

Abstract #828: Urinary and fecal continence as factors for functional decline in nursing home residents: a 2-year prospective study during the COVID-19 pandemic



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Hypothesis / aims of study

The COVID-19 pandemic has raised concerns about nursing home (NH) residents' well-being, as recent studies point to a substantial rise in both functional decline and continence issues during this critical period. A comprehensive study on functional capacity trajectories in NH residents during the pandemic and post pandemic period entails longitudinal and prospective designs, extended follow-up periods, and identification of risk factors, including urinary and fecal incontinence and their decline.

This study aimed to analyze the functional capacity of older adults living in NHs during the COVID-19 pandemic. Specifically, our objectives were to: (a) assess the **functional decline** (FD) during a 2-year period, (b) examine the evolution of each **basic activity of daily living** (BADL), and (c) analyze **risk factors** associated with functional decline, placing particular emphasis on urinary and fecal continence and the impact of room confinement on NH residents.

- Hypothesis 1: urinary incontinence (UI) at baseline represents a significative risk factor for FD among NH residents during the 2-year period.
- Hypothesis 2: urinary continence decline during the 2-year period is associated with FD among NH residents.
- Hypothesis 3: fecal incontinence (FI) at baseline represents a significative risk factor for FD among NH residents during the 2-year period.
- Hypothesis 4: fecal continence decline during the 2-year period is associated with FD among NH residents.

Study design, materials and methods

A **24-month multicenter prospective study** with NH residents in Central Catalonia (Spain) collected data at **six-month intervals across five waves**, covering the pre-pandemic, pandemic, and post-pandemic periods. This is a substudy of the OsoNaH project registered in Clinical Trials (NCT04297904) with methodology further detailed elsewhere (1). The Strengthening the Reporting of Observational studies in Epidemiology (STROBE) standards for cohort studies were followed (2).

Data collection of the first wave (baseline) was gathered right before the onset of the COVID-19 pandemic (January-March 2020). Baseline data collection encompassed the acquisition of sociodemographic information and health-related variables through a comprehensive geriatric assessment. Follow-up data collection was focused on a subset of health-related variables, including COVID-related variables, newly developed chronic diseases, frailty, UI, FI, fractures, falls, hospitalizations, and functional capacity assessment. This allowed calculation of incidence rates and declines over the follow-up period.

The dependent variable of the study was the presence of FD for the following BADL, assessed through a **5-point Likert scale** (from totally dependent to totally independent): eating, personal hygiene, dressing, bathing, transferring, walking or wheelchair handling, toileting, and climbing stairs. Two variables were calculated: **FD-1, a 1-point decrease** in BADL scores compared to the previous measurement, and **FD-10, a 10-point decrease** relative to baseline. Both were recorded with the corresponding waves.

Multivariate analysis employed **Cox's regression** with a significance level set at 0.05. Variables with a bivariate analysis p-value below 0.25 were tested for the final model. 'Age' and 'number of confined days' were initially included and retained during the forward selection process.

Results and interpretation

The final sample consisted of **123 older adults**, predominantly females (83%), with mean age of 85.3 years and institutionalization mean period of 37.9 months. The survival curves of FD-1 and FD-10 demonstrated an initial steep decline followed by a more gradual decrease over time (see Figure 1). Over the study period, considerable declines were observed in **Personal Hygiene (-0.73), Eating (-0.66), and Toilet Use (-0.60)**, while Dressing (-0.19) and Bathing (-0.20) were least affected.

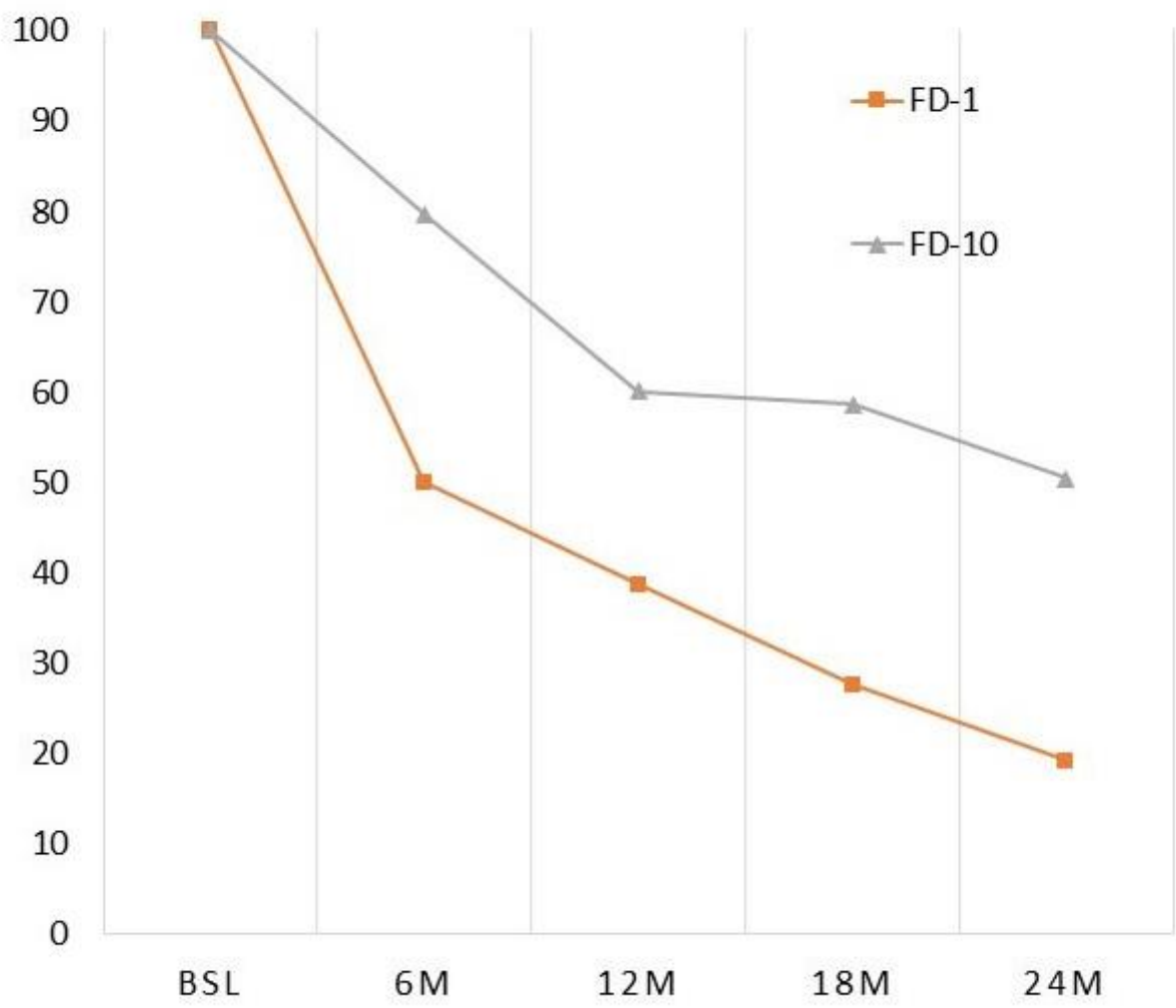
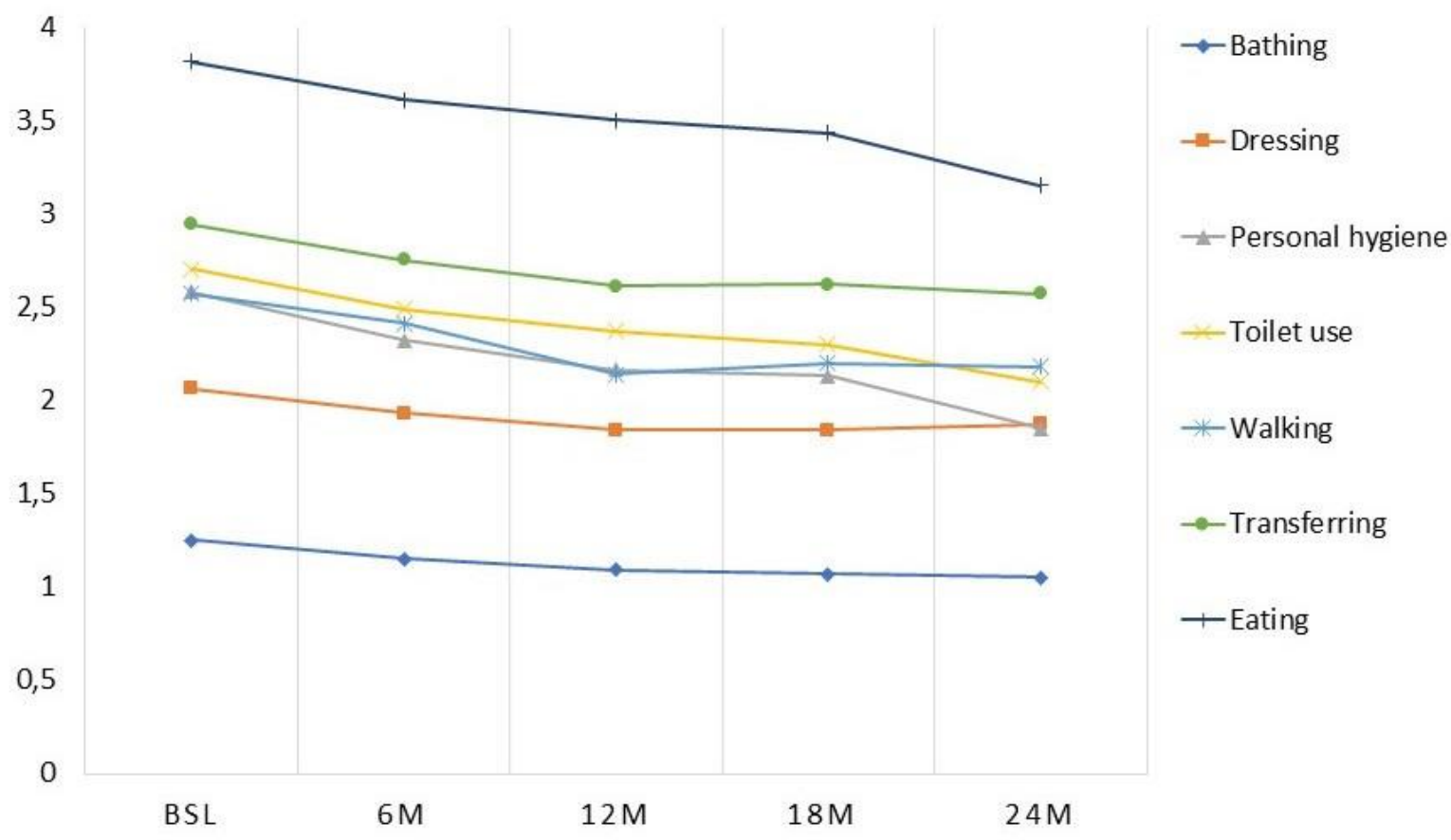


Figure 1. Evolution of FD-1, FD10 and BADL during the 2-year period (2020-2022) among older adults living in 5 NHs in Central Catalonia (Spain).

Table 1 includes the results of the multivariate analysis for FD-1 and FD-10. Urinary continence decline was an independent risk factor for FD-1, with affected NH residents having a 2.83 times higher risk. Similarly, deterioration in fecal continence during the study period was an independent risk factor for FD-10, showing 2.5-fold increased risk for affected NH residents.

Table 1. Multivariate analysis of FD-1 and FD-10 in NH residents in Central Catalonia (Spain) during the 2-year period (2020-2022).

		Multivariate analyses FD-1			Multivariate analyses FD-10		
		HR	CI 95%	p (Cox)	HR	CI 95%	p (Cox)
Age (years)	65-86	Reference		0.543	Reference		0.546
	≥87	1.01	0.98-1.05		1.01	0.97-1.06	
Days confined in room	≤31	Reference		0.415	Reference		0.331
	>32	1.004	0.99-1.01		1.01	0.99-1.02	
Urinary continence decline	No	Reference		<0.001*			
	Yes	2.83	1.66-4.84				
Fecal continence decline	No				Reference		0.007*
	Yes				2.48	1.28-4.82	

Key notes: CI=Confidence Interval; FD=functional decline; HR=Hazard Ratio.

Interpretation of results:

- Urinary and fecal incontinence at baseline were not significantly associated with functional decline in this sample of NH residents.
- **Urinary continence decline (during the 2-year period) was associated with minor functional decline (FD-1), while fecal continence decline correlated with major functional decline (FD-10).**
- Notably, the number of days spent in **room confinement** during the COVID-19 Pandemic did **not significantly contribute** to the observed decline.
- The probability of functional decline was unfavorable, with 80.7% chance of 1-point decline (FD-1) in Barthel scores and a 49.5% probability of 10-point decline (FD-10).
- **Pandemic-related probabilities of maintaining functional capacity in the initial 6 months align with the usual 2-year follow-up rates** in non-pandemic conditions.
- **Personal hygiene, eating, and toilet use** were identified as the most affected activities of daily living.
- Pandemic-induced isolation strategies significantly impacted toileting and personal hygiene.
- Recognizing continence loss as a substantial risk factor for FD is crucial for proactive monitoring, management, and prioritizing interventions.

Conclusions

The considerable risk of FD during the COVID-19 pandemic compared to the pre-pandemic period, and the identification of urinary and fecal continence decline as independent risk factors highlight the need for tailored interventions in NH residents. Implementing strategies to encourage physical activity and integrating mobility toileting programs in the future, offer potential avenues for effectively addressing FD and enhancing the overall health and wellness of NH residents in the context of a pandemic.

References

1. Farrés-Godayol P, Jerez-Roig J, Minobes-Molina E, et al. Urinary incontinence and sedentary behaviour in nursing home residents in Osona, Catalonia: protocol for the OsoNaH project, a multicentre observational study. BMJ Open 2021;11:e041152. doi:10.1136/bmjopen-2020-041152
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