La riabilitazione funzionale del paziente con frattura di femore e deterioramento cognitivo: ha un ruolo il genere?

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SOCIETÀ ITALIANA DI GERONTOLOGIA E GERIATRIA

CREMONA SOLIDALE
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Outline

- **Epidemiologia: che cosa sappiamo?**
- **Che cosa significa “deterioramento cognitivo”?**
- **L’influenza del genere sull’outcome**
- **Quale specificità riabilitativa tra “genere” e “decadimento cognitivo”**

Declining trends in the incidence of hip fractures in people aged 65 years or over in years 2000–2011

Sandro Giannini [a,*], Stefania Sella [a], Maurizio Rossini [b], Daniela Braghin [a], Davide Gatti [b], Maria Teresa Vilei [a], Annalisa Amabile [a], Maria Fusaro [c], Anna Chiara Frigo [d], Giuseppe Sergi [e], Roberto Lovato [f], Martino Nobile [a], Fabrizio Fabris [a]

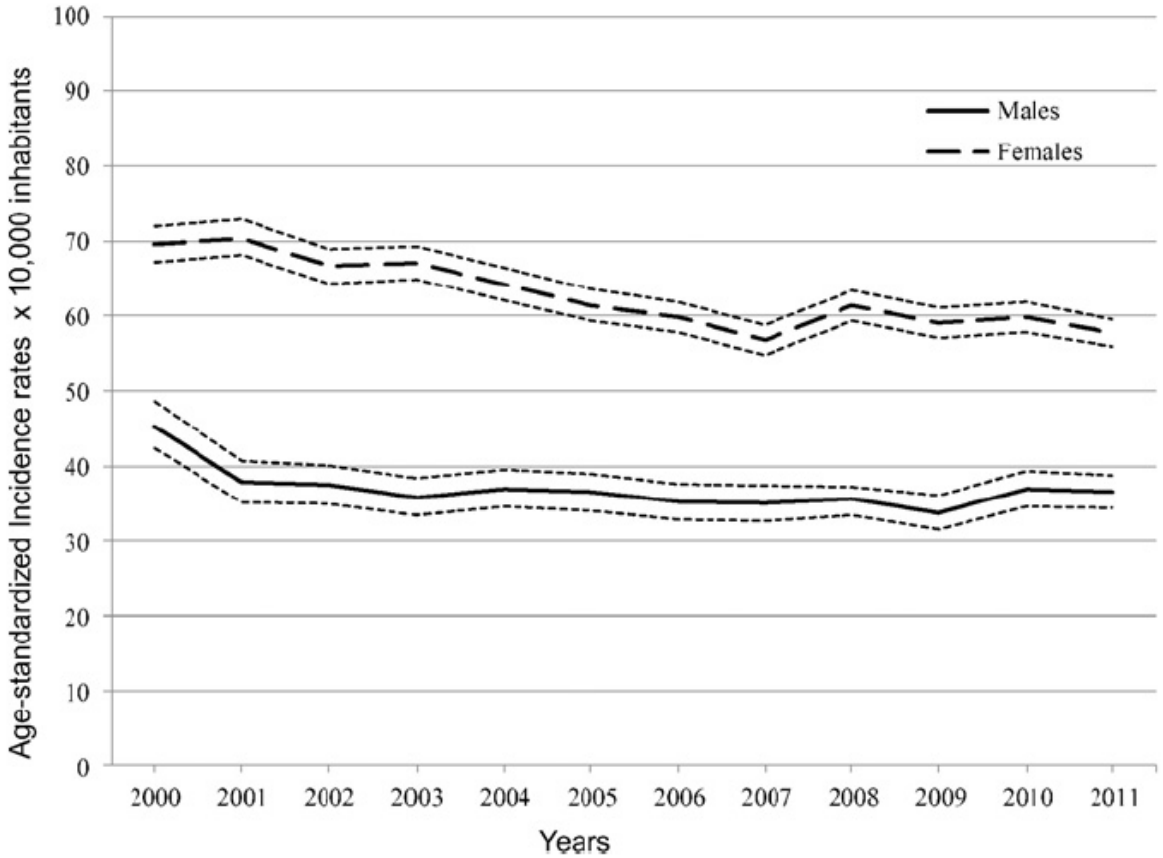

Fig. 2. Age-standardized hip fractures incidence rates in 65 years and over population, by sex, calendar years 2000 to 2011, in the Veneto Region, Italy. Dotted lines indicate 95% CI.

European Journal of Internal Medicine 35 (2016) 60–65

Gender differences in the incidence of and risk factors for hip fracture: A 16-year longitudinal study in a southern European population

Elena Lobo[a,b,c,*], Guillermo Marcos[a,b,c,d], Javier Santabárbara[a,b,c],

Risk factors for hip fracture in men and in women.

	Men				Women			
	Univariate		Multivariate		Univariate		Multivariate	
	HR (95% CI)	*p-value*	HR (95% CI)	*p-value*	HR (95% CI)	*p-value*	HR (95% CI)	*p-value*
Age	**1.14 (1.10–1.17)**	*<0.001*	**1.13 (1.08–1.17)**	*<0.001*	**1.13 (1.11–1.15)**	*<0.001*	**1.12 (1.09–1.14)**	*<0.001*
Coupled	**0.30 (0.17–0.53)**	*<0.001*	**0.51 (0.27–0.94)**	*0.032*	**0.31 (0.23–0.41)**	*<0.001*	**0.68 (0.48–0.96)**	*0.028*
Illiterate	0.75 (0.10–5.47)	*0.780*	0.35 (0.05–2.54)	*0.296*	**2.20 (1.52–3.19)**	*<0.001*	**1.57 (1.03–2.39)**	*0.035*
Alcohol	1.11 (0.55–2.19)	*0.796*	0.86 (0.42–1.78)	*0.691*	**2.02 (1.23–3.32)**	*0.005*	1.52 (0.88–2.64)	*0.135*
Tobacco	1.04 (0.57–1.91)	*0.894*	**2.13 (1.11–4.10)**	*0.024*	0.81 (0.36–1.81)	*0.602*	1.55 (0.68–3.56)	*0.301*
Underweigth	2.46 (0.59–10.15)	*0.213*	1.13 (0.26–4.95)	*0.874*	**2.28 (1.30–3.99)**	*0.004*	1.48 (0.79–2.75)	*0.221*
Overweight	0.66 (0.37–1.16)	*0.146*	0.77 (0.42–1.45)	*0.417*	0.81 (0.61–1.07)	*0.810*	0.95 (0.68–1.33)	*0.768*
Obesity	0.84 (0.40–1.79)	*0.66*	0.74 (0.32–1.69)	*0.477*	0.87 (0.64–1.17)	*0.349*	0.81 (0.56–1.18)	*0.271*
Depression	2.02 (0.63–6.5)	*0.240*	1.68 (0.51–5.55)	*0.396*	1.35 (0.97–1.87)	*0.075*	**1.45 (1.01–2.06)**	*0.042*
Dementia	**10.74 (2.51–45.9)**	*0.001*	2.34 (0.48–11.35)	*0.293*	**5.72 (3.32–9.84)**	*<0.001*	1.64 (0.69–3.90)	*0.265*
bADL'	**5.78 (2.88–12.43)**	*<0.001*	**3.15 (1.23–7.87)**	*0.011*	**3.42 (2.41–4.85)**	*<0.001*	1.23 (0.78–1.97)	*0.401*
Menopause <45 y					1.34 (0.98–1.82)	*0.063*	1.27 (0.93–1.73)	0.127

bADL': Basic Activities of Daily Living. Cox regression models. HR: hazard ratios. CI: confidence interval.

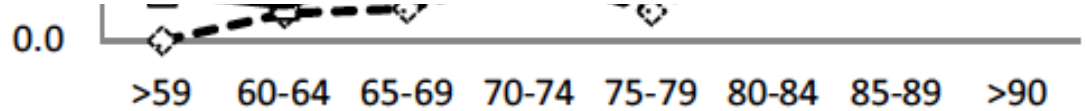

Fig. 1. Hip Fracture Incidence Rate (IR) (100,000 person-year) in Men and Women.

Maturitas 97 (2017) 38–43

Short- and long-term prognostic factors associated with functional recovery in elderly patients with hip fracture: A systematic review

Berenice Araiza-Nava[1] · Lucia Méndez-Sánchez[1] · Patricia Clark[1] · María Luisa Peralta-Pedrero[2] · Muhammad Kassim Javaid[3] · Mónica Calo[4] · Brenda María Martínez-Hernández[5] · Fabiola Guzmán-Jiménez[6]

Table 2 Description of the associated factors to functional recovery after hospital discharge in elderly patients (over 60 years) after a hip fracture event

TYPE OF FACTOR	ASSOCIATED FACTOR	IMPACT **	TIME	
			SHORT TERM (<6 months)	LONG TERM (≥6 months)
Gender	Female	+		●
Dementia	Severe	-	●	●
	Moderate	-	●	●
Delirium	Post-surgical	M -	●	●
Rehabilitation participation	> participation	+	●	
Rehabilitation	In-hospital sessions	+		●

Osteoporosis International (2022) 33:1429–1444

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Review Article

Rehabilitation Interventions for Older Individuals With Cognitive Impairment Post-Hip Fracture: A Systematic Review

Barbara Resnick PhD, CRNP, FAAN, FAANP [a,*], Lauren Beaupre PT, PhD [b], Katherine S. McGilton RN, PhD [c], Elizabeth Galik PhD, CRNP, FAANP [a], Wen Liu PhD, RN [d], Mark D. Neuman MD, MSc [e], Ann L. Gruber-Baldini PhD [f], Denise Orwig PhD [f], Jay Magaziner PhD, MSHyg [f]

Up to 40% of individuals with a hip fracture have some form of cognitive impairment, which may include dementia, delirium, mild cognitive impairment, or other postoperative cognitive decline

2015

Development of dementia in patients with femoral neck fracture who experience postoperative delirium—A three-year follow-up study

B. Olofsson[1,2] | M. Persson[1] | G. Bellelli[3] | A. Morandi[4] | Y. Gustafson[5] | M. Stenvall[5]

Three years after their operations, 31.8% were diagnosed with dementia.

TABLE 5 Logistic regression modelling of factors associated with the development of dementia within 3 years after hip repair surgery

Independent Variable	B	Wald Statistic	P	OR	95% CI
Age	0.060	1.952	0.162	1.062	0.976–1.156
Sex	0.508	0.619	0.432	1.662	0.469–5.891
Diabetes	−1.411	4.347	**0.037**	0.244	0.065–0.919
Delirium preop	0.624	0.709	0.400	1.867	0.437–7.982
Delirium postop	2.746	9.228	**0.002**	15.582	2.649–91.640
Hyperactive delirium	0.338	0.305	0.581	1.402	0.423–4.645
Days with delirium	−0.056	1.822	0.177	0.946	0.872–1.025
Urinary tract infection	0.314	0.337	0.562	1.369	0.474–3.949
MNA score	−0.010	0.021	0.885	0.990	0.861–1.138

Int J Ger Psych 2018

Table 1. Baseline Characteristics of Older Adults with Dementia and Hip Fractures According to Postfracture Rehabilitation Setting

Characteristic	No Rehabilitation, n = 4,494	CCC, n = 2,474	HCR, n = 1,157	IPR, n = 3,075	No Rehabilitation vs CCC	No Rehabilitation vs HCR	No Rehabilitation vs IPR
					P-Value		
Age, mean ± SD	85.4 ± 6.7	84.8 ± 6.4	83.2 ± 6.8	83.7 ± 6.3	.004	<.001	<.001
Female, n (%)	3,255 (72.4)	1,800 (72.8)	897 (77.5)	2,338 (76.0)	.77	<.001	<.001
Rural community, n (%)	519 (11.6)	362 (11.6)	243 (21.0)	135 (4.4)	<.001	<.001	<.001
Medical comorbidity, mean ± SD							
Charlson Comorbidity Index score	1.3 ± 1.9	1.3 ± 1.8	1.3 ± 1.7	1.4 ± 1.9	.02	.13	.002
Number of major Adjusted Diagnostic Groups	2.7 ± 1.4	2.73 ± 1.5	2.6 ± 1.4	2.8 ± 1.5	.23	.008	.001
Health service use before hip fracture, mean ± SD							
Number of outpatient physician visits in previous year	47.9 ± 33.9	49.9 ± 40.4	46.0 ± 30.6	54.6 ± 33.8	.72	.28	<.001
Number of hospitalizations in previous year	0.5 ± 1.0	0.6 ± 1.0	0.4 ± 0.9	0.5 ± 0.9	.002	.001	.14
Perioperative variables							
Surgical delay, days, mean ± SD	2.1 ± 9.0	1.86 ± 4.0	1.6 ± 2.5	1.5 ± 2.9	.42	.87	.01
American Society of Anesthesiologists score, n (%)							
1–2	1,289 (28.7)	666 (26.9)	316 (27.3)	929 (30.2)	.11	.36	.15
3	1,477 (32.9)	776 (31.4)	452 (39.1)	1,123 (36.5)	.20	<.001	.001
4	1,213 (27.0)	790 (31.9)	261 (22.6)	721 (23.5)	<.001	.002	.005
5	31 (0.7)	19 (0.8)	≤5	16 (0.5)	.77	.02	.37
Extracapsular fracture, n (%)	2,201 (49.3)	1,331 (54.2)	489 (42.5)	1,484 (48.5)	<.001	<.001	.51
Hemiarthroplasty, n (%)	1,881 (41.9)	915 (36.9)	518 (44.8)	1,305 (42.4)	<.001	.61	.07
Regional anesthesia, n (%)	2,514 (55.9)	1,420 (57.4)	707 (61.1)	1,725 (56.1)	.24	0002	.89
Hospital type, n (%)							
Rural	297 (6.6)	183 (7.4)	191 (16.5)	47 (1.5)	<.001	<.001	<.001
Nonteaching urban	3,021 (67.2)	2,014 (81.4)	688 (59.5)	2,118 (68.9)			
Teaching	1,176 (26.2)	277 (11.2)	278 (24.0)	910 (29.6)			

A two-year multicenter point prevalence study of older patients with hip fractures admitted to rehabilitation units in Italy

Valentina G
Maria Grazia

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Table 2 Charact
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Dementia
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Bladder cathe

Table 3 Characteristics of the patients according to the type of rehabilitation

andi[3,7,10,11]

	Intensive rehabilitation $n=241$, 39.2%	Extensive rehabilitation $n=171$, 27.8%	p value	Endoprosthesis $n=239$, 38.9%	p value
Sociodemographic variables				79 (%)	
Gender					
Females	182 (75%)	134 (78%)	0.343	22 (9%)	0.67
Complexity markers				86 (34%)	0.608
Delirium	13 (5%)	23 (13%)	0.004		
Dementia	93 (39%)	78 (45%)	0.099		
Malnutrition	62 (26%)	33 (19%)	0.080		
Bladder catheter	53 (22%)	43 (25%)	0.272		

Association between delirium, adverse clinical events and functional outcomes in older patients admitted to rehabilitation settings after a hip fracture: A multicenter retrospective cohort study

Table 1 Characteristic of 519 older patients according to the presence of delirium and/or adverse clinical events during the rehabilitation stay

	Full sample (n = 519)	No ACE or delirium (n = 223)	Only ACE (n = 219)	Only delirium (n = 19)	ACE and delirium (n = 58)	
Age (years)	82.9 ± 9.4	80.70 ± 11.11	84.03 ± 7.67	88.02 ± 5.54	85.85 ± 7.14	<0.001
Female sex	411 (79)	180 (80.7)	168(76.7)	19(100.0)	44 (75.9)	0.684
Barthel Index (prefracture)	81.63 ± 21.55	86.14 ± 19.79	81.48 ± 22.03	66.68 ± 26.93	69.78 ± 17.67	<0.001
Barthel Index (admission)	27.84 ± 19.85	33.48 ± 21.22	26.74 ± 18.10	13.89 ± 13.51	14.84 ± 12.28	<0.001
Barthel Index (discharge)	54.01 ± 26.62	63.19 ± 27.83	52.56 ± 29.24	35.68 ± 21.74	29.32 ± 21.07	<0.001
Severe Cardiac Impairment	30 (5.8)	3 (1.3)	17 (7.8)	3 (15.8)	7 (12.1)	<0.001
Severe Respiratory Impairment	19 (3.7)	3 (1.5)	11 (5)	1 (5.3)	4 (6.9)	0.093
Severe Hepatic Impairment	4 (0.8)	1 (0.4)	1 (0.5)	0	2 (3.4)	0.105
Severe Renal Impairment	10 (1.9)	2 (0.9)	5 (2.3)	0	3 (5.2)	0.172
Severe Dementia	90 (17.4)	21 (9.4)	26 (11.9)	9 (47.4)	34 (58.6)	<0.001
Urinary tract infection	136 (26.3)	0	101 (46.4)	0	35 (60.3)	<0.001
Falls	52 (10.1)	0	33 (15.1)	0	19 (33.3)	<0.001
Non-infectious ACE	141 (27.3)	0	106 (48.4)	0	35 (60.3)	<0.001
Malnutrition	153 (29.6)	47 (21.2)	66 (30.3)	11 (57.9)	29 (50.0)	<0.001

[1] Significant differences between variables were evaluated using one-way analysis of variance (ANOVA).

Morandi et al Geriatrics & Geront Int 2019

Associazione tra eventi clinici/delirium ed outcome funzionali

Variables	Model 1		Model 2	
	Mean (95% confidence interval)	*P*-value	Mean (95% confidence interval)	*P*-value
No ACE or delirium	(Reference)		(Reference)	
Only ACE	−6.7 (−11.6; −1.7)	0.008	−2.6 (−6.0;0.8)	0.130
Only delirium	−13.2 (−25.6; −0.8)	0.038	−3.4 (−11.9; 5.0)	0.426
ACE and delirium	−18.6 (−26.9; −10.3)	<0.001	−10.4 (−16.1; −4.6)	<0.001
Age	−0.6 (−0.9; −0.4)	<0.001	−0.1 (−0.3; −0.1)	0.393
Sex	1.6 (−4.2; 7.4)	0.581	3.2 (−0.8; 7.0)	0.114
Malnutrition	−1.1 (−5.6; 3.4)	0.636	0.8 (−2.9; 4.5)	0.664
Severe dementia	−18.7 (−25.5; −11.9)	<0.001	−0.6 (−5.5; 4.3)	0.803
Delta Barthel Index	−0.1 (−0.23; 0.02)	0.109	—	—
Barthel Index pre-admission	—	—	0.4 (0.3;0.5)	<0.001
Barthel Index on admission	—	—	0.8 (0.7;0.9)	<0.001

Morandi et al Geriatrics & Geront Int 2019

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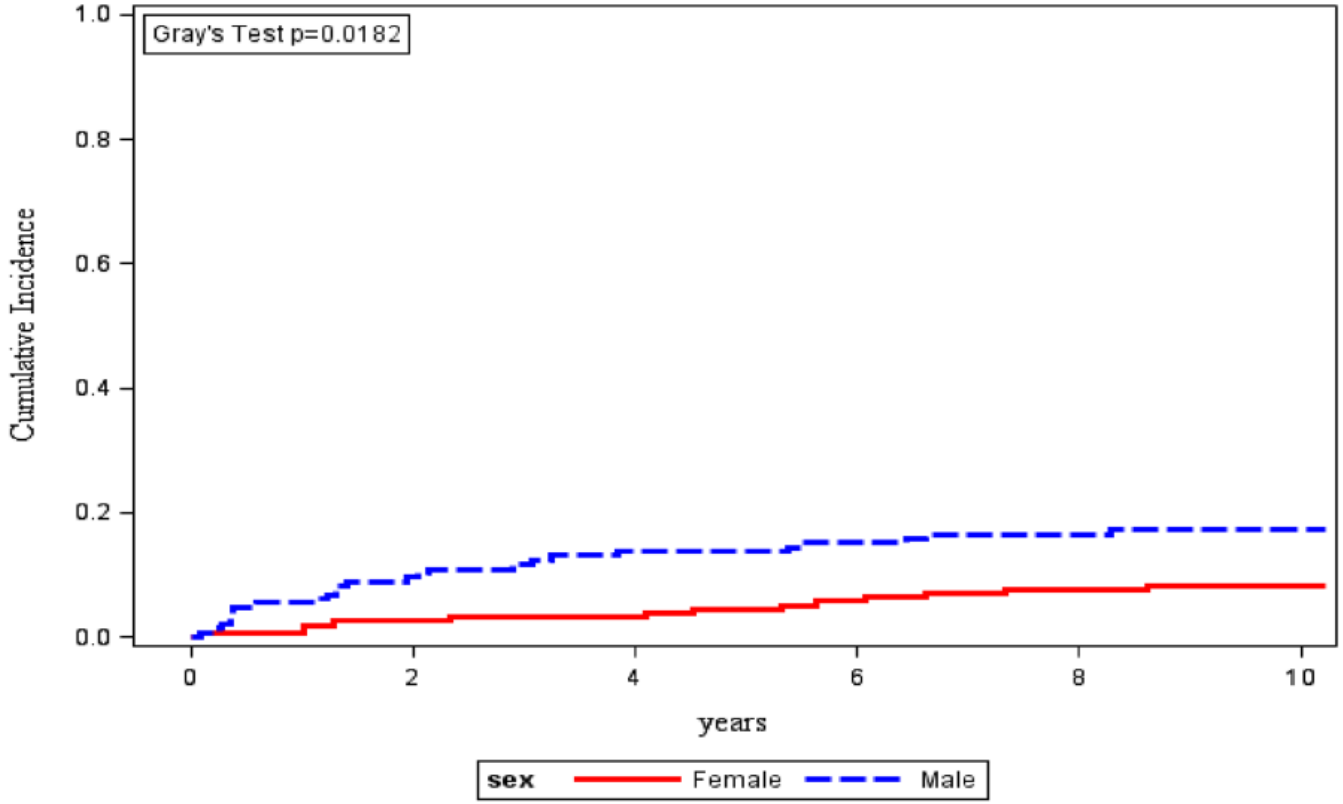
Long-term sex differences in all-cause and infection-specific mortality post hip fracture

Rashmita Bajracharya PhD[1] | **Jack M. Guralnik MD, PhD[1]** |

(A)



Cumulative incidence of infection-specific mortality

J Am Geriatr Soc. 2022;70:2107–2114.

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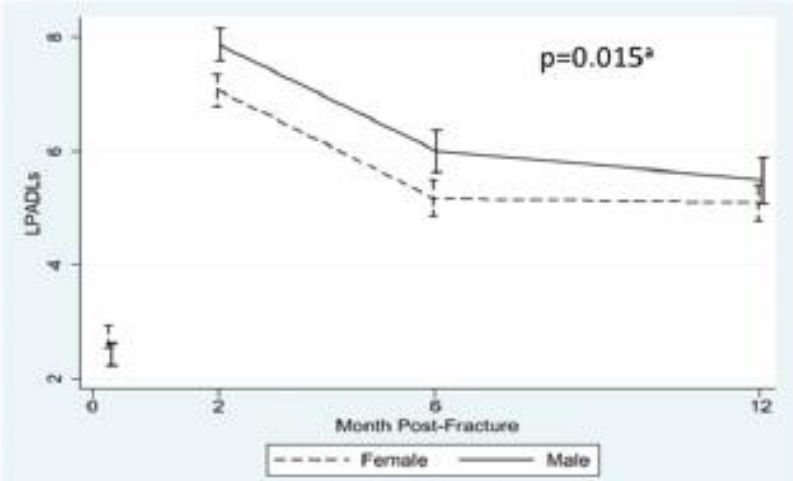
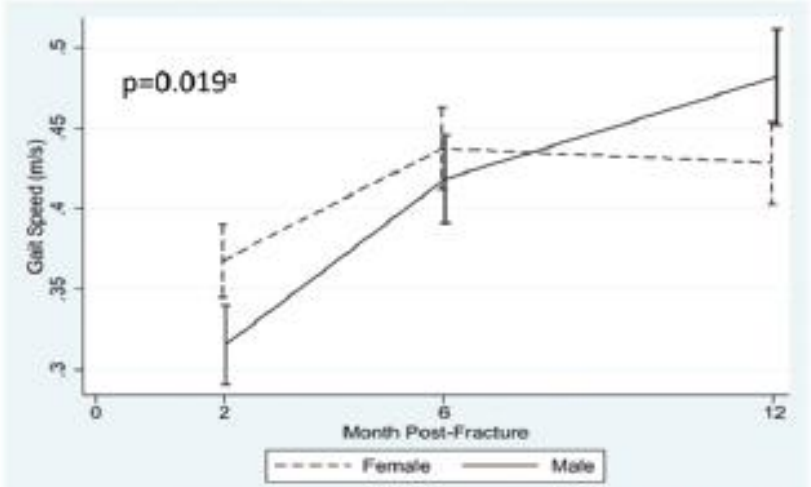
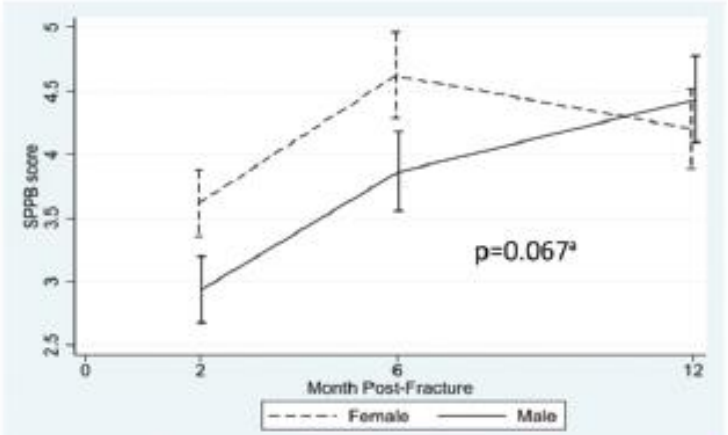


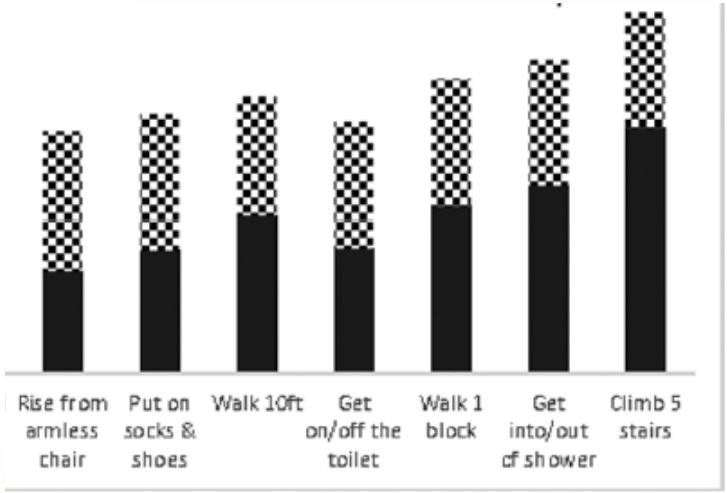
	Baseline	2 Month	6 Month	12 Month
Female n	164	126	103	101
Male n	162	125	92	83



	2 Month	6 Month	12 Month
Female n	109	95	90
Male n	109	90	74



	2 Month	6 Month	12 Month
Female n	102	82	83
Male n	102	82	71



ts not disabled in lower extremity activities of daily living activity prior to admission who became newly disabled or died by 12 months, stratified by sex.

7, 1463–1471

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Two included studies were randomized controlled trials, one was a single group pre- and post-test, one a descriptive comparison between those with and without cognitive impairment, one a case controlled matched trial, one a nonequivalent groups trial, and one a case report.

JAMDA 2015

Evaluation of patient-centered rehabilitation model targeting older persons with a hip fracture, including those with cognitive impairment

Katherine S McGilton[1,2*], Aileen M Davis[3], Gary Naglie[4], Nizar Mahomed[3], John Flannery[5], Susan Jaglal[1,6], Cheryl Cott[1,6] and Steven Stewart[7]

Table 3 Multivariate regression results for each patient outcome

Variable	Coefficient (95% confidence interval)		*p*-value	
	FIMM gain	Return to home	FIMM gain	Return to home
FIMM admission score	−0.72 (−0.88 – -0.55)	–	<0.001	–
Pre-hip fracture OARS	–	0.12 (−0.00 – 0.24)	–	0.05
Age	−0.05 (−0.17 – 0.06)	−0.02 (−0.10 – 0.07)	0.38	0.71
Gender	−0.71 (−2.89 – 1.48)	1.01 (−0.57 – 2.60)	0.53	0.21
Pre-hip fracture living status	−0.50 (−2.37 – 1.36)	1.80 (0.22 – 3.37)	0.73	0.03
Charlson Comorbidity Index	0.07 (−0.48 – 0.62)	−0.08 (−0.32 – 0.48)	0.80	0.70
Length of stay	−0.12 (−0.20 – -0.05)	−0.05 (−0.08 – -0.02)	<0.001	<0.01
CI at admission	−2.38 (−4.31 – -0.46)	−1.52 (−2.87 – -0.17)	0.02	0.03
Site	0.55 (−1.21 – 2.32)	0.44 (0.75 – 1.63)	0.54	0.47
Intervention group	0.15 (−1.62 – 1.91)	1.45 (0.23 – 2.67)	0.87	0.02

FIMM – Functional Independence Measure Motor Subscale; CI – cognitive impairment as measured by MMSE; OARS – Older Americans Resources and Services Instrument.

McGilton *et al. BMC Geriatrics* 2013

Impact of Dementia on Patterns of Home Care After Inpatient Rehabilitation Discharge for

Check for updates

Table 2 Types and rates of home care services received by older adults with hip fracture within 30 days after discharge from inpatient rehabilitation in Ontario, Canada, stratified by a previous diagnosis of dementia and sex

	Overall(N=17,263)			Men(n=4595)			Women(n=12,668)		
Factors	No Dementia n=14,774	Dementia n=2489	*P*	No Dementia n=3947	Dementia n=648	*P*	No Dementia n=10,827	Dementia n=1841	*P*
Any home care services									
n (%)	11,668 (79.0)	2165 (87.0)	<.001	3034 (76.9)	567 (87.5)	<.001	8634 (79.7)	1598 (86.8)	<.001
Visits* (95% CI)	11.43 (11.19, 11.67)	18.11 (17.22, 19.05)	—	10.90 (10.45, 11.37)	17.65 (15.91, 19.58)	—	11.62 (11.34, 11.90)	18.27 (17.24, 19.37)	—
Physiotherapy									
n (%)	8305 (56.2)	1388 (55.8)	.677	2177 (55.2)	357 (55.1)	.976	6128 (56.6)	1031 (56.0)	.633
Visits* (95% CI)	2.08 (2.04, 2.12)	2.09 (1.98, 2.20)	—	2.03 (1.94, 2.11)	2.01 (1.81, 2.23)	—	2.10 (2.05, 2.15)	2.11 (1.99, 2.24)	—
Occupational therapy									
n (%)	5527 (37.4)	1128 (45.3)	<.001	1465 (37.1)	305 (47.1)	<.001	4062 (37.5)	823 (44.7)	<.001
Visits* (95% CI)	0.76 (0.74, 0.78)	0.94 (0.88, 1.00)	—	0.75 (0.71, 0.79)	0.97 (0.86, 1.09)	—	0.76 (0.74, 0.79)	0.93 (0.86, 1.00)	—
Personal/homemaking									
n (%)	6858 (46.4)	1646 (66.1)	<.001	1576 (39.9)	422 (65.1)	<.001	5282 (48.8)	1224 (66.5)	<.001
Visits* (95% CI)	7.08 (6.83, 7.33)	13.36 (12.27, 14.55)	—	6.19 (5.74, 6.68)	12.42 (10.32, 14.95)	—	7.40 (7.11, 7.70)	13.69 (12.44, 15.06)	—
Nursing									
n (%)	2758 (18.7)	488 (19.6)	.268	924 (23.4)	168 (25.9)	.163	1834 (16.9)	320 (17.4)	.64
Visits* (95% CI)	1.42 (1.33, 1.51)	1.59 (1.36, 1.85)	—	1.82 (1.64, 2.02)	2.11 (1.63, 2.73)	—	1.27 (1.18, 1.38)	1.41 (1.17, 1.70)	—
Other home care visits†									
n (%)	656 (4.4)	178 (7.2)	<.001	200 (5.1)	56 (8.6)	<.001	456 (4.2)	122 (6.6)	<.001
Visits* (95% CI)	0.09 (0.08, 0.10)	0.14 (0.11, 0.17)	—	0.11 (0.09, 0.13)	0.15 (0.10, 0.22)	—	0.08 (0.07, 0.09)	0.14 (0.11, 0.18)	—

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Intensive In-Hospital Rehabilitation After Hip Fracture Surgery and Activities of Daily Living in Patients With Dementia: Retrospective Analysis of a Nationwide Inpatient Database

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Table 3 Multivariable linear regression analysis for Barthel Index at discharge with multiple imputation (N=43,206)

Variables	Adjusted Coefficients	(95% Confidence Interval)	*P* Value
Interval from surgery to starting rehabilitation (per extra day)	-0.38	(-0.54 to -0.21)	<.001
Frequency of postoperative rehabilitation (d/ wk)			
≤3.0	Reference		
3.1-4.0	2.62	(0.99-4.25)	.002
4.1-5.0	5.83	(4.28-7.38)	<.001
5.1-6.0	7.56	(5.95-9.16)	<.001
6.1-7.0	9.16	(7.34-10.97)	<.001
Average daily units of postoperative rehabilitation (min/daily rehabilitation)			
20-39	Reference		
40-59	4.37	(3.69-5.06)	<.001
≥60	6.60	(5.63-7.57)	<.001
Male	-3.91	(-4.49 to -3.33)	<.001
Dementia level			
I-II	Reference		
III-IV	-12.11	(-12.57 to -11.64)	<.001

Factors associated with and 1-year outcomes of fear of falling in a geriatric post-hip fracture assessment

Roope Jaatinen[1,2,3] · Tiina Luukkaala[4,5] · Markus T. Hongisto[6,7] · Minna A. Kujala[1,3] · Maria S. Nuotio[1,3,8,9,10]

Table 1 Distribution of baseline characteristics according to having or not a having fear of falling and association of the characteristics with fear of falling (n = 916)

Baseline	Fear of falling						
	Yes (n = 452, 49%)	No (n = 464, 51%)	p	Adjusted for age and gender		Multivariable adjusted	
	n (%)	n (%)		OR	(95% CI)	OR	(95% CI)
Gender			**0.002**				
Male	106 (24)	151 (33)		1.00		1.00	
Female	346 (76)	313 (67)		**1.52**	**(1.13–2.04)**	**1.46**	**(1.08–1.98)**
Diagnosed cognitive disorder			**0.033**				
No	352 (78)	333 (72)		1.00		1.00	
Yes	100 (22)	131 (28)		**0.66**	**(0.48–0.89)**	**0.51**	**(0.36–0.73)**

The association between patient participation and functional gain following inpatient rehabilitation

Sara Morghen[1,2] · Alessandro Morandi[1,2] · Andrew A. Guccione[4] · Michela Bozzini[1] · Fabio Guerini[1,2] · Roberto Gatti[5] · Francesco Del Santo[1] · Simona Gentile[1,2] · Marco Trabucchi[2,3] · Giuseppe Bellelli[2,6]

Table 2 Predictors of good functional gain at discharge (multivariable logistic regression)

	Odds ratio	95 % Confidence interval	*p* value
PRPS score (average score during in-hospital rehabilitation stay)	1.51	1.19–1.91	.001
Age, years	0.99	0.96–1.01	.381
Female sex	1.34	0.87–2.01	.185
Walking independence 2 weeks before DRAC admission	2.05	1.36–3.11	.001
GDS	0.98	0.93–1.04	.543
Rehabilitation impairment categories			
Immobility syndrome	0.65	0.37–1.13	.125
Pulmonary	1.91	0.97–3.77	.061
Orthopedics	1.79	1.01–3.19	.046
MMSE score	1.03	0.97–1.09	.297
CIRS severity	0.49	0.20–1.19	.115

Conclusioni

- **L’importanza dell’epidemiologia e dell’impatto del decadimento cognitivo**
- **Necessità di valutare i determinanti dei verosimili peggiori outcome nel genere maschile**
- **E’ importante il genere o il corretto approccio riabilitativo nella persona con decadimento cognitivo?**

Grazie per l’attenzione

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