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The association of frailty with socioeconomic and lifestyle factors in community-dwelling older subjects: the key role of cultural fruition

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Background and aims of the study

- To assess the association between frailty and sociodemographic, socioeconomic and lifestyle factors in community-dwelling older people.
- To realize and validate proper methodological tools to evaluate frailty in ageing in a multidimensional approach
- The study represents the first application and validation in Italy of the FRAIL scale (Morley et al 2012) combined with different standardized tools related to socioeconomic conditions and life-styles of respondents, with a specific focus on cultural fruition

Frailty and social vulnerability in ageing

- Frailty can be considered a pre-disability state, characterized by decreased physiological reserve and resilience, where exposition to stressors increases the risk for disability or dying (Morley et al., 2012).
- Increased vulnerability in later life depends both on genetic and environmental factors, as well is related to socioeconomic conditions, lifestyles and life events (Alley and Crimmins, 2013).
- On average, the baseline of frail subjects is 15% of older people and the 30% of these need hospitalization.
- …Still frailty is a reversible conditions, especially when having early identified pre-frail conditions.
- Importance of adequate multidimensional tools for early recognition of frailty (Metzelthin et al., 2010).

Economic importance of early recognition and prevention of frailty in Italy (our elaborations on Istat datasets)

Hypothesis	Data	2015	2020	2025	2030
Demographic projections	Over 75s x 1000	110,1	113,5	125,6	136,1
…Actual burden projection	Frail people x 1000 (actual baseline 15%)	16,5	17,0	18,8	20,4
	Bedplaces x 1000 (30%)	5,0	5,1	5,7	6,1
…Increasing 1% of frail people every 5 years	Frail people x 1000 (+1% every 5 years)	16,5	18,2	22,6	23,1
	Bedplaces x 1000 (30%)	5,0	5,4	6,8	6,9
…Decreasing 1% of frail people every 5 years	Frail people x 1000 (-1% every 5 years)	16,5	15,9	16,3	16,3
	Bedplaces x 1000 (30%)	5,0	4,8	4,9	4,9

Methods

- A cross-sectional survey in a population-based sample of 542 community-dwelling over 65s living in Genoa.
- A metropolitan urban context of northern Italy with a major demographic ageing, where the aging index was equal to 235.9 in 2013, compared to the Italian mean value of 152.7 and the EU28 mean value of 117.7 (https://opendata.europa.eu/en/data/publisher/estat)

Methods

Frailty was evaluated by means of the FRAIL scale (Morley 2012) combined with several other dimensions:

- Basal and instrumental activities of daily living (ADL, IADL) and physical activity
- Sociodemographic dimension (age, gender, marital status and co-habitation)
- socioeconomic dimensions (education, economic conditions and occupational status)

Methods

- lifestyle domains (particularly cultural and technological fruition and social activation) intended as habits, attitudes, tastes, moral standards, economic level, etc., that together constitute the mode of living practiced at individual level trough individual choices and actions, but also depending on broader structural factors, like social origins, culture, reference groups and class positioning

The FRAIL scale

FRAIL scale

- **F**atigue
- **R**esistance (ability to climb one flight of stairs)
- **A**mbulation (ability to walk one block)
- **I**llnesses (Greater than **5**)
- **L**oss of Weight (>**5**%)

0 = robuste/ 1-2 = pre-frail /≥ 3 = frail

Standardized tools adopted to observe the different socioeconomic dimensions

- Disability: ADL (Katz, 1983) and IADL scales (Lawton & Brody, 1969)
- Household dimension: classification of Laslett (1972)

  (solitary, nuclear, extended, multiple and non-structured)
- Level of education: ISCED scale

  0=No qualification; 1=primary school; 2= secondary school; 3= vocational school of 2-3 years; 4= high school; 5= bachelor's degree; 6= PhD.
- Economic conditions:
  - Household disposable income (Breen, 2007) evaluated in terms of:

  a) the amount of the respondent's income and that of all other family members (pension, disability allowances, real estate rentals and investments, salary, economic aid from other family members or institutions or charities, b) the incidence of the respondent’s income on total family income, and c) the overall declared ability to support routine expenses
  - Occupational Status classification (de Lillo & Schizzerotto, 1985)

  a) unskilled workers; b) less qualified workers; c) qualified workers and lower service class; d) middle-class city-dwellers; e) white collar workers; f) entrepreneurs, managers and higher service class. …similar to traditional EGP model but adjusted to the Italian social context and related to the working period of our sample

Standardized tools adopted to observe the different socioeconomic dimensions

- Lifestyle:
  - Cultural fruition (Cesareo, 2008)

  Frequency in practicing hobbies; reading books, magazines and newspapers; using media; going to the theatre or cinema; participating in cultural events; travelling abroad or on short trips; frequenting public places

  - Technological access (Selwyn, 2004)

  use of devices or technological practices (mobile, PC, internet, online payments and credit cards

  - Elderly Social Activation (Poli, 2015)

  observing the attitude to perform socially-useful activities under four aspects: individual willingness to offer professional, social and cultural experience to others; collaboration with associations and organizations; voluntary activities; care activities, such as fostering or caring for children or disabled subjects

for more details:

Poli, S., Cella, A., Puntoni, M., Musacchio, C., Pomata, M., Torriglia, D., Vello, N., Molinari, B., Pandolfini, V., Torrigiani, C., Pilotto, A. (2016) Frailty is associated with socioeconomic and lifestyle factors in community-dwelling older subjects, Aging Clinical and Experimental Research, pp. 1-8, Springer

Table 1. Participants' characteristics (n=542)

	Robust (n=279)	Pre-frail (n=181)	Frail (n=82)
Age, years	73.6 ± 5.9	75.7 ± 6.5	79.6 ± 5.1
Male	142 (50.9)	84 (46.4)	33 (40.2)
Presence of ADL deficit	22 (7.9)	49 (27.1)	62 (75.6)
Presence of IADL deficit	65 (23.3)	117 (64.6)	76 (92.7)
Marital status			
Married/Cohabiting	177 (63.1)	92 (51.1)	30 (36.6)
Divorced/Separated	14 (5.0)	11 (6.1)	7 (8.5)
Widowed	69 (24.7)	61 (33.9)	40 (48.8)
Single	20 (7.2)	16 (8.9)	5 (6.1)
Education(ISCED)			
No qualification(0)	2 (0.7)	2 (1.1)	3 (3.7)
Primary school (1)	39 (14.0)	21 (17.1)	21 (25.6)
Secondary school (2)	49 (17.6)	50 (27.6)	28 (34.1)
Vocational school (3)	21 (7.5)	17 (9.4)	4 (4.9)
High school (4)	100 (35.8)	47 (26.0)	15 (18.3)
Bachelor's degree or PhD (5-6)	68 (24.3)	34 (18.8)	11 (13.4)
Household classification			
Solitaries	81 (29.0)	66 (36.5)	36 (43.9)
Nuclear	184 (66.0)	96 (53.0)	34 (41.5)
Extended	5 (1.8)	7 (3.9)	5 (6.1)
Multiple	2 (0.7)	2 (1.1)	2 (2.4)
No structure	7 (2.5)	10 (5.5)	5 (6.1)
Economic condition			
Lower	43 (15.4)	41 (22.7)	29 (35.4)
Lower-middle	41 (14.7)	36 (19.9)	18 (22.0)
Middle	99 (35.5)	60 (33.2)	22 (26.8)
Middle-upper	35 (12.5)	22 (12.2)	4 (4.9)
Upper	61 (21.9)	22 (12.2)	9 (11.0)

Table 1. Participants' characteristics (n=542)

	Robust (n=279)	Pre-frail (n=181)	Frail (n=82)
Status classification			
Unskilled workers	31 (11.1)	22 (12.2)	17 (20.7)
Semi-skilled working class	4 (1.4)	11 (6.1)	9 (11.0)
Skilled working class & lower service class	40 (14.3)	29 (16.0)	10 (12.2)
Middle-class city dwellers	37 (13.3)	19 (10.5)	10 (12.2)
White collars	99 (35.5)	66 (36.5)	27 (32.9)
Entrepreneurs and higher service class	68 (24.4)	34 (18.8)	9 (11.0)
Physical Activity level			
Lower	25 (9.0)	53 (29.3)	54 (65.9)
Average	182 (65.2)	105 (58.0)	25 (30.5)
Higher	72 (25.8)	23 (12.7)	3 (3.7)
Level of cultural fruition			
Lower	7 (2.5)	9 (5.0)	19 (23.2)
Lower-average	37 (13.3)	54 (29.8)	33 (40.2)
Average	112 (40.14)	68 (37.6)	25 (30.5)
Above average	96 (34.4)	42 (23.2)	4 (4.9)
Higher	27 (9.7)	8 (4.4)	1 (1.2)
Level of technological fruition			
Lower	17 (6.1)	37 (20.4)	24 (29.3)
Lower-average	49 (17.6)	48 (26.5)	24 (29.3)
Average	73 (29.2)	45 (24.9)	26 (31.7)
Above average	23 (8.2)	12 (6.6)	4 (4.9)
Higher	117 (41.9)	39 (21.6)	4 (4.9)
Level of social activation			
Lower	62 (22.2)	45 (24.9)	41 (50.0)
Lower-average	71 (25.5)	55 (30.4)	28 (34.2)
Average	77 (27.6)	48 (26.5)	5 (6.1)
Above average	51 (18.3)	21 (11.6)	6 (7.3)
Higher	18 (6.5)	12 (6.6)	2 (2.4)

Data are summarized as mean ± standard deviation (SD) or numbers (%)

Table 2. Multivariate logistic regression model related to frailty status (Frail/Pre-frail vs. Robust)

	N	OR	(95%CI)	p [b]
ADL				
No	409	1.00		
Yes	133	1.80	(0.96-3.40)	0.067
IADL				
No	284	1.00		
Yes	258	4.73	(2.94-7.61)	<0.001
Education				
No qualification/primary/secondary/vocational school	267	1.00		
High school/Bachelor's degree or PhD	275	0.67	(0.44-1.03)	0.066
Socioeconomic level/status classification [d]				
Lower	55	1.00		
Average	285	0.47	(0.23-0.97)	0.04
Higher	205	0.34	(0.16-0.73)	0.005
Physical Activity				
Lower	132	1.00		
Average	312	0.31	(0.17-0.55)	<0.001
Higher	98	0.26	(0.12-0.55)	<0.001
Cultural fruition				
Lower/Lower-average	159	1.00		
Average	205	0.61	(0.35-1.05)	0.072
Above average/Higher	178	0.55	(0.31-0.98)	0.042

[a] OR = Odds Ratio; CI = confidence interval; adjusted for age and gender. OR>1 indicates higher association to frailty or pre-frailty. [b] Two-sided Wald test; [c] Two-sided Likelihood Ratio Test; [d] see statistical methods for detailed description

Results

- Impairments in ADL and IADL were significantly associated with frailty while moderate and high physical activity were inversely associated with frailty.
- Moreover, both socioeconomic variables and lifestyle factors were associated with the condition of frailty: in particular, more disadvantaged socioeconomic conditions, and low levels of cultural fruition were significantly associated with frailty.
- Greater gender disadvantage for older frail women

Conclusions

- Socioeconomic and lifestyle factors, particularly cultural fruition, are associated with frailty independently from functional impairment and low physical activity.
- Cultural habits may therefore represent a new target of multimodal interventions against frailty in ageing.

Thank you for attention