original article

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Prospective monitoring and self-report of previous falls among old[illegible] high risk of falls and fractures: a study of comparison and agreement

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ABSTRACT | **Background:** The identification of the occurrence of falls is an important step for screening and for [illegible]sses for the elderly. The methods of monitoring these events are susceptible to recording biases, [illegible] most accurate method remains challenging. **Objectives:** (i) To investigate the agreement between retrospective self-reporting and prospective monitoring of methods of recording falls, and (ii) to compare the retrospective self-reporting of falls and the prospective monitoring of falls and recurrent falls over a 12-month period among older women at high risk of falls and fractures. **Method:** A total of 118 community-dwelling older women with low bone density were recruited. The incidence of falls was monitored prospectively in 116 older women (2 losses) via monthly phone calls over the course of a year. At the end of this monitoring period, the older women were asked about their recall of falls in the same 12-month period. [illegible]n the two methods was analyzed, and the sensitivity and specificity of self-reported previous falls in relation to the prospective monitoring were calculated. **Results:** There was moderate agreement between the prospective monitoring and the retrospective self-reporting of falls in classifying fallers (Kappa=0.595) and recurrent fallers (Kappa=0.589). The limits of agreement were 0.35±1.66 falls. The self-reporting of prior falls had a 67.2% sensitivity and a 94.2% specificity in classifying fallers among older women and a 50% sensitivity and a 98.9% specificity in classifying recurrent fallers. **Conclusion:** Self-reporting of falls over a 12-month period underestimated 32.8% of falls and 50% of recurrent falls. The findings recommend caution if one is considering replacing monthly monitoring with annual retrospective questioning.

Keywords: aged; bone density; accidental falls; rehabilitation; mental recall.

HOW TO CITE THIS ARTICLE

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Introduction

Fal[illegible]gh prevalence among the elderly population, even among those who are active and healthy, and constitute one of the major preventable geriatric syndromes[1]. Among the community-dwelling elderly, approximately 30% suffer a fall each year, and half experience recurrent falls[2]. Elderly women with osteoporosis and having a high risk of fractures exhibit an even higher frequency of falls (51.1%)[3]. A significant portion of these falls results in injuries (36%)[4], fractures (3.4% to 19%)[2,4,5], and the need for medical assistance (8 to 19%)[4,5] and affects lifestyle choices, creating a high socio-economic burden[6]. Additionally, experiencing one or more falls in the course of one year significantly increases the chances of the occurrence of new episodes in the following year among the community-dwelling elderly[4,5] and postmenopausal women[1,7].

Thus, the surveillance of falls among the elderly represents a priority health issue[6], which is why questioning the o[illegible] falls has been used in clinical/scientific decision making[8-10]. Several methods have been suggested for monitoring the occurrence of falls among the community-dwelling elderly, including questions asking individuals to recall these events at several intervals by means of telephone, face-to-face or mail interviews, information obtained from medical records, and/or prospective records using falls calendars or diaries[8,9,11-13]. However, the elderly

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common than over-reporting. Of the 64 elderly women who reported falls during the monthly monitoring, 32.8% denied having fallen in the self-reporting of previous falls. Of the 52 participants who reported no falls during the monthly monitoring, 5.76% reported falls in the self-reporting of previous falls. Similarly, of the 24 elderly women who reported recurrent falls during prospective monitoring, 50% denied recurrent falls in the retrospective self-report. Additionally, of the 92 participants who denied having fallen tw prospective monitoring, 1.1% reported recurrent falls in the self-report of the 12 previous months.

However, the ratio of elderly women who incorrectly reported not having fallen in the previous 12 months decreased with the increase in the number of falls during the year of retrospective follow-up: 40% under-reporting among participants who reported one fall, 30.76% among those who reported two falls, 16.6% among those who reported three falls, and no under-reporting among those who had fallen four to six times during the study.

Comparison between retrospective self- spective monitoring of falls for sample subgroups

The analyses of the sensitivity and specificity of retrospective self-reporting of falls and recurrent falls with respect to prospective monitoring regarding subgroups of elderly women who may or may not have suffered injurious falls are shown in Table 4. A better recall capacity of falls in the previous

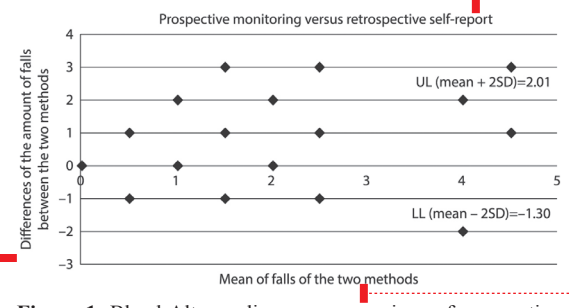

Figure 1. Bland-Altman diagram: comparison of prospective monthly monitoring over 12 months and annual retrospective self-reporting (prev UL = upper limit; LL = Lower Limit; Mean difference = 0.35. SD = 0.83. Limit of agreement = 0.35±1.66.

Table 3. Agreement between prospective monitoring and retrospective self-reporting of falls and recurrent falls over 12 months (n=116).

Retrospective Self-report	Prospective Monitoring: Non-faller (0 fall)	Prospective Monitoring: Faller (≥1 fall)	Total
Non-faller (0 fall)	49	21	70
Faller (≥ 1 fall)	3	43	46
Total	52	64	116
	Non-recurrent faller (≤1 fall)	**Recurrent faller (≥2 falls)**	
Non-recurrent faller (≤1 fall)	91	12	103
Recurrent faller (≥2 falls)	1	12	13
Total	92	24	116

Retrospective self-report of falls: Sensitivity = 43/64 = 67.2% (CI 95% 55.0 – 77.4). Specificity = 49/52 = 94.2% (CI 95% 84.4 – 98.0). Percentage agreement = (49 + 43)/116 = 79.31%. *Kappa* = 0.595, p=0.001 (CI 95% 0.458 – 0.732). Retrospective self-reporting of recurrent falls: Sensitivity = 12/24 = 50% (CI 95% 31.4 – 68.6). Specificity = 91/92 = 98.9% (CI 95% 94.1 – 99.8). Percentage agreement = (91 + 12)/116 = 88.79%. *Kappa* = 0.589, p=0.001 (CI 95% 0.395-0.783).

Table 4. Sensitivity and specificity of retrospective self-reporting of falls and of recurrent falls for sample subgroups.

Subgroups	Falls (≥1 fall)		Recurrent Falls (≥2 falls)	
	Sensitivity (CI 95%)	**Specificity (CI 95%)**	**Sensitivity (CI 95%)**	**Specificity (CI 95%)**
No injuries after falls (n=19)	63.1% (41.0 – 80.8)	0%	60% (23.1 – 88.2)	92.8% (68.5 – 98.7)
Injuries after falls (n=44)	68.2% (53.4 – 80.0)	0%	47.4% (27.3 – 68.3)	100% (86.7 – 100.0)

recommend a more simple definition of falls to allow for a broader understanding[11] allowing more attention to be paid to the correct understanding of the definition by patients. Thus, the proper recognition of the patient's history of falls would allow clinicians and researchers to develop strategies to reduce the incidence of falls and injuries and to preserve mobility among elderly patients[14], especially among those at high risk of falls and fractures.

Conclusion

The method of retrospective self-reporting of falls in the previous 12 months exhibited moderate agreement and limited accuracy with respect to the method of prospective monitoring of falls among elderly women at high risk of falls and fractures. The retrospective self-reporting of falls was more sensitive with respect to prospective monitoring among women with injurious falls than among those with no post-fall injuries. These findings call for caution when substituting monthly monitoring with retrospective questioning and indicate the importance of including associated clinical-functional information for decision-making in clinical-scientific settings.

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