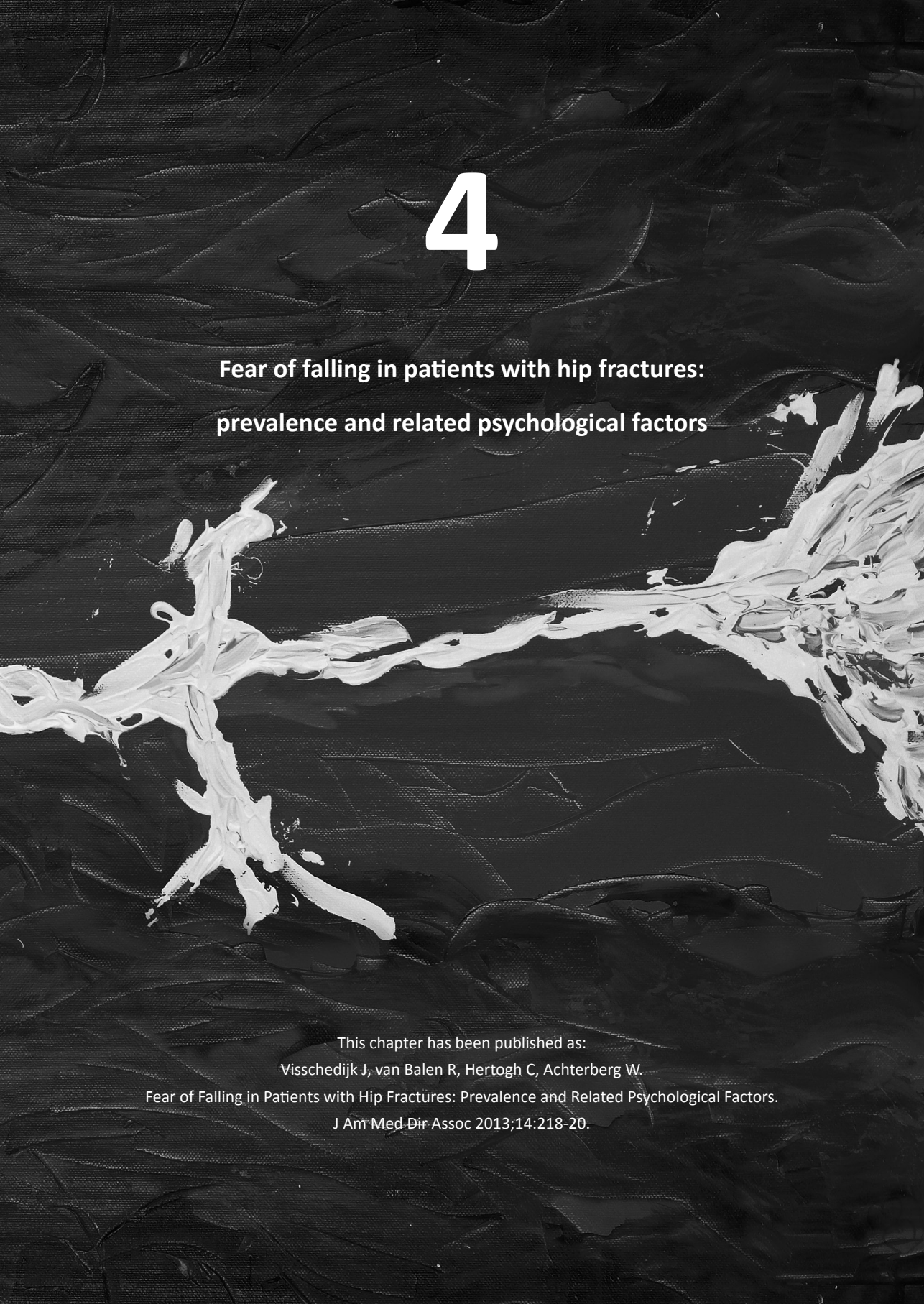

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Fear of falling in patients with hip fractures: prevalence and related psychological factors

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ABSTRACT

Objectives: To determine the prevalence of FoF in patients after a hip fracture, to investigate the relation with time after fracture and to assess associations between FoF and other psychological factors.

Design: Cross-sectional study in elderly patients after a hip fracture performed between September 2010 and March 2011.

Setting*:* Ten post-acute geriatric rehabilitation wards in Dutch nursing homes.

Participants: A total of 100 patients aged ≥ 65 years with a hip fracture admitted to a geriatric rehabilitation ward.

Measurements*:* FoF and related concepts such as falls-related self-efficacy, depression and anxiety were measured by means of self-assessment instruments.

Results: Of all patients, 36% had a little FoF and 27% had quite a bit or very much FoF. Scores on the Falls-Efficacy Scale-International were 30.6 in the first 4 weeks after hip fracture, 35.6 in the second 4 weeks, and 29.4 in the period ≥ 8 weeks after fracture. In these 3 periods, the prevalence of FoF was 62%, 68% and 59%, respectively. Significant correlations were found between FoF and anxiety (P<.001), and self-efficacy (P<.001).

Conclusion: In these patients with a hip fracture, FoF is common and is correlated with anxiety and falls-related self-efficacy. During rehabilitation FoF is highest in the second 4 weeks after hip fracture. More studies are needed to explore the determinants of FoF and develop interventions to reduce FoF and improve outcome following rehabilitation.

Key words: hip fractures, rehabilitation, fear of falling, falls efficacy

INTRODUCTION

The burden of hip fractures on the individual and society is considerable and will continue to increase in the future.[1,2] Psychological factors are important for successful rehabilitation after hip fracture.[3] Fear of falling (FoF) is such a factor, which may have more impact on functional recovery than pain or depression.[4] A recent literature review revealed that our knowledge on FoF in older people recovering from a hip fracture is limited.[5] Most studies suffer from selection bias because frail older people with substantial co-morbidity are frequently excluded. Therefore, we conducted a study in hip fracture patients in 10 post-acute geriatric rehabilitation wards of nursing homes in the Netherlands.

In the Netherlands, almost half of the patients with a hip fracture (mostly frail elderly) recover in post-acute geriatric rehabilitation wards of nursing homes. The rehabilitation protocols for these wards are similar, in terms of procedures and inputs. After admission, a multidisciplinary rehabilitation care plan is made by the elderly care physician. This physician is specially trained in medical care of frail elderly and part of the staff of the nursing home.[6] Patients generally follow a 4-16 week rehabilitation program, which includes wound care, treatment of pain and co-morbidity, training in ADL, occupational and physical therapy. When required, a social worker, psychologist or dietician is consulted. Patients are discharged when they can function independently or with assistance of formal or informal care at home. Most patients continue some form of physical therapy after discharge. Patients with little co-morbidity or complications who only need physical therapy after a hip fracture are usually discharged home after hospital admission. Patients who already live in a nursing home are usually not admitted to a post-acute geriatric rehabilitation ward.

The aim of this cross-sectional study was to determine the prevalence of FoF using different instruments, to investigate the relation with time after fracture and to assess associations between FoF and other psychological factors.

METHODS

A total of 124 patients were eligible to participate. Inclusion criteria were age ≥ 65 years and admitted to the ward because of a hip fracture. 24 Patients were excluded because they were unable to adequately respond to the questions, did not give consent to participate or had communication problems. Data were collected cross-sectionally at every site during a period of two weeks. In the first week the investigators provided information to the participants and health workers. In the second week the interviews with the participants and tests by

physiotherapists were conducted. Additional data were collected via questionnaires issued to the physicians and responsible nurses. Every patient rehabilitating after hip fracture on that rehabilitation ward was eligible to participate.

The Medical Ethical Commission of the VU University Medical Center approved the study and the protocol. All participants provided written informed consent.

Because different types of measures, i.e. multi-item self-efficacy and single-item FoF measures are available for FoF, two instruments were used in the study: The Falls Efficacy Scale-International (FES-I) and the One-item FoF instrument.[7] The FES-I reflects concern about falling when performing 16 ADL-tasks.[8] The response to the FES-I consists of 4 levels ranging from "no concern" to "very much concern".[9] The One-Item FoF instrument asks one question: Are you afraid of falling? and has four answer options "not at all", "a little", "quite a bit", and "very much".[7]

To assess FoF in relation to the rehabilitation phase, the participants were divided into three groups depending on the number of days between fracture and assessment; phase 1 = up to 28 days, phase 2 = 29-56 days, and phase 3 = ≥ 57 days. These cut-off points ensured comparable numbers of participants in each group and are also clinical relevant for the rehabilitation process. In phase 1 the focus is on strength and balance training, in phase 2 on walking independently and in phase 3 on increasing walking distance and adjusting to circumstances at home.

Depressive symptoms were measured using the Geriatric Depression Scale 8-item version (GDS8).[10] Anxiety was assessed using the anxiety component of the hospital anxiety and depression scale (HADS-A).[11] Self-efficacy was measured using the Dutch translation of the General Self-Efficacy Scale (GSE).[12] This ten-item scale measures the general competence of a person to cope with a broad scope of challenging encounters. Pain was assessed by asking the patients to indicate their level of pain on a visual analog scale (VAS) ranging from 0-10.[13]

Analyses were performed using SPSS for Windows, version 17 (SPPS, Inc., Chicago, IL, USA).

RESULTS

Of the 100 participants, mean age was 83.1 years and 75% were female. The mean FES-I was 32.2. The scores for the FoF 1-item were: no FoF 37.0%; a little FoF 36.0%; quite a bit FoF 23.0%; and very much FoF 4.0%. The Pearson's correlation between the FES-I and the 1-item FoF instrument was 0.668 ($p<.001$).

Table 1 shows that the percentage of patients with FoF (measured with the FES-I and the FoF 1-item instrument) is highest in phase 2 of the rehabilitation process. In phases 1, 2 and 3 the FES-I is 30.6, 35.6 and 29.4, respectively (P=.025; Kruskal-Wallis test).

Table 1 - Fear of Falling and Falls-Related Self-Efficacy in different periods of rehabilitation.

Characteristics	First four weeks (≤ 28 days) after fracture	Second four weeks (28-56 days) after fracture	More than 8 weeks (≥ 57 days) after fracture)	P-value
Number in group	26	40	34	
Range of days after fracture	[7-28]	[29-56]	[57-292]	
Days after fracture, mean (median)	21.0 (22)	42.2 (42)	87.7 (73.5)	
FES-I, mean (CI)[a] [range]	30.6 (27.0-34.2) [16-46]	35.6 (32.2-39.0) [19-60]	29.4 (26.7-32.1) [17-52]	Kruskal-Wallis test: P=.025
FoF 1-item, % with FoF[b]	62%	68%	59%	Pearson's Chi-Square test: P=.731
GSE, mean, (CI), [range]	22.9, (20.5-25.4), [8-30]	21.0, (19.2-22.9), [8-30]	21.0, (18.7-23.3), [5-30]	
VAS, mean, (CI), [range]	2.5, (1.7-3.3), [0-6]	3.1, (2.4-3.8), [0-8]	2.3, (1.6-3.1), [0-7]	
GDS, mean, (CI), [range]	0.2, (0.0-0.3), [0-1]	0.7, (0.2-1.2), [0-7]	1.4, (0.6-2,1), [0-7]	
HADS-A, mean, (CI), [range]	2.4, (1.1-3.7), [0-13]	2.7, (1.5-3.8), [0-18]	3.5, (2.1-4.9), [0-14]	

FES-I, Falls Efficacy Scale-International; FoF, Fear of Falling; GDS, Geriatric Depression Scale (8 items, dichotomous yes/no [range 0-8]); GSE, general self-efficacy scale (10 items, 4 point rating [0-3] [range 0-30]);
HADS-A, anxiety component of the hospital anxiety and depression scale (7 items, 4 point rating [0-3] [range 0-21]); VAS, visual analog scale-pain (11 point numerical rating [range 0-10]).
[a]The FES-I score is the summed score of 16 items. For each item a Likert scale is used in which "no", "a little", "quite a bit" and "very much" concern to fall gives a score of 1, 2, 3 and 4, respectively.
[b]Patients with FoF answered to the question "Are you afraid of falling?" with "a little", "quite a bit" or "very much".

The Pearson's correlation between the GDS8 and the FES and the 1-item FoF instrument was 0,111 (P=.271) and 0.190 (P=.058), respectively. The Pearson's correlation between the GSE and the FES and the 1-item FoF instrument was -0.295 (P=.003) and -0.363 (P<.001), respectively. The Pearson's correlation between the anxiety component of the HADS and the FES, and the 1-item FoF instrument was 0.267 (P=.007) and 0.359 (P<.001), respectively. The Pearson's correlation between VAS-pain and the FES and the 1-item FoF instrument was 0.250 (P=.012) and 0.152 (P=.131), respectively.

DISCUSSION

This study shows that FoF is common among patients after a hip fracture. When using a simple 1-item instrument to assess FoF, 63% of the patients had at least some FoF. This is within the broad range of 21-85% reported in other studies, mainly focusing on community-dwelling older persons.[14]

The mean FES-I of 32.2 in our group is similar to that in a German study of geriatric rehabilitation inpatients in which FES-I was 32 on admission to hospital and 34 at 4-months follow-up.[15] In a Dutch study (among mostly independently living older people) the mean score was 26.7 for those aged 70-79 years, and 33.0 for those aged ≥ 80 years.[9] This indicates that also when using the FES-I as a proxy for FoF, FoF is a considerable clinical problem in rehabilitation after hip fracture.

When measuring in different phases of rehabilitation, FoF and FES-I were highest in the group that had rehabilitated 4 to 8 weeks. Studies are required in which individual participants are followed longitudinally to confirm these results and draw further conclusions.

FoF was strongly associated with anxiety and self-efficacy; however, it is not clear how this relationship is established. Anxiety might be a general characteristic of a person and, as such, may facilitate FoF in general. Similarly, a person's lack of self-efficacy about *not* falling may enhance FoF. The exact features of this relationship, and how they might be modified, needs to be examined in future studies.

A limitation of this study is that the data are cross-sectional, meaning that the individual patients were not followed throughout the rehabilitation process. This implies that the different subgroups may not be fully comparable. Patients who rehabilitated at a faster rate may have been discharged earlier and were probably underrepresented; this may have resulted in overestimation of the prevalence of FoF. Although the patients included in this study constitute a large proportion of the (often frail) older people who recover after a hip fracture, caution is required when generalising the results to other groups.

CONCLUSION

FoF is common among patients with a hip fracture, using different measurement instruments, and is related to other psychological factors, such as anxiety and depression. The prevalence was greatest in the group rehabilitating between 28 and 56 days. However, the exact prevalence during different phases in the rehabilitation process has to be further explored in longitudinal studies. This information is necessary to develop interventions to diminish FoF in order to improve functional capacity and participation after hip fractures.

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