

ORIGINAL ARTICLE

Evaluation of bio-psycho-social frailty in older persons on the territory: the method and the experience of the “Medesano Health House”

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Summary. *Background and aim of the work:* Frailty in older people is a situation of risk of dependency caused by many factors. On this consideration, the Medesano city started a survey on the condition of fragility of people ≥ 75 aimed at building a monitoring system for timely interventions on the factors of risk and implementation of measures for preventing dependency. *Methods:* The survey was conducted jointly by the family doctor and the social worker in the City. The multidimensional assessment considered logistic and housing conditions, disease, medications, basic and instrumental activities of daily living, neurological and psychological conditions. *Results:* The survey included 761 older people, with a following definition of condition and levels of frailty both at social (loneliness, lack of supporting network, etc..) and health level (complexity of the regimen, high and / or severe comorbidity) was planned from the beginning as the basis on which developing a continuous in time monitoring program for assessing the frailty, for a early taking in charge by Health and Welfare services, boosting integrated health and welfare interventions and promoting networks of solidarity and sociality. *Conclusion:* The data seem to confirm that the methodology used is sufficiently adequate to intercept frailty in ≥ 75 years unknown to social services indicating that the monitoring on the functionality of the subjects obtained from the surveys by the General Practitioners could be deemed as a privileged way for a survey on large populations. After the survey was activated continuous monitoring of patients with social and clinical frailty.

Key words: frailty, prevention, health; social needs.

Introduction

The concept of frailty related to older people, which has appeared in the literature since the early 1990s, has developed in all these years, resulting in a rich scientific production mainly in the medical field, but also, albeit in reduced terms, in the psychosocial sphere (1,2).

On the interpretative level, the concept of frailty usually ranges from biological decay and physical conditions to neuropsychic and socio-relational impairment (3,4). From the evaluation point of view it ranges from the possible evaluation of 70 items with

a few targeted items as well as on the evaluation of specific performances ranging from simple exercises practicable anywhere to in-depth instrumental tests that can be performed only in dedicated laboratories (5-7). All this discussion has led to making the most recent international literature consider frailty in bio-psycho-social terms, or rather as a global condition of the person, determined by multiple organic, functional, psychic, logistic-environmental factors and social, which require a multi-dimensional evaluation system, in order to provide adequate integrated responses on the socio-health level (8-10).

Frailty thus becomes a risk condition determined by social and health factors interacting with each other, which can be modified over time and which act differently depending on the environmental context in which the subject lives. The concept of frailty must therefore be considered in a preventive logic, therefore as a determining condition of risk of non-self-sufficiency, which must be addressed by the primary care and social care system with the aim of providing adequate answers. It is obvious that in this interpretation logic of a substantially preventive and proactive type, that is of medicine of initiative, a fundamental aspect in the future development of Primary Care and its organizational structure represented by the Health Houses, all those are excluded from the definition.

However, the aspect that must be considered a priority is that on the part of social and health services the need to not work on the emergency that forces us to use the resources immediately available and available at that time and that are not always completely felt is strongly felt appropriate to the person's need. In fact, for the most part, older people and their families turn to services when the situation precipitates towards non-self-sufficiency due to a serious and sudden event or when the family is no longer able to cope with care work due to sudden events that for exhaustion of the assistance capacities. Therefore, seeking to do something in advance can allow not only the identification of more targeted projects but also the involvement of a community aid and support system (e.g. commitment of individuals, of the neighborhood, of volunteering, etc.) that goes in the logic of support and anticipatory intervention to the possible "crucial" event, being able to condition and characterize fundamental preventive interventions. This is why our mapping of frail older people has been designed, immediately, as a prerequisite and basis from which to develop a monitoring program of the continuous condition over time, to boost integrated social and health interventions and to promote networks of solidarity and sociality, involving the social forces of the community. All of this is aimed at building a monitoring system on the living conditions of elderly people, in order to be able to intervene promptly on risk factors and to implement responses aimed at the condition of fragility and integrated interventions for the prevention of non self-sufficiency. Starting from the construction of a

shared work methodology between General Practitioners, Professional Nurses and Social Services to intercept and evaluate risk situations.

Given this background, the aim of this work is to develop a working methodology, shared between General Practitioners, Professional Nurses and Local Social Services (by developing the integration of territorial planning policies in terms of urban planning, transport, culture, etc) to assess risk situations in older people living in the community for overcoming loneliness and social isolation. Moreover, we aim to build a range of diversified and flexible opportunities, initiatives and activities aimed at frail older people and a surveillance system on the quality of life of elderly people, using indicators sensitive to change over time, able to intercept needs early.

Materials and Methods

Participants

The project initially involved 1,024 people who made up the entire older population aged 74 at 1st January 2012, resident in the Municipality of Medesano, in charge of the GPs of the Primary Care Unit of Medesano.

Project scheme

The project is made of the following consecutive steps:

- a) Building a list of the older people ≥ 75 not in charge to the Welfare Services and not present in the Health and Welfare network through the Health Registry of the Local Health Company;
- b) Collecting the demographic data through the municipality Registry Office;
- c) Involving the Social Assistants of the municipality dispense to the General Practitioners (interview) the evaluation sheet (see the supplementary material) in order to assess, through GPs' knowledge of the case:
 - Family and neighbourhood network
 - Address and residence
 - Health conditions through self-reported information;
 - Information regarding medications;
 - Cognitive and psychic health status;

- The autonomy in simple and complex activities of daily life (ADL), through the use of the Barthel Index (BADL) (11) and the Lawton-Brody index (IADL) (12).

The results concerning the health and welfare conditions of the over 75 subjects have been the basis for monitoring and subsequently taking in charge the elders the working group considered most at risk. Therefore, in a second step, the surveillance activities focused on 246 older people who live alone starting from those who do not have living sons, those who live in medium or high degree isolation, the elderly couples without children in neighbourhood isolation and those with poor health conditions (consumption of 4 or more drugs per day, medium / high grade regimen complexity, high and / or severe comorbidity). Such subjects were under constant monitoring through periodic home visits by the Welfare Services (Social Assistants, Social Workers with targeted training) who in case of need activate the Health Services. The subjects with prevailing health fragility receive periodic assessment also by the General Practitioner and the Community Nurse.

In this case, the home visit by the Welfare Services (Social Assistant and domiciliary health care workers) schedule the following steps:

- a) interview for checking the following elements already detected by the General Practitioner during the "mapping phase":
 - Demographic situation;
 - Neighbourhood isolation;
 - Assessment of the ADL (Barthel Index) and the IADL (Lawton Index).
- b) reporting possible recent falls
- c) deepening the subjective perception of the wellness and illness related the user's health conditions;
- d) life style, daytime activities and level of participation in the social life of the community.

The implementation path

Responsibility for the surveillance project lies with the Social Worker of the Municipality, who uses a figure of social and healthcare Operator with experience and expertise gained over time. This operator must be known on the territory, and able to interact

with the elderly, with the various professional figures of reference and territorial resources. The process included the following phases:

- sending a letter to older people, signed by the Mayor, Councilor for Social Services and Coordinator of the Primary Care Unit aimed at involving them in the project, and to announce the visit of the social operator;
- home visit by the Social Assistant and the social and health Operator and identification of needs, aspirations and expectations through a specially established instrument;
- survey, by the Social Assistant, in collaboration with the health operator, of all the opportunities present in the municipal territory that constitute the social fabric (commercial establishments, aggregation and recreational forms, etc.), with particular regard to the forms of association volunteers who can collaborate on the project;
- involvement, by the municipal administration, of all the aforementioned resources, requesting the availability, based on the specific possibilities of intervention, in the construction of a solidarity network. From this monitoring action can emerge both the need to take charge by the social-health services, and the need for "light" management such as socialization, teleassistance / remote control, support from the voluntary sector for accompaniment, company, small transport.

The General Practitioners together with the Nurses of the Primary Care Unit were entrusted with the monitoring of the older people who present the conditions of health frailty. To this end, these individuals were included in individualized home care support / control programs based on their clinical and functional conditions, monitored in an integrated manner through suitable multi-dimensional assessment tools. This presupposes the initial interaction with the Social Assistant and the subsequent reporting to the same, by e-mail or by telephone, of significant changes in the condition of the clients, whenever they occur. In order to guarantee the updating of the health conditions of the elderly alone, it is possible to hypothesize that the Nursing Primary Care Nurse can carry out surveillance on the database (in connection with the municipal office that manages the general database) highlighting,

on the Based on the information provided by the General Practitioner, the changes occurred, in particular in order to identify new situations of health fragility over time.

Statistical analysis

Data were reported as frequency in absolute numbers and the correspondent percentages, using Microsoft Excel 2007.

Results

Study population

Of the 1,024 initially included older people, 761 subjects were analyzed since 263 people were already followed by the municipal social service or included in programs of Integrated Home Care, deceased, or did not agree to participate.

General and descriptive characteristics

Table 1 shows the main characteristics of the population included. The 761 people (59.1% females) represented the 74.3% of the older population of the Municipality. The prevailing age class was from 75 to 79 years (35%), whilst the ninety-year-olds represent 9.6% of the study population. Most people (47.3%) are married, followed closely by those who are widowed (45.3%). 5.7% are single or single and 1.1% are separated or divorced.

In the sample as whole, the majority of the persons lived in couple (47.3%), but a similar percentage (45.3%) was widowed. The 39.4% of older people included lived in couple (39.4%).

Of importance is the figure of social contacts that are frequent in 86.1% of the interviewed people. Almost half of the included people have a sufficient disposability for help by neighbours that was elevated in the 39.0% of the cases. The 80.3% of people lived in town, with a good transport availability (82.3%). Finally, at their houses, the interviewed people reported a high presence of architectural barriers, prevalently external (40.2), but in 8.4 both internal and external (Table 1).

Regarding multi-morbidity, the sample was mainly affected by moderate (34.8%9 or mild (39.3%)

Table 1. Descriptive characteristics of the population included

| Parameter | Categorization | Prevalence (%) |
|---|----------------------------|----------------|
| Age (years) | 75-79 | 35 |
| | 80-84 | 32.5 |
| | 85-89 | 23.0 |
| | ≥ 90 | 9.6 |
| Gender | Males | 40.9 |
| | Females | 59.1 |
| Marital status | Married | 47.3 |
| | Widow | 45.3 |
| | Single | 5.7 |
| | Divorced | 1.1 |
| Living status | Older couple | 39.4 |
| | Alone | 32.3 |
| | Other familiar nucleus | 28.3 |
| Frequency of social contacts | Frequent | 86.1 |
| | Not frequent | 9.1 |
| | None | 3.2 |
| | Not known | 1.7 |
| Disposability for help by neighbours | Sufficient | 46.0 |
| | Elevated | 39.0 |
| | Not sufficient | 13.0 |
| | Not known | 2.0 |
| Site | Town | 80.3 |
| | Group of house | 5.0 |
| | Scattered houses | 14.6 |
| Transport availability | Good | 82.3 |
| | Insufficient | 6.3 |
| The person is in neighbourhood isolation | Absent | 11.3 |
| | High | 4.1 |
| | Medium | 8.4 |
| | Low | 20.8 |
| | Absent | 66.6 |
| Architectural barriers | Only external | 40.2 |
| | Only internal | 28.0 |
| | Both internal and external | 8.4 |
| | Absent | 16.2 |
| | Not known | 7.2 |
| Presence and severity of any chronic degenerative polypathology | Mild | 39.3 |
| | Moderate | 34.8 |
| | Elevated | 15.2 |
| | None | 10.5 |

Table 1. Descriptive characteristics of the population included

| Parameter | Categorization | Prevalence (%) |
|---|----------------------|----------------|
| Space-temporal cognitive status | Conserved | 90.8 |
| | With difficulty | 6.4 |
| | None | 2.8 |
| Presence of depression | No | 79.9 |
| | Moderate | 18.7 |
| | Severe | 1.4 |
| Anxiety | No | 71.1 |
| | Moderate | 27.3 |
| | Severe | 1.6 |
| Disability status (Barthel index) | Independent | 77.7 |
| | Very mild disability | 10.9 |
| | Mild disability | 4.6 |
| | Moderate disability | 3.3 |
| | Total disability | 3.4 |
| Disability in the instrumental activities of daily living (number) (men) | 0 | 2.9 |
| | 1 | 1.9 |
| | 2 | 4.8 |
| | 3 | 4.5 |
| | 4 | 9.0 |
| | 5 | 76.8 |
| Disability in the instrumental activities of daily living (number) (women) | 0 | 5.6 |
| | 1 | 2.9 |
| | 2 | 3.8 |
| | 3 | 5.3 |
| | 4 | 5.8 |
| | 5 | 5.8 |
| | 6 | 3.8 |
| | 7 | 5.1 |
| | 8 | 62.0 |

degree of multi-morbidity. As shown in Figure 1, there was a linear association between the presence of multi-morbidity and the use of medications, with the majority of population using between 2 and 3 medications (46.1%).

Cognitive status was preserved in almost all the sample included (90.8%), with a high prevalence of depression (moderate: 18.7%; severe: 1.4%) and anxiety (moderate: 27.3%; severe: 1.6%) (Table 1).

Finally, our survey reported some data regarding disability. The large majority of the population included reported no disability in the basic activities of daily

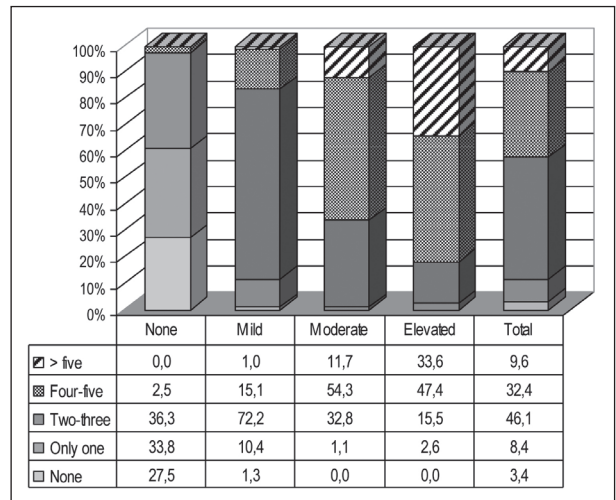


Figure 1. Distribution of included older people for the severity of multi-morbidity and daily consumption of medications.

living (ADL) (77.7%), with a similar proportion being independent in the IADL (62.0% of women; 76.8% of men) (Table 1).

Activation of the surveillance system

Given this background, on an experimental level, a surveillance system was proposed for dynamically following the entire population under investigation over time. However, during the first phase, only the 246 older people living alone (178 F; 59 M) were included. During the implementation path, a first visit was made and the following elements were checked and updated by the GP during the “mapping” phase: registry and social situation; situation of environmental isolation; degree of participation in social life; autonomy in the ADL and in the IADL.

In this sub-sample, a level of home hygiene prevails that can be considered adequate. However, several situations of hygienic deficiency have been detected; the neglected houses are mostly inhabited by single men. The situation found, where the factors of loneliness, absence of children and environmental isolation are added to the house in a state of serious neglect, brought the maximum attention in this phase. Relationships with the family network 55% of older people maintain frequent relationships with the parental network, 31.1% only sporadic visits and 13% no relation with relatives. In this sample of alone older people, however, 69% of the elderly entertain active and frequent relationships

with the social environment while 31% have a degree of participation considered to be low or absent.

Of interest is the presence of multi-morbidity since 58% did not report any chronic disease or have only mild pathologies, while 35.6% suffer from moderate-grade multi-morbidity and only 6.7% a high degree. In this regard, alone older people 84.4% of the older people were completely autonomous, including the auto-sufficiency in the IADL.

Finally, we found one case of frequent falls in an older woman in environmental isolation and one case of accidental fall with consequent fractures of another older woman.

First interventions proposed

The requests for activation of the home assistance service are reported in Figure 2 and they were: - 1 bathroom request, - 3 social taxi requests, - 2 socialization requests, - 5 meal requests per domicile - 5 consignments to the Specialist Psychiatrist and prescription aids - 4 visits to the Center of Cognitive Disorders - 7 requests of the diagnostics by the GP (finding of unknown pathologies) - 4 having the need of a nurse.

Discussion

In this work, we developed a working methodology shared across figures that usually are in contact with older persons, including General Practitioners,

Professional Nurses, Social Assistants. Moreover, we have also reported some simple, but useful interventions aiming to improve quality of life in older people, particularly in those living alone.

The investigation described here was focused on the objective of creating and evaluating the effectiveness of a tool (the survey) and of a system (the Social Assistant's interview with the General Practitioner) able to early intercept bio-psicosocial frailty, both in its health and social components (13). The latter, unfortunately, is often little considered in literature, although it is nevertheless an important domain of an older person, capable of negatively affecting the other dimensions that characterize the human person, e.g. the physical and the psychic functions (14, 15)

The positive and interesting aspects that the survey has revealed are the following:

- The frequent disquisition on different clinical and social cases that saw the Social Assistant and the attending physician confronted during and beyond the research phase could be this the modus operandi to create the real basis of that socio-health integration that is often difficult to act.
- The survey allowed to highlight that the attending physician is able to represent an ideal information source also regarding news on the subject linked to functional aspects and relational dynamics.
- The real needs of individuals have been pointed out, especially with regard to subjects with social problems. In particular, the benefit of the system is im-

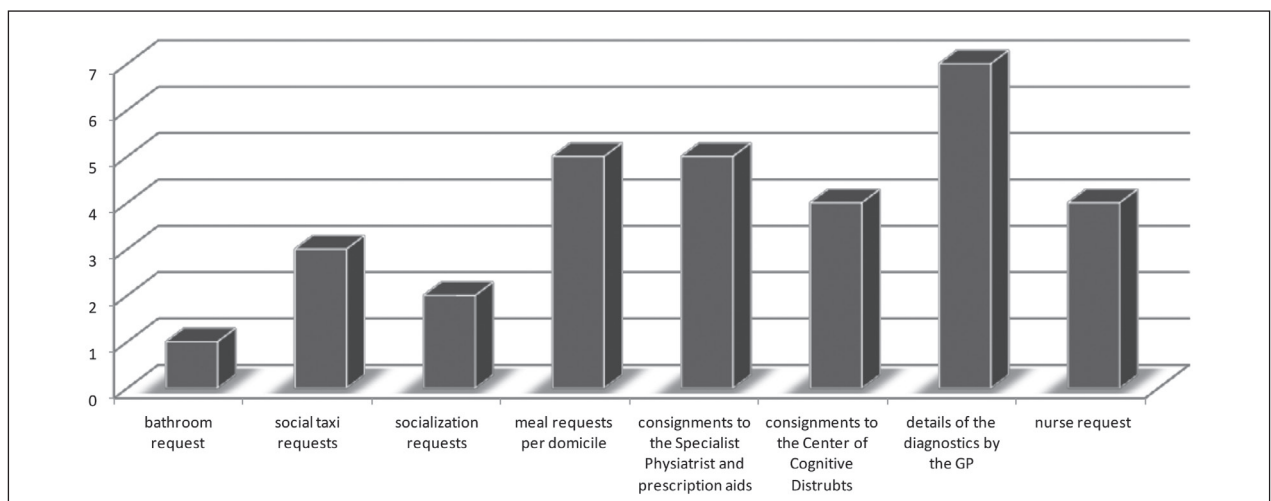


Figure 2. Types and number of interventions proposed in the older people living alone

mediate and tangible in those cases where home assessment has revealed the need for timely handling. The information gathered can represent the useful basis for creating, by the Municipal Administrations, services adapted to real needs.

- Evidence of frailty from the health point of view (45 people and 23 couples) can be the model for activating individualized forms of disease management through the integrated management of the General Practitioner and the nursing case manager territorial (13).

Some limitations should be mentioned. The investigation phase is certainly demanding and complex on the organizational level, requiring the professionals time and availability and having to activate support services (preparation of lists, statistical elaboration, bureaucratic procedures). The survey therefore has a cost, which derives from all the factors listed above.

Conclusions

In conclusion, our work supported the necessity of a better integration across figures working in different settings and with different competencies in older people's care through a survey creation in the community and in primary care services. Since it can be affirmed, as widely described, that the use of a system of interception of frailty is certainly advantageous, we hope that the practice of investigation and subsequent monitoring will become a system for the elderly population of a territory. The methods and tools of the mapping can probably be simplified, also to obviate the aforementioned criticalities, provided that the speculative aspect is simultaneously maintained on social frailty and on health, through an integrated professional evaluation

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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