Frailty and Its Social Predictors Among Older People: Some Empirical Evidences and a Lesson From Covid-19 for Revising Public Health and Social Policies

Stefano Poli*, Valeria Pandolfini**, Claudio Torrigiani***

Author information

*   Department of Science of Education (Di.S.For.), University of Genoa, Italy.
         Email: Stefano.Poli@unige.it

**   Department of Science of Education (Di.S.For.), University of Genoa, Italy.
         Email: Valeria.Pandolfini@unige.it

**   Department of Science of Education (Di.S.For.), University of Genoa, Italy.
         Email: Claudio.Torrigiani@unige.it

PADOVA **UP**

Frailty and Its Social Predictors Among Older People: Some Empirical Evidences and a Lesson From Covid-19 for Revising Public Health and Social Policies

Stefano Poli, Valeria Pandolfini, Claudio Torrigiani

Abstract: The Covid-19 crisis revealed to be particularly lethal for older frail people. Such emergency, more critical in a scenario of diffused demographic ageing, stresses on the importance of protective measures toward older frail subjects, defining the early detection of frailty and of its predictive social factors among elderly population as a priority for the whole public health system. This paper describes the results of a study assessing the association of frailty with factors of social exclusion by means of a survey on a population-based sample of 1,354 community-dwelling older residents living in Genoa, Italy. Focusing on a multidimensional conceptualization of frailty, the individual's physical and cognitive state resulted associated with higher levels of social vulnerability and perceived isolation, reproducing patterns of marginalization and exclusion and confirming the hybridization of multiple factors of socioeconomic weakness as main predictors of mortality among older frail people. Our results underline the need of combining early screening of frailty and its social predictors in a preventive approach in order to identify in the short term the most exposed profiles, as well, in the long term, once settled the emergency, the need of a multimodal intervention against geriatric frailty to offer better protection against major risk of mortality due to Covid-19.

Keywords: Ageing, frailty, social vulnerability, health policies, Covid-19

1. Ageing in time of Coronavirus: frailty and social vulnerability behind the strike of Covid-19 among elderly population

We are living unusual times. Even this contribution is written during an epochal experience, where we are all facing one of the most terrible and unexpected epidemiological events since the past century. In front of the Coronavirus, we all feel worried, unprepared, and unprotected. None of the present generations has previous experience of such a pandemic event interesting all countries all over the world.

Still, we examine the profile of victims, we look at their characteristics in search of a psychologic handhold, trusting that experts stress that most of deaths seems to be referred to older people, mostly in frail conditions. Media, institutions and opinion leaders reaffirm daily such a message, probably in the effort to conceal the fact that also younger people, even if with smaller incidence, can be infected and suffer from Covid-19.

Indeed, considering data form ISS (2020) and analysing the age classes of the COVID-19 patients dying in Italy[1], since the start of the emergency till the 9th of April 2020, 13,161 cases on a total of 16,654 deceased patients, equal to the 83.2 per cent of the overall cases, reported to be 70 and over years old, mostly being already affected by several comorbidities[2]. Moreover, according to preliminary results (data are limited to the 6th of April 2020) of the survey on the diffusion of Covid-19 among the nursing homes in Italy, the 37.4 per cent of the 3,589 patients deceased in February-March 2020 in the nursing homes in Italy resulted Covid-19 positive or presented flu-like symptoms.

The fatality rate by age[3] clearly expresses the disadvantage affecting older frail profiles in front of the current emergency.

However, there is a subtle and latent form of ageism behind this diffused trust, silently and implicitly defining the Coronavirus as a sort of natural solution to the growing incidence of the dependent senile population draining resources of welfare systems all over the World: now, only the stronger and healthier survive.

---

[1] Data on deaths refer to patients who died having tested positive for SARSCoV-2 RT by PCR, independently from pre-existing diseases.

[2] According to current data, updated to the 9th of April 2020, the mean age of patients dying for COVID-2019 infection was 78 years old (median 80, range 5-100, IQR 73 -85). Besides a prevalence of men on the overall deaths (67.1 per cent vs 32.9 per cent), women dying for COVID-2019 infection reported an older age than men (the median age among women was 83 vs a median age among men of 78). Overall, the 3.5 per cent of the sample presented with no comorbidities, 14.8 per cent with a single comorbidity, 20.7 per cent with two, and 61.0 per cent with three or more.

[3] The current fatality rate is probably underestimated at the moment, due both to several deaths reported but potentially not related to Covid-19 when the outbreak not yet recognized and to the increasing number of practised swab tests.

Far from such an ageist perspective, these terrible days represent a touchstone for many aspects of our living together and light on a critical focus on the older part of society, its social and health conditions and the need of dedicated future interventions once settled this emergency.

Indeed, and not by chance, the Covid-19's epidemic is deadly striking prevalently among the most vulnerable and frail subjects of the elderly population. Certainly, such infective symptoms, generally sustainable by healthier and younger profile, become a deadly trigger in case of frail conditions, clinically defined as a physiological state of reduced energy and resistance (Kelley-Moore, 2013, p. 103).

More specifically, frailty represents a pathological condition, manifesting itself in a set of signals and symptoms characterized by marked vulnerability, incipient decline and high risk of mortality (Ferrucci et al., 2003). Still, frailty remains a separate concept from disability, although the two phenotypes can influence each other. Indeed, the etiological foundations of frailty highlights how disease, inactivity and aging activate mechanisms that deplete the reserves of the nervous and muscular system, so that, when the damage exceeds a certain limit of possible compensation, it leads to a decline in physical performance, and, in case of particularly stressing agents (as in Covid-19's worst clinic evolutions), death can occur.

However, conceptualizing frailty only as a pre-disability state, mainly characterized by decreased physiological reserve and resilience, where exposition to stressors increases the risk for disability or dying (Morley, Malmstrom & Miller, 2012), would mean ignoring important factors of social construction of causality (see, on this regard, Kelley-Moore, 2013, pp. 66-110). In this sense, disease processes, functionl physical and cognitive decline or even disablement, should be always reconnected also to multiple social dimensions acting independently from age and disability as generative factors of clinical frailty.

Since the last decade several studies have focused on such a multidimensional approach. The recent mainstream can be classified across some main possible domains for exploring the social dimensions behind frailty among older people.

First of all, the mainstream of the last years has focused on structural factors of social vulnerability affecting older population. In this sense, older age and weaker health combine prevalently with patterns of social inequality, deriving from lower educational levels (Brunello et al., 2016; Brigola et al., 2019), socioeconomic conditions (Read, Grundy & Foverskov, 2016; Heap, Fors & Lennartsson, 2017; Franse et al., 2017; van der Linden et al., 2019), lower status (Zimmer, Hanson & Smith, 2016) and social background (Mazzonna, 2014), as well forms of ageist discrimination (Vauclair et al., 2016).

A second domain relates to the association of frailty with the characteristics of social networks, observing family structure, frequency and quality of personal relationship inside and outside the household and consequent social support (O'Rourke, Collins & Sidani, 2018; Henriques et. al., 2020), with loneliness, focusing on the sense of isolation and feeling alone (Hagan et al., 2014; Gale, Westbury & Cooper, 2018; Ige et al., 2019; Smith & Victor, 2019) and with disengagement, developing from rolelessness, sense of unproductivity and marginalization due to lack of social participation and scarce integration (Poli & Pandolfini, 2016; Walsh, Scharf & Keating, 2017).

Lastly, in the domain of agency, particular attention has been given to the capability of older people to maintain frequent and satisfactory interaction with the environment, expressing an active and socially involved lifestyle both in concrete and symbolic ways. In this sense, several researches show the association of the conservation of cognitive and physical functionalities with satisfactory levels of self expression and social connectedness, for instance by leisure (Galenkamp et al., 2016), cultural fruition (Poli et al., 2016; Juang et al., 2018) and social activation (Stephens, Breheny & Mansvelt, 2015; Ten Bruggencate, Luijkx & Sturm, 2019).

Still, all the aforesaid domains remain strictly interrelated, and individual differences in health conditions are implicitly associated to a combined effect of limited agency, structural inequalities, reduced social connectedness, higher levels of isolation and critical social exclusion (Grenier & Phillipson, 2013; Dannefer & Huang, 2017).

Starting from such premises, this paper will focus on the evaluation of the multiple social determinants of frailty by means of a dedicated project addressed to community dwelling older people, interpretating the results according to the current emergency and provinding possible recommendations for short- and mid-term interventions.

2. The PRESTIGE project: understanding social determinants of frailty and promoting resilience and participation

The PRESTIGE Project ("Partecipi e RESilienTi: Invecchiare a GEnova") started in late 2019 with the aim to provide an intervention research on frailty among community dwelling older people.

The project, funded by the Carige Bank Foundation and realized by a partnership composed by the University of Genoa, the Galliera Hospital of Genoa and Auser Liguria (leading Third Sector association for the promotion of cultural activities among senior people), proposed an intervention measure to prevent frailty and the risks of marginalization and social isolation among Genoa's older residents.

The project was articulated in three phases: 1) a survey on conditions of frailty and social exclusion among community dwelling older residents; 2) a phase of information and training, providing informative materials and sharing with participants the results emerged from the questionnaires about their health and opportunities of social participation; 3) a third phase of orientation and intervention, through a): clinical trials, conducted by medical staff and addressed to respondents reported as frail or pre-frail in the screening phase and b) intergenerational training courses, mixing senior and university students in promoting active social participation.

Unfortunately, due to the Covid-19 emergency activities stopped at the phases 1 and 2, having only partly started the phase 3 and awaiting to ultimate the project.

Study population

This study was carried out in 2019-2020 in Genoa, a metropolitan urban context of Northern Italy with a major demographic ageing, where the ageing index was equal to 252.9 in 2017, compared to the Italian mean value of 152.7 and the European (EU28) mean value of 117.7 over 65s residents every 100 0-14 years old inhabitants (source: Eurostat- Regional Demographic Statistics). According to the data provided by the statistical office of Genoa's Municipality, in 2017 the local context was characterized by a significantly old mean age (48.3 years old, on average) and a higher incidence of over65s residents (28.4 per cent of inhabitants). Of these, the 32,0 per cent were living alone, mostly women (59.2 per cent).

Focusing on the whole municipal area, we analysed a population-based sample drawn from the 166,151 residents aged 65 years and older (as of 1 January 2017), distributed on a factorial plan by gender and two age-class (65-74 years old and 75 years and older), randomly extracted and contacted via recruitment notices, mails and phone calls with the help of Third Sector associations dedicated to senior people assistance.

Due to the Covid-19 emergency, in February 2020 we had to stop the data gathering started in September 2019. Nevertheless, considering the overall gathered questionnaires, the final sample reached 1,354 cases, plenty fitting the starting population according to a confidence interval of 5 per cent and a confidence level of 95 per cent.

3. Methods: the operative definition of frailty and its social determinant

The risk of mortality due to frail conditions was considered as the main dependent variable and was evaluated by means of the Self-Administered Multidimensional Prognostic Index (SELFY-MPI, see Pilotto et al., 2019). This

scale (a self-administered form of the Multidimensional Prognostic Index, MPI, see Pilotto et al., 2008), considers eight domains: (1) the functional status, in terms of activities of daily living, (ADL); (2) the mobility, assessed through the Barthel scale, observing the ability in feeding, bathing, personal hygiene, dressing, faecal and urinary continence, toilet use, transfer from bed to chair or wheelchair, walking and going up and down the stairs (see Mahoney & Barthel, 1965); (3) the level of autonomy and independence, in terms of instrumental activities of daily living (IADL), assessed by means of the Lawton's IADL scale, evaluating functional activities like managing own finances, using a telephone, taking medications, shopping, using transportation, preparing meals, doing housework, and washing (Lawton & Brody, 1969); (4) the cognitive status, assessed through the self-administered cognitive screening Test Your Memory test (TYM), evaluating domains of memory, semantic knowledge, and visuospatial skills, (see Brown et al., 2009); 5) the nutritional status, investigated with the Mini-Nutritional Assessment Short Form (MNA-SF test), evaluating body mass index and weight loss, neuropsychological problems and recent psychological stress, mobility and decline in food intake (see Donini et al., 2018); 6) the number of medications, calculating the number of medicines' intake; 7) the comorbidity conditions, observing the number of chronic health diseases, by means of the Comorbidity Index Rating Scale (CIRS, see Linn, Linn & Gurel, 1968); lastly, (8) the observation of household conditions by means of the social-familial evaluation scale (SFES, Garcia Gonzalez et al., 1999).

The sum of the calculated scores from the eight domains was divided by 8 to obtain a final SELFY-MPI risk score, ranging between 0.00 (minimum risk) and 1.00 (maximum mortality risk). If the obtained index has a value between 0.00 and 0.33, the prognostic risk of mortality is considered low; if the value is between 0.34 and 0.66 the prognostic risk is considered moderate; if the value is between 0.67 and 1.00 the prognostic risk is considered severe.

The independent variables were classified across four main domains: the functional domain (considering physical characteristic and health conditions), the social vulnerability (regarding the structural conditions of social exclusion), the dimension of loneliness (main factor of psychosocial distress among the older population) and, finally the domain of agency, considering those factors, mainly in terms of practices and activities, referred to the capacity of senior people to act independently and to make their own free choices interacting actively with the social context.

The functional domain, referred to physical characteristics and health conditions, was related to gender, age, and impairments. Gender was considered in evaluations of any differences, particularly considering the major incidence of older women in chronic conditions among the frail population (Caroli & Weber-Baghdiguian, 2016). Age was considered in chronological

terms, dividing the sample into two subgroups: 65-74 years and over 75s respondents. The first group refers to younger old profiles, pertaining to the first cohort of baby boomers (born immediately after the II World War, generally healthier, higher educated and, on average, in adequate socioeconomic conditions), and the second group corresponds to older-old subjects, typically belonging to the Silent generation (born before the end of the last world conflict, spending their youth in the difficulties of reconstruction, less educated and on average defining a lower social status if compared with baby boomers). The two aforesaid generations deeply differ each other, both from the socioeconomic and lifestyle dimensions (Howe & Strauss, 1991; Green, 2006; Leach et al., 2008), as well in terms of health conditions (Sole-Auro & Crimmins, 2013; Poli, 2014). In this sense, the degree of disability was evaluated by assessing functional independence both in terms of ADL and IADL (see before), recoding in a score of "1", indicating the presence of ADL or IADL impairments and of "0" for all respondents without an ADL or IADL deficit.

Shifting to the domain of the structural social exposure affecting older people, we considered the socioeconomic conditions, the overall vulnerability and possible victimization, such as having suffered attacks and forms of discriminations.

Economic difficulties were observed on an ordinal scale ranging from "1-struggling to make ends meet", "2-spending everything earned and drawing on savings", "3-spending everything earned", "4-being able to save something", "5-being able to save and invest something" (see Cesareo, 2007), successively recoding economic difficulties in "none" (previous modalities 4 and 5), "somewhat" (3) and serious (1 and 2).

The level of education was assessed by classifying the reported titles of study according to the International Standard Classification of Education (ISCED), successively recoded in None/Compulsory school (ISCED 0-2), Apprentice/diploma (ISCED 3-4) and Bachelor/PhD (ISCED 5-6).

Referring to a previous work (Poli, 2012), the concept of victimization was divided in two dimensions, referring to possible aggressions and discriminations suffered by respondents. Each possible suffered act of aggression or discrimination reported a score of "1", if the respondent declared to have been victim in the last five years of theft or robbery, scams, physical assault, usury, or to have felt discriminated by age, gender, economic conditions, level of education, health conditions, political views, sexual orientation, religious orientations, origins or other reported reason (observed in open question and successively recoded). The final individual sum of scores was divided by the number of overall items (14), obtaining an index with a theoretical range of 0-1, successively recoded in tertiles to obtain a lower-medium-higher risk of victimization.

Lastly, we adopted a comprehensive Social Vulnerability Index (SVI), offering a broad representation of factors incfluencing and describing individual's social circumstances (e.g. living situation, levels of social support, social engagement and leisure, sense of empowerment and life control, socio-economic status) and definig major rsks of social exposure (see, for more detail, Andrew, Mitnitski & Rockwood, 2008). The final social vulnerability index was calculated as a proportion of the total number of deficit items by dividing the sum of deficit scores by the number of deficits considered (23), obtaining an an index with a theoretical range of 0-1, successively recoded in tertiles in order to classify respondnets in lower-average-higher levels of social vulnerability.

The dimension of isolation was observed across several perspectives. Household conditions were considered by collecting marital status, the number of people in the household and the characteristics of cohabitation, recoded according to the classic typology proposed by Laslett in 1972 (solitary, nuclear, extended, multiple and non-structured) and especially recoding in "other forms of cohabitation" those living in nursing home.

Moreover, in order to evaluate isolation, we adopted two scales: one of Social Disconnectedness (SDS) and one of Perceived Isolation (PIS), validated by Cornwell and Waite (2009). According to the authors, social disconnectedness can be defined by a lack of contact with others and a reduced and limited network, poor social involvement and little support due to scarce relationships both in terms of frequency and quality, inside and outside the household. Perceived isolation refers to the feelings of loneliness, solitude and exclusion in missing company of friends and relatives. Thus, social disconnectedness items were related to social network characteristics (size, range, proportion of network alters in the home, frequency of interaction, number of friends, attendance at group meetings, socializing with friends and family and volunteering). Perceived isolation items were related to emotional and instrumental support from spouse/partner, family members and friends, lacking of companionship, feeling left out and isolated. Both scale scores were calculated for each respondent by standardizing the retained items (so that M = 0 and SD = 1) and dividing the sum of the standardized values by the total number of items. Scores on each scale may then be interpreted as a standardized variable. A score of 0 indicates that the respondent provided the mean response for each of the included items. Positive scores indicate greater-than-average isolation, whereas negative scores indicate lower-than average isolation (for more details, we refer to Cornwell & Waite, 2009).

Lastly, we defined a set of variables in the agency domain, aiming to evaluate the individual capability of older people to act on their own, making autonomous choices and expressing themselves by interacting with the daily social context through practices and behaviours.

To such purpose, we adopted a set of variables from a previous work (see Poli & Pandolfini, 2016): the level of cultural fruition (staying informed, practicing cultural activities, hobbies and traveling); the overall satisfaction for services in the quarter (green spaces, leisure and cultural activities, commercial and daily needs activities, transports, social and health assistance, safety); the frequency in doing sports and physical activities; the technological fruition (use of mobile, PC, Internet, online payments, debit and credit cards); the expression of a social activation observing the propensity and availability to perform socially-useful activities (like offering professional, social and cultural experience to others, collaborating with organisations and associations, performing voluntary work; and assistance activities such as fostering or caring).

4. Results: a predictive model of social factors behind the risk of mortality in frailty conditions

Statistical methods

Associations of social factors with frailty conditions were primarily explored by bivariate analysis, evaluating significance of p values using Pearson's chi-square. Successively, we realized a binary logistic regression model to test the association between moderate/higher risk of mortality due to frail conditions and the main independent variables previously described. Statistical significance of each parameter in the model was assessed by the likelihood ratio test. Having checked for multi-collinearity and having evaluated correlations through Pearson's coefficient, the parameters revealed to be sufficiently independent or only slightly correlated[4]. The binary regression was conducted by stepwise backward-selection method (likelihood-ratio test <0.2). Two-tailed probabilities were reported, and a p value of 0.05 was used to define nominal statistical significance.

Statistical analysis

The results of the bivariate and binary logistic regression analyses are provided in Tables 1.1-1.4 and 2. Overall, as in table 1.1, the 84.3 per cent of our sample reported a lower risk of mortality due to frail conditions evalu-

---

[4] The higher correlation resulted between ADL/IADL factors and the dependent variable, the SELFY-MPI, being already contained in the index. However, they have been maintained in the analysis to evidence the inherent association of functional impairments with frailty. Similarly, partial correlations have been reported between income difficulties and the Social Vulnerability Index (SVI), as well between the Social Vulnerability Index itself and the Social Disconnectedness Scale, due to their implicit mutual conceptual proximity. However, all variables have been maintained in the bivariate analysis in order to maintain descriptive completeness. In the final binary logistic regression model only the most statistically significant variables have been maintained.

ated by the SELFY MPI scale, the 9.5 per cent described a moderate risk and the 6.1 per cent a higher risk of mortality.

The bivariate analysis was conducted observing respondents' characteristics in the four main dimensions previously described in the Methods section: the functional domain, the social vulnerability, the dimension of loneliness and the practiced activities in terms of agency.

Considering the functional domain (table 1.1), a higher risk of mortality reported to be significantly statistically associated with the female gender (8.1 per cent vs 3.3.7 per cent among men) and older age (9.5 per cent among over 75s, vs 1.5 per cent among 65-74 years old respondents), but, especially, with health conditions. Indeed, in presence of ADL impairments, the 24.8 per cent of respondents showed a higher risk of mortality and the 21.4 per cent reported a moderate risk.

Table 1.1 - Factors in functional domain by risk of mortality due to frail condition (N=1,354)

		Risk of mortality level on SELFY-MPI			
	Cases	Low	Moderate	High	χ^2 test p-value
Total sample	**1,354**	**84.3**	**9.5**	**6.1**	-
Gender:					**0.001**
Male	598	87.8	8.5	3.7	
Female	756	81.6	10.3	8.1	
Age groups:					**0.000**
65-74 (Baby boomers)	547	95.8	2.7	1.5	
75 and over (Silent generation)	807	76.6	14.1	9.3	
Presence of ADL deficits:					**0.000**
Yes	262	53.8	21.4	24.8	
No	1,092	91.7	6.7	1.6	
Presence of IADL deficits:					**0.000**
Yes	1,340	85.2	9.4	5.4	
No	14	0.0	21.4	78.6	

Observing the domain of social vulnerability (table 1.2), higher risks of mortality resulted significantly statistically associated with lower level of education (a higher risk was reported among the 8.2 per cent of those with compulsory school titles), with difficulties in economic situation (where a higher risk of mortality was recognized among about the 10.0 per cent of those declaring both "severe" and "moderate" economic difficulties). Higher

risks of mortality were observed among the 18.4 per cent of respondents showing a higher level of social vulnerability (observed by the SVI), as well among the 15.5 per cent of those which reported to have been more frequently assaulted or discriminated.

Table 1.2 - Factors in social vulnerability domain by risk of mortality due to frail condition (N=1,354)

	Risk of mortality level on SELFY-MPI			
	Cases	**Low**	**Moderate**	**High**	**χ² test p-value**
Total sample	**1,354**	**84.3**	**9.5**	**6.1**	-
Education:					
None/Compulsory school (ISCED 0-2)	764	79.1	12.7	8.2	**0.000**
Apprentice /diploma (ISCED 3-4)	427	89.9	6.1	4.0	
Bachelor/PhD (ISCED 5-6)	163	95.4	3.7	1.8	
Economic difficulties:					
None	849	89.3	7.1	3.7	**0.000**
Somewhat	257	79.4	10.1	10.5	
Serious	248	72.6	17.3	10.1	
Level of social vulnerability (SVI index):					
Lower	559	96.8	2.9	0.4	**0.000**
Average	420	87.6	9.5	2.9	
Higher	375	62.1	19.5	18.4	
Level of victimization					
Lower	1,008	86.5	7.6	5.9	**0.000**
Average	262	82.8	13.0	4.2	
Higher	84	63.1	21.4	15.5	

Shifting to the dimension of loneliness (table 1.3), the higher risk of mortality was reported in widowed status (13.8 per cent), among those living alone (12.7 per cent) and, especially, in "other forms of cohabitations", mainly referred to those living in nursing home (47.6 per cent). The observed levels of social disconnectedness and social networks resulted associated with higher risks of mortality, this can also be related to the worse health conditions of respondents living in care homes. Similarly, a higher risk of mortality resulted associated with greater than average levels of perceived isolation (14.6 per cent), again typical of nursing home contexts.

Table 1.3 - Factors in loneliness domain by risk of mortality due to frail condition (N=1,354)

		Risk of mortality level on SELFY-MPI			
	Cases	Low	Moderate	High	χ^2 test p-value
Total sample	**1,354**	**84.3**	**9.5**	**6.1**	-
Marital status:					
Single	64	87.5	7.8	4.7	
Married/Cohabiting	781	92.4	5.2	5.2	**0.000**
Divorced/Separated	97	86.6	8.2	2.2	
Widowed	412	68.0	18.2	13.8	
Number of persons in household:					
Living alone	433	69.3	18.0	12.7	**0.000**
2 persons	720	93.1	5.7	3.2	
3 or more persons	201	92.5	5.0	2.5	
Household classification:					
Solitaries	426	69.5	18.3	12.2	
Nuclear	646	92.7	5.3	2.0	
Nuclear with sons/daughters	144	95.1	3.5	1.4	
Respondent with sons/ daughters	62	87.1	9.7	3.2	**0.000**
Extended/Multiple	31	90.3	3.2	6.5	
No structure	24	79.2	12.5	8.3	
Other forms of cohabitation	21	42.9	9.5	47.6	
Level of social disconnectedness:					
Lower than average	208	97.6	1.9	0.5	**0.000**
Average	897	86.5	8.7	4.8	
Greater than average	249	65.5	18.9	15.7	
Level of perceived isolation:					
Lower than average	144	84.0	7.6	8.3	**0.000**
Average	975	87.7	8.5	3.8	
Greater than average	233	70.4	15.0	14.6	
Level of social network:					
Lower	362	69.9	17.4	12.7	
Average	698	87.5	7.6	4.9	**0.000**
Higher	291	94.8	4.1	1.0	

Lastly, in the domain of agency (table 1.4), higher mortality risks due to frail conditions resulted to be associated with lower satisfaction for the quality of services in the neighbourhood (7.3 per cent), with lower levels of cultural fruition (13.8 per cent) and lower levels of social activation (15.1 per cent), with lacking of physical activity (10.4) and with scarce technological access (11.8 per cent).

Table 1.4 - Factors in agency domain respondents by risk of mortality due to frail condition (N=1,354)

		Risk of mortality level on SELFY-MPI			
	Cases	**Low**	**Moderate**	**High**	**χ^2 test p-value**
Quality of services in quarter:					
Lower	490	80.0	12.7	7.3	**0.013**
Average	412	85.4	9.0	5.6	
Higher	450	88.0	6.7	5.3	
Level of cultural fruition:					
Lower	493	70.0	16.2	13.8	
Average	259	87.3	10.0	2.7	**0.000**
Higher	602	94.9	3.8	1.3	
Level of social activation:					
Lower	417	69.1	15.8	15.1	
Average	507	90.5	7.7	1.8	**0.000**
Higher	430	91.9	5.6	2.6	
Frequency of physical activity:					
Never	733	75.9	13.8	10.4	
Sometimes	310	93.9	4.8	1.3	**0.000**
Regularly	311	94.9	4.2	1.0	
Level of technological access:					
Lower (0-2 tools)	533	74.1	14.1	11.8	
Average (3-4 tools)	421	87.2	8.8	4.0	**0.000**
Higher (5 or more tools)	400	95.0	4.3	0.8	

The binary logistic regression (limited to the variables reporting adequate statistical significance, see Table 2) explained 49.9 per cent of the model interpreting the associations of different social factors with moderate/higher levels of mortality risks on the SELFY MPI Scale. Observing results of the model in table 2, an odds ratio >1 indicates a higher association of the dif-

ferent modalities of the independent variables to moderate/higher risk of mortality due to frail conditions

The significant odds ratio for individuals over the age of 75 confirmed an increasing relationship between moderate/higher risk of mortality due to frailty and ageing (OR=3.77, 95 per cent CI: 2.24-6.34) and a major risk of mortality among women (OR=1.88, 95 per cent CI: 1.21-2.90).

Similarly, the presence of ADL impairment (again, implicitly related to the ageing process, the longevity and more chronical conditions) was positively related with moderate/higher risk of mortality due to frailty (OR=1.36; 95 per cent CI: 1.06-1.76).

Table 2 - Binary logistic regression analyses of moderate/higher risk of mortality due to frail conditions (SELFY-MPI) by independent variables (N=1,354)

	Moderate/higher mortality risk on SELFY-MPI		
Independent variables	p-value[a]	OR[b]	95 per cent CI[c]
Gender (reference = Male):			
Female	**0.004**	1.88	(1.21-2.90)
Age (reference = Age class 65-74):			
Age Class 75+	**0.000**	3.77	(2.24-6.34)
Presence of ADL impairment (reference = No):			
Yes	**0.000**	1.36	(1.06-1.76)
Level of social vulnerability (reference = Lower):	**0.000**		
Average	**0.013**	2.17	(1.18-4.00)
Higher	**0.000**	5.62	(3.04-10.38)
Household classification (reference = Solitary):	**0.000**		
Nuclear	**0.000**	0.19	(0.11-0.31)
Nuclear with sons/daughters	**0.000**	0.16	(0.06-0.43)
Respondent with sons/daughters	**0.002**	0.22	(0.08-0.58)
Extended/Multiple	0.064	0.21	(0.04-1.09)
No structure	**0.034**	0.22	(0.08-0.58)
Other forms of cohabitation	0.625	1.42	(0.34-5.94)
Level of perceived isolation (reference = Lower than average):	**0.018**		
Average	**0.022**	2.08	(1.11-3.91)
Greater than average	**0.005**	2.71	(1.35-5.42)
Satisfaction for quality of services in quarter (reference = Lower):	**0.000**		
Average	**0.002**	0.47	(0.30-0.76)
Higher	**0.000**	0.41	(0.25-0.66)
Level of social activation (reference = Lower):	**0.004**		

Average	**0.001**	0.46	(0.29-0.74)
Higher	0.063	0.61	(0.36-1.02)
Constant	**0.999**	2894.69	
Nagelkerke R²	49.9 %		

ᵃ Two-sided Wald test; ᵇ OR=Odds Ratio, OR >1 indicates a higher association to moderate/higher risk of mortality due to frail conditions (SELFY-MPI); ᶜ CI = Confidence interval.

Social vulnerability reported to be one of the most important factors in determining frailty and the related risk of mortality, as confirmed by the increasing odds ratios, arriving to 5.62 (CI: 3.04-10.38) in situations of major exposure, if compared with lower vulnerability levels. The model accounted also how similar conditions of weakness prevailed in solitary conditions (showing higher risk of mortality when compared with other family conditions) and in situations of institutionalized care (OR=1.42, CI:0.34-5.94). Similarly, the model confirmed the significantly higher associations to moderate/higher risk of mortality due to frail conditions in case of greater than average levels of perceived isolation (OR=2.71, CI: 1.35-5.42). On the contrary, moderate/higher risks of mortality due to frailty reported to be inversely related with higher levels of satisfaction for quality of services in quarter (OR= 0.41, CI: 0.25-0.66) and with higher levels of social activation (OR=0.61, CI: 0.36-1.02).

5. Discussion: frailty and the crystallization of social inequalities in later life

Our study provides evidence of the deep predictive potential of several social aspects as generative factors of frailty and relative mortality risk. Our final model describes the conjoint effect of older age, disability, social vulnerability, household conditions and perceived isolation, as main predictors of higher mortality risk, as well, on the contrary, how a better perceived quality of available and higher levels of social activation play key roles as protective factors.

Providing an interpretation of results, we could say that the different effects of the aforesaid factors can be synthetized according to the patters of the ageing in place's dynamics, so intensely interesting older people of contemporary society (Phillipson, 2013).

Structure, context, relationships and isolation play a key role in determining differentials in health status, by restraining and immobilizing the weaker profiles, as well the ability to move, to interact, to change and shift enhance the survival chances according to patterns of successful ageing.

Indeed, in a globalized world characterized by hyper-mobility, the older frail people are those missing out on the opportunities, both concretely

and symbolically. Due to their bodily and non–physical limitations from illness, functional loss and implicit decline in social status, they suffer both segregation and social exclusion mechanisms, utterly limiting their material and symbolic mobility.

In this sense, the association of social factors with higher mortality risks reveals the worsening of health conditions both as a cause and a consequence of a general social weakness of the older-old frail profiles (Kelley-Moore, 2013). Undoubtedly, this is related to structural social factors limiting individual agency of older people besides the presence of physical impairments. Major social disconnectedness, limited social networks, but also higher levels of suffered discrimination (not rarely including also physical aggression), describe the main structural characteristics of how society silently conceive the latest part of life as an essentially acceptable form of relegation and marginalization. This is consequently related to the second main explicative factor, i.e. the perceived isolation, a cognitive state of suffering typically observable in the setting of nursing home where major loneliness rules the alienating standardization of everyday routine of institutionalized frail and non-autonomous older people.

All of these factors result associated with higher risks of mortality due to frail conditions.

On the contrary, the possibility to enhance agency reflect the main protective factors, frequently permitting to older people the expression of self through activities of collective usefulness in order to explicate a social talent. This is not related only to the possibility in terms of individual physical conditions, but also to the opportunities in terms of accessible lifestyle and practices.

Once again, the results confirm how ageing represents the crystallization of social inequalities. Indeed, resembling a classic model of social closure, the frail older profiles are clearly dysfunctional to the interests of the dominant social groups and the institutionalization, awaiting the natural passing away, remains the best cost-effective solution. At the same time, it clearly realizes the sense of seclusion deriving from the patterns of ageing in place and social disconnection in a globalized world characterized, on the contrary, by hyper-mobility and interconnection.

Likewise, the active ageing's call to arms through voluntarism, civic engagement and different forms of advocacy for older citizens, besides its implicit usefulness, often concentrates on the economic aim of preventing the early arise of frailty conditions among an increasingly ageing population. Thus, such activities represent essentially an opportunity mainly for younger old profiles in overall good conditions or, at least, for the healthier minority of the elderly population. On the contrary, it's much more difficult (also because considered economically inefficient) to diffusely al-

low frail older people, almost those in adequate cognitive conditions, to be actively involved (for instance, through opportunities offered by ICTs). Moreover, this becomes nearly impossible when frailty is associated with poverty and lesser education.

In this perspective, social inequalities become unmodifiable and crystallized in front of health decline in later stages of life, where factors of socially structural reduction of individual agency compromise change and opportunity of social mobility determining resistance of social closure factors.

Apart from the aforesaid evidences, our study presents several limitations, mainly related to the interruption of the questionnaires' collection due to the COVID-19 emergency.

We would have expected to raise a higher sample, reaching about 2,000 respondents, but, due to the containment measures, we had to stop the data gathering. This implies that our factorial plan does not equally distribute among gender and age classes (over 75s and females are slightly overrepresented). Still, the actual sample size corresponds adequately to an acceptable statistical numerousness and the older-old overrepresented age class fits properly to describe the clinical frail profiles (typically, older women with chronic diseases and comorbidities). However, by having not reached the final sample, we cannot define a proper response rate (actually, around 30.0 per cent or contacts accepted to be interviewed).

Moreover, the sample was drawn in a local context and not at national level. However, Genoa describes a demographic urban setting with one of the highest of ageing index in Europe, providing added value to the sociological peculiarity of the study, even if data are non-generalizable as in a multi-centric study.

Still, it is important to observe that in our study the percentage sum of moderate-higher risk (equivalent to the 15.6 per cent) matches adequately the average incidences of frailty among community dwelling older people reported in other studies (see O'Caoimh et al., 2018), confirming a substantially adequate representativeness of our sample.

Lastly, our study was defined only in a cross-sectional design of the study, but, having the opportunity to re-contact respondents, a future longitudinal analysis is not excluded.

6. Connected protection for the frail, remote involvement for the healthy: rethinking policies for older people after the lockdown

If we look at the results of our research, the higher risk of mortality seems to be associated with typical profiles of older widowed women, suffering

functional impairments, affected by social vulnerability and isolation, living alone or in nursing home. Not by chance, looking at recent news, such characteristics describe exactly the profiles of several victims of the Coronavirus.

To this regard, our research suggests some possible short-term interventions and policy recommendations referred to older people in the current emergency of Covid-19.

Indeed, still awaiting a vaccine or effective treatments, we cannot exclude other epidemic outbreaks once this first emergency will have settled. Consequently, we cannot let us find ourselves unprepared in terms of collective safety and particularly in preservation of most vulnerable and frail older subjects.

Being the frail profiles at major risk in front of Coronavirus infection and considering that probably a vaccine will not be shortly available, protecting the weakest profiles, as well limiting the increase of frailty among population by intervening on its predictive and protective factors represents an indirect way to face the Coronavirus itself.

Similarly, by no means we urge for a careless or untimely end or improper reduction of lock down measures, to be defined institutionally in order to ensure protection and safety in a progressive reprise of activities.

However, particularly considering the current conditions of older people, a potential application of drastic and unconcerned interventions and political decisions increases the risk of reproducing inequalities as well to increase the risk itself of frailty and major exposure to Covid-19.

In this sense, as recently stated by the British Society of Gerontology (2020), worldwide media and institutional communication on Covid-19 suggests a binary vision of the problem, stressing the substantial difference between older and younger age groups in terms of risk of mortality by Coronavirus. Besides the implicit evidence (yet not adequately stressed) that all age groups can be infected and suffer deaths by Covid-19, the higher median age of deceased patients, together with the deserved (yet late) media and institutional focus on deaths in nursing care homes, reproduce the idea that the Coronavirus strikes essentially older people, while being a lesser lethal threat for younger generations.

However, such broad interpretation and approximate communication risk to lead to multiple undesired consequences both in terms of social cohesion and in potential efficacy and efficiency of interventions.

Once again, the persistent way to define individuals by their recognized productive functionality according to the obsolete industrial paradigm, misses out both the deep heterogeneity of older age groups as well the essential role of senior people in society.

In these days, exactly when the different economic sectors rightly press for restarting from the lock down, often media, advertisement and even in-

stitutional communications stress on the need to maintain older people in isolation for their own safety, limiting their movement, reaffirming the need to avoid or limiting contacts even with their own families (like grandchildren or other non-cohabiting relatives).

Even if in a protective aim, defining social containment mainly on a chronological base, by imposing isolation at home and limitation of contacts to all older people, reproduces a double sided sort of "benevolent" ageism.

On the one hand, the protective effort hides a clear inequality, by defining the entitlement of reducing the lock down essentially to the labour force, due to the economic pressures and needs, and, on the contrary, negating the right to a progressive reduction on measures to the non-active population (as somewhat improperly referred to by statistics).

On the other hand, an unselective lock down among older people, even for their own safety, means to forget and to renounce to the fundamental active role provided to community of senior generations. Childcare or assistance to other older relatives in need, voluntarism and active involvement in social and cultural activities of collective usefulness, often a position in paid work sometimes essential to the household income, are just some of the main activities which are essential to the economic reprise itself. In case of severely protective and unselective containment measure toward older people, all of these "oikonomically oriented" activities (intended in the Greek classic etymology of the word "economy", i.e. as a norm toward collective usefulness for our own community) would not be available. This would undoubtedly lead to serious problems not only to older individuals, deprived of personal rights, but also to families, in terms of household management, and, consequently, more or less indirectly, to the entire productive system.

Again, this does not mean to press for a complete or inappropriate end of preventive measures, but to find a safe way to permit and recognize the continuity of contribution by older people to society.

Likewise, this does not mean to negate the tragic evidence of these days, i.e. that the main victims of the Covid-19 are older people, often suffering comorbidities, mostly frail and often alone and socially vulnerable.

Still, not all older people are frail, alone and vulnerable. Similarly, frailty and comorbidities (like hypertension, cardiovascular illness, diabetes, cancer, etc.), as well isolation and vulnerability are transversal to all age groups. Covid-19 poses a threat to everyone in frail conditions acting as a lethal stressor, as well as social vulnerability, isolation, loneliness, scarce integration, exclusion, limited agency and lacking of social role are all predictive factors of frailty and consequently of a potential rise of the individual risk of mortality. Applying strict, unselective and indiscriminate measures of secluded protection to all older age groups could exactly provoke particularly in the healthiest and more robust component of older age groups a diffused

pressure to refusal to the rules, but, more important, it could increase social isolation, vulnerability and loss in terms of psychological wellbeing, till a potentially diffused decline of mental health. This could happen especially because one of the most critical social effect of the lock-down has been the limitation of the larger familiar inter-household network, where older people, often living alone or in couple, live separately from their sons, daughters and grandchildren, but in continuous connection and frequent relations with them. Moreover, such deep mutual linking is not limited to a passive received assistance to older people in need, but it diffusely realizes an active and fundamental support provided by seniors to other non-cohabiting younger relatives, like sons, daughters and grandchildren.

This does not mean to reduce protection, but to find alternative ways ensuring safe but concrete relationship.

Such issue becomes even more important in case of the weakest frail profiles and it brings on exactly the real matter of the problem, i.e. that frailty and social vulnerability, regardless of age, are the main factors of exposure to Covid-19.

The striking outbreak of Coronavirus in nursing care homes resembles exactly the ideal type of such weak health and social conditions. The exact number of deceased patients will be probably difficult to define, due to the late recognition of the virus spreading. Moreover, it will be probably impossible to understand how many frail and vulnerable people will have died at home by Covid-19, assisted by their families or alone, single or widowed, in partially autonomous conditions.

Specific solutions for those living alone and for those families caring for non-autonomous relatives should be find in the short time and in front of an expectable future epidemic outbreak. A simple and drastic solution of rigid isolation as applied till now would produce also in this cases negative consequences. Who is facing the emergency partially autonomous and living alone would probably feel even more unprotected and condemned to a sort of domiciliary segregation for its own safety. Who is caring for others would feel the lack of support and the anxiety of being unable to provide adequate assistance to their beloved, or even, when assisting others non-cohabiting and semi-autonomous living on their own, would feel the fear of infecting exactly by giving daily help and support.

The risk of an anomic situation is implicit, yet not adequately addressed at the moment due to the lacking of both epidemiologically proper and socially efficient interventions. Containment measures has to be conceived in terms of social distancing, however not in terms of negation of continuous social relationships.

Higher perceived isolation and major social disconnectedness are not only predictive factors of physical frailty, but an implicit trigger for a dif-

fused decline of psychological wellbeing in terms of cognitive and emotive resilience. Thus, ensuring protection by isolating the frailest and vulnerable profiles includes necessarily to maintain or realize an adequate support network in terms of emotional and practical support, both to the frail subjects and their family caregivers. Otherwise, an all-out severe domiciliary isolation of older profiles without foreseeing an adequate support to the typical family-based caregiving system, regardless of the collective aim of protection, could provoke anomic consequences, leading to a potential increase in suicide rates, particularly and exactly among situations major social vulnerability (Reger, Stanley & Joiner, 2020).

More generally, a concrete form of "ageing in place", due to Covid-19 imposed social restrictions, must be reverted from a critical factor to an opportunity, preserving both safety and quality of life for older people. This can happen setting up ahead of time a mix of preventive, prosthetic and protective measures adequately provided for the older population.

Frail and vulnerable subjects must be individuated and followed, preparing the community in front of a potential new epidemic event. This means shifting health care from a model of late detection and treatment of frail patients to a continuous system of early screening and identification of frail and pre-frail profiles among older population via a multidimensional approach, monitoring predictive factors of mortality risk both in terms of clinical and socioeconomic conditions.

Probably with very little time, the institutional nursing homes system should be re-thought. Institutionalized caregiving should abandon the "warehousing" model, packing several frail patients in the same place (Phillipson, 2020). Often these realities suffer a lack of staff, and the personnel itself is severely exposed to the virus, frequently without proper tools and procedures. Not to say about possible situations where lucrative exploitation of the need of caregiving meets illegal conditions, utterly increasing the risk of mortality for patients.

For these reasons, several residential and nursing homes revealed to be main sites of infection, with a quick spreading of the virus also due to the concentration of patients. Probably, domiciliary solution should be preferred, and, when not possible, institutionalized assistance should be monitored to avoid concentration, limiting the number of residents and reducing the ratio of staff per patients, in order to ensure the best possible conditions of assistance.

Frail people, at home or in institution, should be kept separated, warranting environmental protection against any form of contamination in close spaces. Maintaining adequate social distancing measures especially for and among profiles at risk should become an imperative, but it should also be maintained and improved the opportunity for regular relationships, ade-

quate psychological well-being and, as much as possible, a cognitively and physically active lifestyle, even if older people are confined at home.

Families and care institutions should be provided in time, besides with adequate containment tools (gloves, masks and other protective measures), also with smart ICT technologies and free public Wi-Fi coverage, permitting telemedicine and distance monitoring, as well ensuring, even in isolation, medical and psychological care (both to older subjects and family caregivers). Relatives of older people, living or not with them, supported by groups of professional or certified voluntary caregivers, under a continuous public monitoring, should receive an early training in order to be able to provide assistance for all functional and instrumental activities of daily living (cleaning, shopping delivery, medicine intake, therapies and any other form of assistance). Family should be assisted because the stress of caregivers is an indirect critical factor also in times of non-emergency. In this sense, all the related economic supply chain should be reverted to ensure effectively and efficiently both the production and the home delivery of goods in emergency conditions. Possibly, each caregiver should possibly give assistance to a limited, and selected number of frail subjects, in order to ensure limited contacts. An intense early informative campaign on adequate protective lifestyles should be provided.

In conclusion, being compelled to face such an emergency through a renovated and real sense of community, exactly the protection of the most fragile of us should become an imperative in order to keep the sense itself of our living together.

Acknowledgment

- Department of Geriatric Care, OrthoGeriatrics and Rehabilitation, E.O. Galliera Hospital: Alberto Pilotto, Alberto Cella, Sabrina Zora.
- Auser Liguria: Ileana Scarrone.

References

Andrew, M.K., Mitnitski, A.B., & Rockwood, K. (2008). Social vulnerability, frailty and mortality in elderly people. *PLoS One*, *3* (5), e2232. doi: 10.1371/journal.pone.0002232.

Brigola, A.G., Alexandre, T., Inouye, K., Yassuda, M.S., Pavarini, S., & Mioshi, E. (2019). Limited formal education is strongly associated with lower cognitive status, functional disability and frailty status in older adults. *Dement Neuropsychology*, *13* (2), 216–224. doi:10.1590/1980-57642018dn13-020011.

British Society of Gerontology (2020). Statement from the President and Members of the National Executive Committee of the British Society of Gerontology on COVID-19. Retrieved March 21, 2020 from https://www.britishgerontology.org/publications/bsg-statements-on-covid-19/statement-one

Brown, J., Pengas, G., Dawson, K., Brown L.A., & Clatworthy, P. (2009). Self-administered cognitive screening test (TYM) for detection of Alzheimer's disease: Cross sectional study. *BMJ British Medical Journal*, 338, b2030. doi: 10.1136/bmj.b2030.

Brunello, G., Fort, M., Schneeweis, N., & Winter-Ebmer, R. (2016). The causal effect of education on health: What is the role of health behaviors? *Health economics*, *25* (3), 314-336.

Caroli, E., & Weber-Baghdiguian, L. (2016). Self-reported health and gender: The role of social norms. *Social Science & Medicine*, 153, 220-229.

Cesareo, V. (Ed.). (2007). La distanza sociale. Una ricerca nelle aree urbane italiane. Milano: FrancoAngeli.

Cornwell, E.Y., & Waite, L.J. (2009). Measuring social isolation among older adults using multiple indicators from the NSHAP study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 64B(S1), i38–i46. doi:10.1093/geronb/gbp037.

Dannefer, D., & Huang, W. (2017). Precarity, inequality, and the problem of agency in the study of the life course. *Innovation in Aging*, *1* (3), 1-10. doi: 10.1093/geroni/igx027.

Donini, L.M., Marrocco, W., Marrocco, C., & Lenzi, A. (2018). Validity of the self- mini nutritional assessment (Self- MNA) for the evaluation of nutritional risk. A cross-sectional study conducted in general practice. *The Journal of Nutrition Health & Aging*, *22* (1), 44-52.

Ferrucci, L., Guralnik, J.M., Cavazzini, C., Bandinelli S., Lauretani F., Bartali B., Repetto L., & Longo D.L. (2003). The frailty syndrome: a critical issue in geriatric oncology. *Critical Reviews in Oncology/Hematology*, *46* (2), 127-137.

Franse, C.B., van Grieken, A., Qin, L., Melis, R.J., Rietjens J.A.C., & Raat, H. (2017). Socioeconomic inequalities in frailty and frailty components among community-dwelling older citizens. *PLoS ONE*, *12* (11). doi: 10.1371/journal. pone.0187946.

Gale, C.R., Westbury, L., & Cooper, C. (2018). Social isolation and loneliness as risk factors for the progression of frailty: the English Longitudinal Study of Ageing. *Age and Ageing*, *47* (3), 392–397. doi: 10.1093/ageing/afx188.

Galenkamp, H., Gagliardi, C., Principi, A., Golinowska, S., Moreira, A., Schmidt, A.E., Winkelmann J., Sowa A., van der Pas S., & Deeg D.J.H. (2016). Predictors of social leisure activities in older Europeans with and without multimorbidity. *European Journal of Ageing*, *13* (2), 129-143. doi: 10.1007/s10433-016-0375-2.

Garcia Gonzalez, J.V., Diaz Palacios, E., Salamea Garcia, A., Cabrera González D., Menéndez Caicoya A., Fernández Sánchez A., Acebal García V. (1999). An evaluation of the feasibility and validity of a scale of social assessment of the elderly. *Atencion Primaria*, *23* (7), 434-440.

Green, B. (2006). Marketing to leading-edge baby boomers: Perceptions, principles, practices, predictions. New York: Paramount Market Publishing.

Grenier, A., & Phillipson, C. (2013). Rethinking agency in late life: structural and interpretative approaches. In J.D. Jan Baars (Ed.), Ageing, meaning and social Structure. Connecting critical and humanistic gerontology (pp. 55-80). Bristol: Policy Press.

Hagan, R., Manktelow, R., Taylor, B., & Mallett, J. (2014). Reducing loneliness amongst older people: a systematic search and narrative review. *Aging & Mental Health*, *18* (6), 683-693. doi:10.1080/13607863.2013.875122.

Heap, J., Fors, S., & Lennartsson, C. (2017). Coexisting disadvantages in later life: Demographic and socio-economic inequalities. *Journal of Population Aging*, *10* (3), 247-267. doi: 10.1007/s12062-016-9158-y.

Henriques, A., Silva, S., Severo, M., Fraga S., & Barros H. (2020). Socioeconomic position and quality of life among older people: The mediating role of social support. *Preventive Medicine*, 135. doi: 10.1016/j.ypmed.2020.106073.

Howe, N., & Strauss, W. (1991). Generations: The history of Americas future, 1584 to 2069. New York: William Morrow.

Ige, J., Gibbons, L., Bray, I., & Gray, S. (2019). Methods of identifying and recruiting older people at risk of social isolation and loneliness: a mixed methods review. *BMC Medical Research Methodology*, *19* (1), 1-11. doi: 10.1186/s12874-019-0825-6.

ISS (2020). Characteristics of COVID-19 patients dying in Italy. Report based on available data on April 9th, 2020. Roma: Istituto Superiore di Sanità.

Juang, C., Knight, B., Carlson, M., Schepens Niemiec, S., Vigen, C., & Clark, F. (2018). Understanding the mechanisms of change in a lifestyle intervention for older adults. *The Gerontologist*, *58* (2), 353-361. doi:10.1093/geront/gnw152.

Kelley-Moore, J. (2013). Disability and ageing: The social construction of causality. In D. Dannefer, & C. Philipson (Eds.), The Sage handbook of Social Gerontology (pp. 96-110). London: Sage.

Laslett, P. (1972). La famille et le ménage: approches historiques. *Annales*, 4-5, 847-872.

Lawton, M.P., & Brody, E.M. (1969). Assessment of older people: Self-maintaining and instrumental activities of daily living. *The Gerontologist 9* (3), 179-186.

Leach, R., Phillipson, C., Biggs, S., & Money, A. (2008). Sociological perspectives on the baby boomers: An exploration of social change. *Quality in Ageing and Older Adults*, *9* (4), 19-26.

Linn, B., Linn, M.W., & Gurel, L. (1968). Cumulative illness rating scale. *Journal of the American Geriatrics Society*, *16* (5), 622-626.

Mahoney, F., & Barthel, D.W. (1965). Functional evaluation: The Barthel Index. *Maryland State Medical Journal*, 14, 56-61.

Mazzonna, F. (2014). The long-lasting effects of family background: A European cross-country comparison. *Economics of Education Review*, 40, 25-42.

Morley, J., Malmstrom, T.K., & Miller, D.K. (2012). A simple frailty questionnaire (FRAIL) predicts outcomes in middle aged African Americans. *The Journal of Nutrition, Health & Aging*, *16* (7), 601-608. doi: 10.1007/s12603-012-0084-2.

O'Rourke, H., Collins, L., & Sidani, S. (2018). Interventions to address social connectedness and loneliness for older adults: A scoping review. *BMC Geriatrics*, *18* (1), 214. doi: 10.1186/s12877-018-0897-x.

O' Caoimh, R., Galluzzo, L., Rodríguez-Laso, Á., Van der Heyden, J., Ranhoff, A., Lamprini-Koula, M., Ciutan, M., López-Samaniego, L., Carcaillon-Bentata, L., Kennelly, S., & Liew, A. (2018). Prevalence of frailty at population level in European ADVANTAGE Joint Action Member States: a systematic review and meta-analysis. *Annali dell'Ististuto Superiore di Sanità*, *54* (3), 226-238. doi:10.4415/ANN_18_03_10.

Phillipson, C. (2013). Ageing and the urban society: Growing old in the century of the city. In C.P. Dale Dannefer (Ed.), The SAGE Handbook of Social Gerontology (pp. 597-606). London: Sage.

Phillipson, C. (2020). Covid-19 and the crisis in residential and nursing home care. Retrieved April 20, 2020, from https://ageingissues.wordpress.com/2020/04/08/covid-19-and-the-crisis-in-residential-and-nursing-home-care/

Pilotto, A., Ferrucci, L., Franceschi, M., D'Ambrosio, L.P., Scarcelli, C., Cascavilla, L., Paris, F., Placentino, G., Seripa, D., Dallapiccola, B., & Leandro, G. (2008). Development and validation of a multidimensional prognostic index for one-year mortality from comprehensive geriatric assessment in hospitalized older patients. *Rejuvenation Research*, *11* (1), 151-161. doi:10.1089/rej.2007.0569.

Pilotto, A., Veronese, N., Quispe Guerrero, K.L., Zora, S., Boone, A.L., Puntoni, M., Giorgeschi, A., Cella, A., Hidalgo I.R., Pers, Y.M., Ferri, A., Fernandez, J.R.H., & Pisano Gonzalez, M. (2019). Development and validation of a self-administered multidimensional prognostic index to predict negative health outcomes in community-dwelling persons. *Rejuvenation Research*, *22* (4), 299-305. doi: 10.1089/rej.2018.2103.

Poli, S. (2012). Città vecchia, nuovi anziani. Invecchiamento e postmodernità in una periferia genovese. Milano: FrancoAngeli.

Poli, S. (2014). Beyond stereotypes talent resources and social activity among the postmodern elderly. *Research on Ageing and Social Policies*, *2* (1), 58-86.

Poli, S., & Pandolfini, V. (2016). The incidence of social factors on elderly frailty evidences from a first methodological application of the Frail scale in Italy. *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, May, 1-9. doi:10.1177/0759106316642720.

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*, August, 1-8. doi: 10.1007/s40520-016-0623-5.

Read, S., Grundy, E., & Foverskov, E. (2016). Socio-economic position and subjective health and wellbeing among older people in Europe: A systematic narrative review. *Aging & Mental Health*, *20* (5), 529-542.

Reger, M.A., Stanley, I.H., & Joiner, T.E. (2020). Suicide Mortality and Coronavirus Disease 2019 - A Perfect Storm? *JAMA Psychiatry*. doi:10.1001/jamapsychiatry.2020.1060.

Smith, K., & Victor, C. (2019). Typologies of loneliness, living alone and social isolation, and their associations with physical and mental health. *Ageing and Society*, *39* (8), 1709-1730. doi:10.1017/S0144686X18000132.

Sole-Auro, A., & Crimmins, E. (2013). The oldest old health in Europe and the United States. *Annual Review of Gerontology and Geriatrics*, *33* (1), 1-33.

Stephens, C., Breheny, M., & Mansvelt, J. (2015). Volunteering as reciprocity: Beneficial and harmful effects of social policies to encourage contribution in older age. *Journal of Aging Studies*, 33, 22-27. doi: 10.1016/j.jaging.2015.02.003.

Ten Bruggencate, T., Luijkx, K., & Sturm, J. (2019). To meet, to matter, and to have fun: The development, implementation, and evaluation of an intervention to fulfil the social needs of older people. *International Journal of Environmental Research and Public Health*, *16* (13), 1-13. doi: 10.3390/ijerph16132307.

van der Linden, B.W.A., Cheval, B., Sieber, S., Cullati, S., & Orsholits, D. (2019). Life course socioeconomic conditions and frailty at older ages. *The Journals of Gerontology: Series B*, *75* (6), 1348-1357. doi: 10.1093/geronb/gbz018.

Vauclair, C.M., Lima, M.L., Abrams, D., Swift, H.J., & Bratt, C. (2016). What do older people think that others think of them, and does it matter? The role of meta-perceptions and social norms in the prediction of perceived age discrimination. *Psychology and Aging*, *31* (7), 699-710. doi: 10.1037/pag0000125.

Walsh, K., Scharf, T., & Keating, N. (2017). Social exclusion of older persons: A scoping review and conceptual framework. *European Journal of Aging*, *14* (1), 81-98. doi: 10.1007/s10433-016-0398-8.

Zimmer, Z., Hanson, H.A., & Smith, K.S. (2016). Childhood socioeconomic status, adult socioeconomic status, and old-age health trajectories: Connecting early, middle, and late life. *Demographic Research*, *34* (10), 285-320. doi: 10.4054/DemRes.2016.34.10.