active ageing while increasing factors such as an activity that will protect their health and quality of life. WHO guidelines recommend providing training and education to caregivers about FOFs, and the development of comprehensive affordable, high-quality, and age-friendly health services to people as they age, which are evidence-based and respond to their specific needs in the environment where they live.¹⁰ Thus, early screening of the presence of FOF in the elderly and identification of the various factors associated with it is necessary as the population ages.

India has over 76.6 million people over the age of 60 years, and it is predicted that this number is going to increase to 198 million by 2030.¹¹ Furthermore, given the moderately high prevalence rates of FOF reported in the Indian elderly,⁵⁻⁷ studying the phenomenon of FOF and its associated risk factors within the environmental and cultural context of the Indian elderly will help in the development of appropriate

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ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 08.03.2021

Revised: 21.04.2021

Accepted: 03.06.2021

Published: 01.12.2021

rehabilitation strategies for effective elderly care. Accordingly, as a first step, a questionnaire that will help identify and/or determine the multifactorial factors associated with fear of falls in the elderly, one that is easy to administer in the community or a clinical setting, can contribute a great deal towards the development of an interdisciplinary program for the prevention and management of FOFs in the elderly.

The objectives of this study were two-fold: (1) review the literature and develop a questionnaire that identifies/determines the biological, psychological, and social factors associated with the Fear of Falls (FOF), and (2) establish content validity and internal consistency of the questionnaire.

METHOD

Development of initial draft of the questionnaire

A review of the literature was conducted and questions related to fear of falls from the perspective of the patient and clinician were identified and enumerated along with three major domains - biological, psychological, and social. Concurrently, a focus group consisting of five older adults and two clinicians actively involved in the care of the elderly was formed to solicit and incorporate their viewpoints with regards to possible factors associated with FOFs. Forty questions associated with FOFs were thus formulated across the three domains.

Establishing Content Validity

To establish content validity, the draft questionnaire was circulated amongst a panel of experts working in the field of gerontology.

Participant Experts: A panel of five experts consisting of two physiotherapists, one psychologist, one gerontologist, and one epidemiologist with experience in the field of geriatric care for at least five years was recruited for this study.

Procedure: The draft questionnaire was shared with four out of the five experts via an online survey software, *Survey Monkey*, while the fifth expert preferred to fill out a hard copy of the questionnaire. Each panellist was required to respond to each of the items in the questionnaire using two criteria: essentiality and clarity. Using a Delphi process, responses from all panellists were pooled and items with 80% approval from the panel were retained. Questions that did not meet the threshold were eliminated, or modified and sent for further review in round two (2). Lawshe's method¹² was used to calculate a Content Validity Index of the final draft questionnaire.

Translation of Questionnaire into Hindi

Two experts proficient in both the Hindi and English language were recruited to translate the questionnaire into the

vernacular Hindi Language so that it could be administered to the elderly living in the community. The validated English questionnaire was translated first into Hindi and then to establish the correctness of the translation and its validity a backward translation into English was carried out by the experts. Consensus by both experts was used to establish the validity of the translated questionnaire.

Establishing Internal Consistency

To establish internal consistency, the validated questionnaire was administered to community living elderly.

Participants: Hundred (100) community living males and females in the age group of 50 years and above were recruited through convenience sampling. People with diagnosed neurological conditions and cardiopulmonary disorders and those who were unable to understand and/or follow written or spoken commands were excluded from the study.

Procedure: Written informed consent was obtained from all participants following an explanation of the aim of the study and its procedure. The participants were required to fill the validated questionnaire by selecting the most suitable answer on a three-point ordinal scale (0 to 2) for each of the items in the questionnaire. The responses thus obtained were compiled and internal consistency was determined.

DATA ANALYSIS

Content Validity Ratio (CVR) of each item in the questionnaire was calculated based on the number of panellists indicating the item as "essential" in the final draft obtained after the second round of the Delphi process as follows:¹²

$$CVR = \frac{n_e - N/2}{N/2}$$

Where n_e is the number of panellists indicating "essential"

N is the total number of panellists

The overall Content Validity Index (CVI) was the average of CVR values computed for the retained items.

Internal consistency¹³ was calculated using Cronbach's Alpha.

RESULTS

Content Validity:

The preliminary factors associated with FOF obtained from the literature and the focus group were categorized under the biological, psychological, and social sub-domains based on Engel's Biopsychosocial Model¹⁴. The initial draft

questionnaire addressing these sub-domains consisted of forty questions: nineteen belonged to the biological domain (six cognitive, four medical, six balance, and three physical activity), nine questions represented the psychological domain, and twelve questions addressed the social domain.

Out of these 40 questions, three questions, ‘Do you feel that you are an important member of your family?’, ‘Do you constantly worry about your future?’ and ‘Do you suffer from any instability or loss of balance while sitting or standing or

both?’ were discarded by the expert panel due to lack of consensus about their essentiality and usefulness in addressing FOF. Four other questions were presented to the expert panel in the Round 2 of the Delphi process for reconsideration after the suggested revision. Finally, thirty-seven items achieved consensus and approval by the expert committee. Content Validity Index for these questions was calculated to be 0.80. Refer to table 1 for each question scored as essential, content validity ratio values, and the overall content validity index.

Table 1: Item Wise Content Validity Ratio and Content Validity Index of the Developed Questionnaire

S. No	Question	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	CVR
Psychological Domain							
1	Confident about moving around	1	1	1	1	1	1
2	Fear falling when using bathroom	1	1	1	1	1	1
3	Feeling of being depressed	1	0	1	1	1	0.6
4	Feeling of anxiousness	1	0	1	1	1	0.6
5	Ability to perform activities	1	1	1	1	1	1
6	Self-evaluation of being physically fit	1	1	1	1	1	1
7	Feeling of happiness	1	0	1	1	1	0.6
8	Forgetfulness	1	1	1	1	1	1
9	Forgetting month or year	1	0	1	1	1	0.6
10	Ability to return home without getting lost	1	0	1	1	1	0.6
11	Ability to concentrate on tasks	1	1	1	1	1	1
12	Difficulty in learning new task	1	0	1	1	1	0.6
13	Difficulty in finding solutions	1	0	1	1	1	0.6
Biological Domain							
14	Health problems	1	1	1	1	1	1
15	Experience of symptoms	1	1	1	1	1	1
16	Intake of medicines	0	1	1	1	1	0.6
17	Use of glasses other than reading glasses	1	0	1	1	1	0.6
18	Requirement of support while moving	1	1	1	1	1	1
19	Instability while standing up from sitting	1	1	1	1	1	1
20	Instability while walking or standing	1	1	0	1	1	0.6
21	Ability to talk while walking	1	1	1	1	0	0.6
22	Ability to walk in dark	1	1	1	1	1	1
23	Level of exercise	1	1	1	1	0	0.6
24	Description of own activity level	1	1	1	1	0	0.6
25	Self-evaluation of fitness	1	1	1	1	0	0.6
Social Domain							
26	Living arrangement	1	1	1	1	1	1
27	Involvement in recreational activities	1	1	1	1	0	0.6
28	Going out with your family/ friends	1	1	1	1	0	0.6
29	Visit to public places	1	1	1	1	0	0.6
30	Avoidance of family functions	1	1	1	1	1	1
31	Dependency for going outdoors	1	1	1	1	1	1

Table 1: (Continued)

S. No	Question	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	CVR
32	Dependency for ADL	1	1	1	1	1	1
33	Housing type	1	0	1	1	1	0.6
34	Requirement of using stair case at home	1	1	1	1	1	1
35	Space to move around in house	1	1	1	1	1	1
36	Distance of bedroom from bathroom	1	1	1	1	1	1
37	Avoidance of crowded areas	1	1	1	1	1	1
Content Validity Index (CVI)							0.80

Internal Consistency: The validated questionnaire was administered to a total of 100 community-living elderly. There were 54 males and 46 females (Refer Figure1).

42 out of the total 100 participants reported having experienced the fear of falls all the time or sometimes when responding to the direct question “Do you have fear of falling?” while 58% never experienced a FOF (refer to Figure 3).

Figure 1: Gender Distribution of Participants.

As seen in figure 2 there were 41 participants in the age group of 50-59, 31 in the 60- 69 age group, 16 in the 70-79 age group, and 10 in the 80-89 age group. Only 2 were aged above 90 years.

Figure 2: Age-wise distribution of participants.

Figure 3: Percentage of participants reporting Fear of Fall.

Out of the total 42 participants who reported fear of falls, 42.86% (18/42) had a previous experience of fall while 57.14% (24/42) had no such experience in the recent past.

15.52% (9/58) of participants who did not report fear of falls had experienced a fall and 84.48% (49/58) of participants who did not report fear of falls had not experienced a fall (refer to Figure 4).

Figure 4: Percentage of participants reporting previous experience of fall.

As seen in Figure 5, 25.93% (14/54) of the sampled males and 60.87% (28/46) of the females reported fear of fall.

Figure 5: Gender wise distribution of FOF.

Interestingly, as seen in Figure 6, there is an equal number of participants reporting FOF in each age group: 34.15% participants in the age group 50-59, 48.39% participants in the age group 60-69, 43.75% participants in the age group 70-79, 40% participants in the age group 80-89, and 100% in participants aged 90 and above (2/2) reported a FOF all the time or sometimes.

Figure 6: Percentage population having FOF in different decades.

As seen in Table 2, the internal consistency of the questionnaire, as calculated using Cronbach's Alpha, was 0.85. The values of Alpha for the Biological, Psychological and Social domains were 0.69, 0.71, and 0.44 respectively.

Table 2: Internal consistency of the questionnaire: Domain wise Cronbach's Alpha

Domains	Score Ranges	Cronbach's Alpha
Biological Domain	0-2	0.69
Psychological Domain	0-2	0.71
Social Domain	0-2	0.44
Questionnaire Total	0-2	0.85

DISCUSSION

Very few studies done in the past, especially in India, have studied factors associated with FOF among the elderly. They have to a large extent used formats with or without semi-structured questionnaires to identify factors associated with FOF.^{3,7,15} It is proposed that the use of a comprehensive structured questionnaire, as an adjunct to physical examination, can be a more objective and efficient method to address the problem of fear of falls in older adults.

In this study, a comprehensive approach based on Engel's Bio-psycho-social model¹⁴ was employed in the development of a questionnaire to determine risk factors associated with the fear of falls (FOF). The final questionnaire consisted of items derived from a review of the existing literature and focus group interviews of clinicians working in the field of geriatrics and the elderly. Given that FOF is a multidimensional construct, questions addressed relevant aspects of the biological, psychological, and social domains (Refer to Table 1). It is suggested, that knowledge of factors within each of these domains and their interaction is essential for the understanding and management of FOF.¹⁶

The biological factors in the questionnaire included existing health conditions,^{7,15,17-19} balance and gait problems,^{6,17,18} levels of physical activity and exercise.^{4,20,21} The psychological factors were depression,^{15,17,18} self-rated health,¹⁷ anxiety, confidence, and new skill learning.⁸ Social factors included self-imposed restriction of indoor and outdoor activities,^{5,17} quality of life,^{18,22} and functional dependence.¹⁸ Additional factors, such as living alone^{18,23} and living in disadvantaged areas^{2,3} were related to FOF and thus were also included in the questionnaire. Factors associated with the urban Indian landscape that were considered in developing the questionnaire were avoidance of unstructured and crowded market places, daily visits to the community temple, chaotic roads with heavy traffic, relative less space in residences for movement, sitting on the floor for religious and/or day-to-day activities of daily living, such as eating and toileting. The final questionnaire was found to have good content validity, which suggests the essentiality and importance of the included items as they relate to the construct of fear of falls (FOF).

Item-reliability or internal consistency values of the questionnaire and its sub-domains in a representative sample of

community-living elderly with and without FOF were in the good range. This suggests that the items being measured concerning the construct of FOF are stable and the probability of researcher bias is minimal.²⁴ Accordingly, the questionnaire provides a good reference to identify and determine factors associated with the fear of falls in clinical practice and research.²⁵ The administration of the questionnaire on the present sample has revealed results (percentage of people experiencing fear of falls, and the influence of common factors like previous falls, gender, and age on fear of falls) consistent with the previous researches.^{3,7,15,20} The total time taken to complete the questionnaire is 10-15 minutes and thus convenient for use in the clinics as well as for research purposes.

As this questionnaire is developed keeping the uniqueness of the Indian lifestyle in mind, it makes it possible to study the phenomenon of the fear of falling in the environmental and cultural context of an Indian elderly. Given good levels of validity and internal consistency, this questionnaire can be an important component of person-centred FOF and fall prevention programs²⁶ of community-living elderly. This questionnaire can also be effective in imparting education about fear of falls to the caregivers of the elderly.

CONCLUSION

The developed questionnaire is a valid and reliable tool for the determination of bio-psycho-social factors associated with the fear of falls in the Indian elderly within their environmental and cultural context. It is quick to administer and can be conveniently implemented across all healthcare disciplines involved in care for the elderly.

In line with the WHO guidelines¹⁰ about holistic care of elderly for fall prevention through an interdisciplinary approach, the developed questionnaire will help in better understanding of the fear of falls across all the bio-psycho-social domains. Furthermore, a better understanding of the fear of falls obtained through this questionnaire will help in the development of appropriate person-centred, high-quality, yet economical pre-emptive strategies and actions for the prevention and management of falls in the Indian elderly. This will help align the palliative health care services with the specific needs of the elderly. It is, however, further suggested that future studies must establish the construct validity of the questionnaire and administer it on a larger sample of community-living elderly as well as on patient populations.

ACKNOWLEDGEMENTS

We are sincerely grateful to Prof Dr. Nandini Sharma MD, Dr. Pankaj Sadaphal, MD, Dr. Majumi M Noohu, PhD, Dr.

Pragya Kumar, PhD, and Dr. A C Verma, MD for their inputs in the development of this questionnaire.

Conflict of interest: None

Funding: None

Authors' Contributions: Sampada Dhavale wrote the manuscript and provided data. Dr. Sonia Singh and Dr. Raju K Parasher conceptualized and guided the research. All authors reviewed the final manuscript.

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