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HEALTH CARE FOR OLDER PEOPLE IN ITALY: THE U.L.I.S.S.E. PROJECT (UN LINK INFORMATICO SUI SERVIZI SANITARI ESISTENTI PER L'ANZIANO - A COMPUTERIZED NETWORK ON HEALTH CARE SERVICES FOR OLDER PEOPLE)

F. LATTANZIO[1], C. MUSSI[2], E. SCAFATO[3], C. RUGGIERO[4], G. DELL'AQUILA[4], C. PEDONE[5], F. MAMMARELLA[5], L. GALLUZZO[3], G. SALVIOLI[2], U. SENIN[4], P.U. CARBONIN[5], R. BERNABEI[5], A. CHERUBINI[4] FOR THE U.L.I.S.S.E. STUDY GROUP

1. Scientific Director, Istituto Nazionale di Ricovero e Cura dell'Anziano INRCA), Ancona, Italy; 2. Istituto di Geriatria, Università di Modena e Reggio Emilia, Modena, Italy; 3. Population's Health Unit , National Center for Epidemiology, Surveillance and Health promotion – CNESPS. Istituto Superiore di Sanità, Rome, Italy; 4. Institute of Gerontology and Geriatrics, Department of Clinical and Experimental Medicine, Perugia University Medical School, 06100, Perugia, Italy; 5. Centro di Medicina dell'Invecchiamento, Dipartimento di Scienze Gerontologiche, Geriatriche e Fisiatriche, Università Cattolica del Sacro Cuore, Rome, Italy; Corresponding author: Cherubini Antonio, MD, PhD, Institute of Gerontology and Geriatrics, Department of Clinical and Experimental Medicine, Perugia University Medical School, Piazzale Menghini 1, 06100 Perugia, Italy, Tel +390755783722, Fax +390755783878

Abstract: *Objectives:* The U.L.I.S.S.E. study is aimed at describing older patients who are cared for in hospitals, home care or nursing homes in Italy. *Design:* The U.L.I.S.S.E. study is an observational multicenter prospective 1-year study. *Setting:* Overall, 23 acute geriatric or internal medicine hospital units, 11 home care services and 31 nursing homes participated in the study. *Measurements:* The patient's evaluation was performed using comprehensive geriatric assessment instruments, i.e. the interRAI Minimum Data Set, while data on service characteristics were recorded using ad-hoc designed questionnaires. *Results:* The older subjects who are in need of acute and long term care in Italy have similar characteristics: their mean age is higher than 80 years, they have a high level of disability in ADL, an important multimorbidity, and are treated with several drugs. The prevalence of cognitive impairment is particularly high in nursing homes, where almost 70% of residents suffer from it and 40% have severe cognitive impairment. On the other hand, there is a shortage of health care services, which are heterogeneous and fragmented. *Conclusions:* Health care services for older people in Italy are currently inadequate to manage the complexity of the older patients. An important effort should be undertaken to create a more integrated health care system.

Key words: Acute hospital care, home care, nursing home, community service, comprehensive geriatric assessment, health-care service.

Introduction

During the last fifty years aging of the population in Italy has been one of the fastest among developed countries (1). Healthcare professionals witnessed a rapid increase in the complexity of the case mix of older patients. This situation is putting a greater pressure on the long term care system that is underdeveloped in Italy, as showed by the very low percentage of the 65+ population who receive home care or nursing home care, i.e. a percentage slightly higher than 2% in both settings (2). The situation worsened after 1995, when the Diagnosis Related Group (DRG) system of payment was introduced in Italian hospitals (3, 4). Moreover, although Italy has a public health care system which provides universal coverage, there is a high level of heterogeneity and fragmentation of health care services. This is the consequence of the fact that after 1978 Regional authorities have been attributed a great deal of autonomy in organizing the local health care services. However, few data documenting the change in older patient case mix and the ability of the health care system to satisfy their needs are available. During the last two decades of the twentieth century a substantial amount of data on older patients admitted to Italian hospitals has been obtained in the GIFA study (5). The information available is particularly scanty for community services. To fill this gap and to provide relevant data for health care planning, the U.L.I.S.S.E. study (Un Link Informatico sui Servizi Sanitari Esistenti per l'anziano- a computerized network on health care services for older people) was designed. This is an observational multicenter prospective research project, aimed at describing the older patients who currently receive acute hospital care, home care or nursing home care in Italy, as well as service characteristics and the quality of care provided.

Materials and Methods

The U.L.I.S.S.E. study was performed between 2003 and 2006. The project was directed by a Steering Committee, and was carried on by a Working team. The study was co-financed by the Ministry of Health and a private partner, i.e. Pfizer SrL Italy, although the property of the data is entirely public, belonging to the Istituto Superiore di Sanità (ISS, Italian Institute of Health). The private sponsor has no influence on the analysis or publication of the results. The Working Team was led by the Department of Medicine of Aging of the Catholic University in Rome (CU), with the collaboration of

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the Institute of Geriatrics of the Modena and Reggio Emilia University (MREU), of the Institute of Gerontology and Geriatrics of the Perugia University (GPU), and by the Population's Health Unit of the national Center for Epidemiology, Surveillance and Health promotion of the Italian Institute of Health. The study was an observational multicenter prospective 1-year study whose main aim was to improve the knowledge of the characteristics of older patients who are cared for in healthcare services in Italy and of the quality of care provided. The only exclusion criterion was age lower than 65 years. The study was made up of the three branches, one investigating hospital care (coordinated by MREU), another investigating home care (coordinated by CU), and the third one on residential care (GPU). In each branch several units across Italy were involved, on a volunteer base (see appendix 1 for a complete list). The design of the study was slightly different in the three branches. In hospitals physicians were requested to evaluate all patients admitted in a period of two months (April-May) in 2004 and 2005. The patients were also contacted by phone one month after discharge to assess vital and functional status, new hospitalizations and institutionalization. In home care 100 randomly selected patients were evaluated in each service at baseline and then re-evaluated at 6 and 12 months. In nursing homes too the total number of residents or, for bigger nursing homes, a maximum of 100 randomly selected residents, were evaluated at baseline and then re-evaluated at 6 and 12 months. When the study was designed only a minority of nursing home accepted short stay residents, therefore only long stay residents were included in the study. In the latter two settings patients who died during the follow-up year were substituted by new patients at 12 months, randomly selected among those admitted in the previous year.

The data were collected on paper charts printed with a special ink in order to be readable by a scanner (Fujitsu, fi-4120C) for data entry. The software used was the Virtual ReScan, ver.3.1 by Kofax, USA. After quality control, scannerized data were sent in an anonymous format to a central web-based database (I-tec srl, Milan, Italy).

Data collection

Before the beginning of the study a 3-day course was organized at the Catholic University, where the researchers were informed about the design of the study and were trained on the use of the instruments of data collection. During the study a regular follow-up was performed by the coordinating centres and telephone access was always available for questions arising.

Patients' characteristics

Detailed patient information were collected using the interRAI Minimum Data Set (MDS) for hospital care, for home care and for nursing home care, respectively (6, 7). These instruments are validated in Italian and are already used in some health care services, being recommended by the Italian Geriatrics Society (8). The MDS consists of over 300 items. The hospital, nursing home and home care instruments share a majority of items, with some of them being specific for the health care setting investigated. MDS includes validated scales to measure physical and cognitive function, as well as mood. Moreover, it has been previously used in epidemiological studies (9, 10). To evaluate functional status the seven point MDS activities of daily living hierarchy was used (11), and the instrumental activities of daily living scale. Cognitive status was assessed using the 7 point MDS cognitive performance scale (CPS) (12). The CPS has a score ranging from 0 to 6, providing comparable results to the Mini Mental status Examination (13): a score of ≥2 is equivalent to a diagnosis of dementia or a MMSE score of ≤19 (14), while a score >4 indicates the presence of severe dementia (15). For all these scales higher scores represent more impairment.

In this study additional instruments were used, including the Geriatric Depression Scale (16,17); the EURO-QOL5, to measure health related quality of life (18), the Cumulative Illness Rating Scale to quantify multimorbidity (19), and ad-hoc developed questionnaires to assess the satisfaction of older subjects and their relatives concerning the care received. Moreover the data collected included a detailed assessment of drug use, the full list of medical diagnoses codified according to the ICD-9 system (20), and health care resource utilization.

Services' characteristics

Detailed information on the service characteristics were collected using ad-hoc designed questionnaires (available on request from the authors). The evaluation of each service included: data on service structure and provision, the number and type of health and social professional staff employed, the use of any validated comprehensive geriatric assessment instrument, and the utilization of clinical guidelines.

The study protocol was approved by the ethical committee of the Catholic University and of each coordinating centre. The patients and their family members, when available, were requested informed consent to participate in the study. The Italian law for data confidentiality was respected.

Analytical approach

Power calculation was not performed as the study was not aimed at verifying a hypothesis. As already explained, the heterogeneity of health care services in Italy, not only between different Regions but even in different areas within the same Region, makes impossible to obtain a national sample of services that can be considered truly representative of the Italian situation. Descriptive statistics are presented as means ± standard deviation or percentages, as appropriate. Means were compared using one-way analysis of variance and percentages were compared using the chi-square test. Analyses were conducted with the SPSS software package (version 13).

Evaluation of the quality of care

The quality of care provided in health care services for older people continues to be of concern to patients, professionals, and policy makers, particularly in nursing homes (21-24). Although the MDS was originally developed as a comprehensive geriatric assessment tool to support the provision of personalized health care, in recent years quality indicators have been developed using information provided by it. In United States, the Centers for Medicare and Medicaid Services (CMS) provides a regular web-based report card that currently includes 19 quality measures fro nursing homes (QMs) that is regularly updated (25). There are chronic care and post-acute care QMs. When the U.L.I.S.S.E. study started it was decided to evaluate only the Chronic care QMs. The 2004 version of the QMs was used, which included 12 QMs (http://www.cms.hhs.gov/NursingHomeQualityInits/downloads/NHQIQMUsersManual.pdf). "Chronic" care (CC) refers to those patients who enter a nursing facility typically because they are no longer able to care for themselves at home. These residents remain in the nursing facility from several months to several years. The chronic QMs are calculated on any resident with a full or quarterly MDS in the target quarter. In general, the numerator is the count of patients with the condition of interest, and the denominator is the count of patients in the facility or a group of patients in the facility considered to be "at risk" of the condition of interest. The QMs are not just raw percentages but they are adjusted for the case mix of the nursing home population of each facility. The adjustment is performed in three ways, i.e. excluding residents who are not at risk for the specific condition (e.g. comatose patients for the ADL loss QM); stratifying the patients according to their baseline risk (e.g. for the presence of pressure sores) or adjusting by means of logistic regression for resident-level covariates (e.g. cognitive function for pain assessment measure). Therefore, QM can be compared between different nursing homes (26)

Results

Overall, 23 acute hospital units participated in the hospital survey, 11 home care services in the home care survey and 31 nursing homes in the long term care survey. The main clinical characteristics of subjects evaluated in each setting are presented in table 1. Nursing home residents were the oldest and those with the highest prevalence of cognitive impairment. Moreover, they suffered from a high burden of chronic diseases and of disability: on average each resident had lost 4 out of 7 activities of daily living and 37% were bedridden. Older subjects receiving home care were slightly younger than those in the nursing homes but had similar prevalence of chronic diseases, including cognitive impairment, and an almost identical burden of disability and severe immobility. Finally, older patients admitted to acute care hospitals were characterized by an important multimorbidity and polypharmacy, with a lower mean level of disability and immobility.

Table 1
Baseline characteristics of the subjects included in the study according to the setting

Characteristics	Hospital units (N=1683)	Home care services (n= 907)	Nursing homes (n= 1762)	P – value*
Age (mean±SD)	80.6 ± 7.8	80.3 ± 9.7	83.5 ± 8.1	0.001
Gender (% female)	54.6	61.6	71.4	0.0001
N. of ADL lost (mean±SD)	1.7 ± 2.4	5.0 ± 1.5	4.2 ± 2.7	0.001
N. of IADL lost (mean±SD)	2.2 ± 2.7	5.6±1.2	NA	0.001
N of diseases (mean±SD)	3.2 ± 1.9	2.8±1.2	3.9 ± 2.3	0.001
N. of drugs (mean±SD)	10.0 ± 5.1	3.6 ± 2.9	5.0 ± 2.9	0.001
CPS score (mean±SD)	1.5±2	2.8±1.0	3.2 ± 2.1	0.001
Cognitive impairment (CPS>2) (%)	22.86	50.8	70.4	0.0001
Severe cognitive impairment (CPS>5) (%)	6.94	40.2	42.0	0.0001
Bedridden subjects (%)	21	37	34.2	0.001

ADL= activities of daily living; CIRS= cumulative illness rating scale; CPS= cognitive performance scale; IADL= instrumental activities of daily living; N.= number; NA= not applicable. * P-values have been calculated by means of ANOVA or Chi square as appropriate.

Concerning health care services, the majority of acute hospital units (20 out of 23) were geriatric wards. Almost 50% belonged to a University affiliated hospital. The mean number of beds was 28, with a mean length of stay of 8.7 days and over two thirds of patients aged at least 75 years. While in some services the majority of patients were admitted from the Emergency room, in others there were mainly planned admissions. As far as nursing homes are concerned, the median number of beds was 103, ranging from small services with 18 beds to large institutions with over 500 beds. In 39% of nursing homes there was a special care unit for dementia while in 13% of them there was a psychiatric unit. Comprehensive geriatric assessment was regularly used in 80% of nursing homes, although by means of different instruments (the RAI-MDS was already used in 48% of them). The responsible for health care of the residents was a geriatrician in 42% of nursing homes, a general practitioner in the 29% of cases and an internist in another 29%. General practitioners provide basic health care to every nursing home resident, and only in 62% of nursing homes there was a geriatrician, either as a staff physician or as a consultant. Usually physicians were available during the day but not at night or during the week-end, when acute health care problems were cared for by emergency physicians on call. Nurses and physiotherapists were present in all nursing homes, social workers and podiatrists in half of them and occupational therapists only in a minority of them. Home care services were coordinated by general practitioners, who in 70% of cases

collaborated with geriatricians. In 80% of cases there was a cooperation between the healthcare authority and the municipality. Palliative care was provided by 60% of participating home care units. Comprehensive geriatric assessment was used by 90% of units at the time of admission to the home care service in order to produce a treatment plan, and it was repeated at predefined time intervals in 50% of cases.

Discussion

The ULISSE project is a multicentre survey performed across Italy aimed at characterizing older patients who are cared for by health care services. The study showed that older subjects who are usually in need of acute and long term care are characterized by a high degree of clinical complexity: their mean age is higher than 80 years, they have a high level of physical disability, a high prevalence of multimorbidity and polipharmacy.

Italy is characterized by the highest percentage of older subjects within the population in the world, i.e. 19.9% in 2006, due to the combination of very low fertility rates (1.2 children per woman) with a high life expectancy at birth - currently 78.3 years in men and 83.9 years in women (27). This phenomenon is not homogenous across the country, being more pronounced in northern and central Italy as compared to southern Italy, mainly due to a higher birth rate in the latter area.

Despite this demographic scenario would suggest the necessity to create a well developed network of both acute and long term care services, Italy is one of the European countries having a lower number of services for older people. In the last years the percentage of subject older than 65 years who are institutionalized remained stable at 2.5% of the population, while the percentage of those who are assisted by home care services slightly rose up to 2.4% (2). Moreover, as a consequence of cultural and social peculiarities of the different Italian Regions, although the Italian health care system is public, there are important differences in the provision and organization of community services for older people even among different areas of the same Region (28). The heterogeneity is more pronounced in community services, probably because hospitals have been developing over hundreds of years and are therefore well structured entities. Furthermore, the legislation establishing the minimum standard of care in community services has still not been approved by the Government, although the proposal of the technical group established by the Ministry of Health has been prepared already in June 2007 and it is still under evaluation (29).

Therefore, the health care services for older Italian subjects are extremely heterogeneous and fragmented and this in striking contrast with the homogeneity of the older population who is cared for by these services. The shortage of community services is responsible for a concentration of more severe cases at home, who are more disabled and cognitively impaired compared e.g. with home care recipients in other European countries (10).

Our survey will provide a large amount of data concerning older patients as well as the clinical and structural factors that can influence their outcomes. The collection of patient level data including clinical and functional outcomes by means of comprehensive geriatric assessment as well as of data on service characteristics will allow to characterize the quality of care provided to the older population.

Key messages

- Older patients who receive health care in Italy are characterized by very advanced age, high prevalence of multimorbidity and polipharmacy, as well as a high level of physical disability and cognitive impairment;
- Health care services for long term care in Italy care are insufficient, heterogeneous and fragmented;
- There is a urgent need that the provision and quality of both acute and long term care services for older people are improved.

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Appendix 1

Centres and health care professionals participating in the ULISSE project

Acute hospital units

1. Alessandria, Azienda Ospedaliera Alessandria, Divisione di Medicina Geriatrica. E. Laguzzi.
2. Bologna, S. Orsola-Malpighi Hospital, Geriatrics. D. Cucinotta, G. Arnone.
3. Brescia, Casa di Cura Poliambulanza. R. Rozzini, A. Cassinadri.
4. Cagliari, U.O di Geriatria. P. Putzu, C. Porceddu, C. Zaru
5. Chieti, U.O Geriatria, Università degli Studi di Chieti. G. Abate, A. Di Iorio, M. Abate, M. Guglielmi, N. Foschini, C. Battaglini.
6. Ferrara, Dipartimento di Medicina Clinica e Sperimentale, Sezione di Medicina Interna, Geriatria e Gerontologia. R. Fellin, S. Volpato, M. Cavalieri, S. Fotini, G. Guerra, L. Rossi.
7. Firenze, U.O. Geriatria, Università di Firenze. G. Masotti, S. Fumagalli.
8. Genova, Ospedale San Martino e Cliniche Universitarie Convenzionate, Dipartimento di Medicina Interna, U.O. di Geriatria. P. Odetti, A. Cataldi, F. Monacelli.
9. Messina, Geriatria. V. Nicita-Mauro, G. Basile, G. Maltese, C. Nicita-Mauro.
10. Modena, U.O. Geriatria, Università di Modena e Reggio Emilia. G. Salvioli, C. Mussi, F. Pellicciotti, R. Scotto, A. Vaccina, A. Minnucci.
11. Padova, U.O di Geriatria, Ospedale S. Antonio ULSS 16 Padova. L. Forte, M. R. Lo Storto.
12. Palermo, Istituto di Clinica Medica I, Università degli Studi di Palermo. G. Licata, A. Tuttolomondo.
13. Palermo, Policlinico Universitario di Palermo, Dipartimento di Medicina Clinica e Patologie Emergenti, Unità Dipartimentale di Geriatria. M. Barbagallo, L. J. Dominguez, M. De Leo, M. Belvedere, E. Putignano.
14. Perugia, U.O. Geriatria, Università di Perugia. U. Senin, A. Cherubini, A. Longo, G. Dell'Aquila, G. Mancioli, F. Patacchini, N. Palmari.
15. Potenza, Struttura Complessa di Geriatria, Azieda Ospedaliera "Ospedale San Carlo". B. A. Ierardi, P. Marino.
16. Roma, Università Cattolica del Sacro Cuore. Prof. R. Bernabei, M. Soldato, C. Pedone
17. S. Giovanni Rotondo, Casa Sollievo della Sofferenza, U.O. di Geriatria. A. Pilotto, F. Paris.
18. Siena, Dipartimento di Medicina Interna Geriatrica e Cardiovascolare. S. Forconi.
19. Siena, U.O. Geriatria, Dipartimento di Medicina Interna, cardiovascolare e Geriatrica Nuovo Policlinico Le Scotte. M. Guerrini, G. A. De Paduanis, A. De Palma, S. Boschi.
20. Torino, ASO San Luigi di Orbassano (Torino), SCDU Geriatria. M. Molaschi, L. Poli.
21. Trieste, Geriatria, Ospedale Maggiore. G. Toigo, P. De Colle.
22. Varese, U.O. di Geriatria, Ospedale Multizonale di Circolo. G. Bonoldi, S. Puricelli, R. Pellegrini, E. Consolaro.
23. Verona, U.O. Geriatria, Ospedale Borgo Trento. O. Bosello, A. Zivelonghi, G. Gravic, S. Guariento, V. Di Francesco.

Home care services

1. Bergamo (Zogno), E. Tua.
2. Caserta (Piedimonte Matese), A. Pisaturo.
3. Catanzaro, R. Lacava, P.Gareri.
4. Chieti (Francavilla al Mare), R. Borgia.
5. Foggia (Accadia), V.N. Cristiano.
6. Genova, Palummeri.
7. Isernia (Agnone), Pescetelli.
8. Napoli (Pomigliano D'Arco), M. Galdi.
9. Potenza (Venosa), G.B. Bochicchio, A. Solimano.
10. Ragusa, S. Brugaletta, L. Carnazza, E. Gallitto.
11. Salerno (Battipaglia), G. Albano, G. Schipani, Conte.

Nursing home services and health care professionals

1. Alessandria, "Soggiorno Borsalino" Centro Servizi Polifunzionali per la terza età. A. Pagella, L. Perrero.
2. Bari (Fasano), Casa per Anziani "Sancta Maria Regina Pacis". V. Sabato.
3. Bergamo, Fondazione Maria Ausiliatrice Onlus. L. Marella, Schiavina.
4. Brescia (Gussago), Opera Pia Ospedale e Casa di Riposo "Nobile Paolo Richiedei". B. Zacco, L. Scaglia.
5. Campobasso (Pianisi), Cooperativa per l'Assistenza Sociale e i Servizi A.r.l. (COOPASS) - Casa di Riposo. A. Virgilio.
6. Catanzaro (S. Vito sullo Ionio), Associazione Interregionale "Vivere Insieme" Onlus Residenza Sanitaria Assistenziale e Riabilitativa "S. Vito Hospital". M. Iera, Doria.
7. Cosenza (Torano Castello), Medical Sport Center S.r.L., Residenza Sanitaria Assistenziale e Riabilitativa "Villa Torano". L. Pansini.
8. Firenze "Pia Casa del Lavoro di Montedomini". G. Masotti, N. Boni, M. Inzitari.
9. Genova, "Istituto Emanuele Brignole". I. Aramini, S. Musante.
10. Genova (Lavagna), "Pio Ritiro Giuseppe Devoto". P. Cavagnaro.
11. Grosseto (Scansano), "RSA –Villa Tizzetti", RSA Scansano. F. Riello, W. De Alfieri.
12. Isernia (Agnone), U.O. di Medicina Interna Ospedale "S. Francesco Caracciolo". P. Pescetelli.
13. L'Aquila (Celano), "RSA Opera Santa Maria Della Pace". R. Trecca, Di Iusto.
14. L'Aquila (Fontecchio), Associazione Opera Santa Maria della Pace. V. Zamboni.
15. Milano (Ornago), "RSA Scaccabarozzi". R. Cuppone, Foschi.
16. Napoli (Castellammare di Stabia), Oasi San Francesco. S. Marino, M. Simone.
17. Novara (Romentino), Istituto per la cura climatica "Centro Anziani Berzonno Di Pogno". A. Scarlata.
18. Pavia (Varzi), RSA Casa di Riposo di Varzi. C. Battegazzore.
19. Perugia, Residenza Protetta Casa dell'amicizia "A. Seppili". R. Morucci.
20. Perugia (Città di Castello), Opere Pie Riunite. M. Luchetti.
21. Perugia (Città della Pieve), RSA "Creusa Brizi Bittoni". G. Menculini.
22. Pesaro, RSA- Galantara. G. Cicchetti.
23. Piacenza (Borgonovo V.T.), Istituto Enrico Andreoli R&G Servizi "Residenza Gardenia". I. Orlando, B. Fantoni.
24. Piacenza (Castel Arquato), Casa Protetta "Vassalli-Remondini". G. Ognibene.
25. Piacenza (Castel San Giovanni), Casa Protetta "Albesani". C. Gobbi.
26. Rovigo (Corbola), "Consorzio Isola di Ariano per i Servizi Sociali". Anna Cascone, G. L. Avanzi.
27. Sassari (Ploaghe), RSA "Comunità Protetta Geriatrica" – Fondazione S. Giovanni Battista. A. Casu.
28. Trento (Brentonico), IPAB Casa di Riposo per Anziani ed Inabili di Brentonico. S. Zeni.
29. Udine, "Istituto Geriatrico e di Assistenza". S. Santin.
30. Varese (Induno Olona), "ASFARM" Azienda Speciale per la Farmacia ed i Servizi Sociosanitari del Comune di Induno Olona. G. Scotti, C. Cappella.
31. Venezia (Sottomarina di Chioggia), Istituto per Anziani di Chioggia. P. Penzo.