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ORIGINAL RESEARCH

The Measurement of Patients' Satisfaction as a Key Indicator of Quality of Life for the Elderly: Two Services Compared

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Abstract
The ageing population and increasing life expectancy in Italy, and in other developed countries, leads to an increasing number of elderly people suffering from loss of autonomy and dangers due to frailty. As a consequence, elderly patients usually suffer from chronic diseases which require long term care, with increasing healthcare needs and costs. Therefore, services provided by home care, day centers and residential services are necessary; their primary objective being to maximize patient well-being and satisfaction. Patient satisfaction is a key indicator of the quality of care and is an important outcome of care in its own right. This study aimed to develop two generic instruments to elicit patients' satisfaction in residential care and in home care with a rigorous and systematic methodology. The two instruments were tested for psychometric performance with face-to-face interviews and applied to a Local Health District of the Marche Region. Furthermore, due to physical and mentally frailty, many elderly patients in residential homes or receiving home care, are unable to participate in studies on satisfaction with care services, while their carers/partners can often provide relevant information. Therefore, another aim of this study was to measure patients' and carers'/partners' agreement on patient satisfaction in the two services investigated. Finally, the principal factors influencing patient satisfaction in the two services investigated were investigated using logistic regression analysis.

Keywords Residential and home care · Patient satisfaction questionnaires · Psychometric proprieties · Determinants of patient satisfaction

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1 Introduction

1.1 Italy's Ageing Population

The ageing of the population has been underway for several decades, not only in Italy, even though it is the European country that is most affected. In 2023 the over 50 s represent 46.84% of the total Italian population; only twenty years ago the percentage was 37%. Ageing is a phenomenon that affects most countries (ILO, 2019; OECD, 2020, 2023) with particular regard to the more developed ones, where healthcare, education and living conditions are better (Renzi & Franci, 2021). In an in-depth study on the 'Silver Economy' (Centro Studi e Ricerche Itinerari Previdenziali, 2023), Italy had the highest figures in terms of the percentage of elderly people, viz. 23% (50–64 years), 23.8% (> 65 years) and 7.6% (for those over 80 years). By comparison, the respective European averages were 21%, 21.1% and 6.1%. The same study observed that from 2025, and even more significantly from 2030, the so-called "baby boomer" cohorts will begin to enter this age group, which will lead to a significant increase in the share of those aged over 65 years compared to the total population. It is projected to rise from the 23.8% in 2023 to 30% in 2035, and then settle at 35% in 2050, i.e. over one in three Italians will be over the age of 65 years. In terms of actual numbers, there were 6.9 million people between the ages of 65 and 74 years and 2.65 million between the ages of 75 and 79 years in 2022. Over half of the over 65 s are women, with the percentage having fallen slightly from 59% in 1980 to 56% in 2022. Furthermore, it is appropriate to remember the quote from Silvio Garattini which reads: "In Italy we live longer but are increasingly less healthy: our expectation of a healthy life is among the lowest in Europe, we are now in fifteenth place. The last ten years of our lives, statistically speaking, are not of good quality. From the qualitative point of view of existence, Italy is the worst country in Europe" (Garattini, 2021).

The higher incidence of chronic conditions and functional limitations in the elderly and this projected ageing of the population poses several challenges for healthcare and public health. One means of establishing where improvements can be achieved in the quality of diagnostic and treatment services is to assess levels of patient satisfaction. Locker & Dunt (1978) suggested that particularly in long-term care "quality of care can be synonymous with quality of life and satisfaction with care is an important component of life satisfaction". Importantly, patient satisfaction is seen as an aspect of the quality of life, a key indicator of quality of care, and an important outcome of care in its own right.

1.2 Measuring Patient Satisfaction

Leading on from the above, a straightforward and established way to evaluate the well-being of patients, both in home care and in residential services, is the implementation of surveys on the satisfaction of patients and their families. However, it should be noted that the measurement of satisfaction through a quantitative method alone represents it in a formalized and restrictive way. For these reasons, the integration of a qualitative approach with a quantitative one was considered to be the best way forward.

This research focused on the development of satisfaction instruments able to identify the various aspects of quality in residential and in home care. It was necessary to create standardized measures of satisfaction that were comprehensible, psychometrically tested and relatively brief.

Our work presents some approaches that aimed to take up these challenges. Therefore, the main aims of our study may be thus synthesized:

- The measurement of patients' satisfaction in residential care and in home care through the use of valid and reliable instruments.
- The synthesis of satisfaction judgments obtained through weighting or not weighting domains and items of the instrument.
- Assessment of the potentiality of instruments to measure, through carers and partners, the satisfaction of mentally frail patients, considering that the literature states that at most only 30% of patients in both services are able to answer a questionnaire.
- Investigation through logistic regression analysis of the principal determinants of patients' satisfaction.

2 Methodology: The Development of the Instruments in Residential Home and in Home Care

The appropriateness of patients' satisfaction questionnaires in elderly care is dependent on their validity and reliability, and criteria for their evaluation have been recommended. These requirements were applied to the development of two questionnaires.

The developmental process followed a literature review of existing questionnaires (Abu-salem et al., 2013; Algamdi, 2016; Babatola et al., 2022 Bartlett, 1993; Karaca & Durna, 2019; Mahon, 1996) and consultation with experts within the field of patients' experiences in three face-to-face meetings. In the first, some main considerations guiding the development of the questionnaires were decided:

- The questionnaires should include the most important aspects of patients' satisfaction, both in residential care and in home care.
- The questionnaires should be brief in order to help elderly patients to respond as freely as possible (Geron, 1998).
- The questionnaires should be administered through face-to-face interviews by highly trained and motivated interviewers, not belonging to the services investigated; so as to avoid and weaken the phenomenon of acquiescence.
- The collection of data with face-to-face interviews should ensure a more personalized approach and enable the interpretation of comments and critical evaluations.
- Visual aids should be used wherever necessary to support and better facilitate the understanding of the response methods; thereby overcoming elderly persons' doubts and resistances, so that they respond in a way that can be considered sincere and reliable (Falissard, 2008).

Although much has been written on patient satisfaction in hospitals and in general practice, there is a lack of research that measures patient satisfaction both in residential and home care (Bartlett, 1993; Francis & Netten, 2004; Geron, 1998). There is also a lack of standardized questionnaires that would allow diachronic and synchronic comparisons, making any application difficult. His is why we have tried to develop two Italian-language instruments for measuring satisfaction both in residential and in home care contexts and apply them in two services of a local health district of the Marche Region. Both instruments included an item regarding overall satisfaction, so as to test the general level of

satisfaction. Participants' responses used a four points Likert-type scale (very bad, bad, good, very good), which excluded neutral modality in order to avoid answers that were uncertain or disinterested (Geron, 1998).

Furthermore, in the two services investigated two different approaches were used. Whilst in the residential services the same importance was applied to all the items within each domain as to the domains themselves, in the home services an anonymous comparison was proposed, using both expert focus groups and Delphi methods (Di Zio & Pacinelli, 2011; Falissard, 2008; Knighting et al., 2016; Rowe & Wright, 2011; Tang et al., 2018), in order to obtain a certain homogeneity of assessment regarding the relative importance of various aspects.

2.1 Questionnaire of Patients' Satisfaction in Residential Homes for the Elderly

This questionnaire was previously content validated with an in-depth study of the literature (Aletras et al., 2010; Atmojo et al., 2020; Lavizzo-Mourey et al., 1992; Reeder & Chen, 1990) and focus group discussion with patients, carers/partners to explore their views and experiences of services provided by residential homes (R.H.s). For each scale of the questionnaire, a standardized score was assigned from 0 (lowest possible satisfaction) to 100 (highest possible satisfaction). All items used the above 4-point Likert-type scale. The final version of the instrument was made up of 13 items, subdivided into 4 domains (Medical Service, Nursing and/or Care Staffing Service, Environmental Characteristics, and Home Management) (See Table 1). The psychometric proprieties of the instrument, validity and internal and external reliability, was tested and are consistent with the existing questionnaires developed in this topic of research. (Lavizzo-Mourey et al., 1992; Wilson et al., 2006; Zinn et al., 1993).

In this aspect of our study, we also consider whether and how cognitive impairment affects the ability of patients, both in home and in residential care, to evaluate the quality of their care (Escribano-Hernández et al., 2012; Marshall, 2001; Zawisza et al., 2020). To avoid the exclusion of any population unable to participate in studies on satisfaction with care services, closely related persons or proxies were invited to answer on patient's behalf, especially in geriatric wards. In fact, in long-term care most elderly patients are unable to answer questions and involving their carers and/or partners to answer the questionnaires provided information on the consumer perception of care quality. Taking these considerations into account, the instrument was administered to only 197 (28%) of 705 patients that, on 30/09/19 were in residential homes, because they were deemed to be mentally suited for an interview. All those selected declared their willingness to be interviewed.

The 2019 data choice resulted from the fact that the administration and the care staff were highly available and motivated to collaborate in organizing the research and in the phase of data collection. Moreover, the outbreak of the COVID-19 pandemic would not have allowed the development of such detailed research that required contact with patients.

2.2 Questionnaire of Patients' Satisfaction in Home Care for the Elderly

The same methodology was also used in the home care environment (Francis & Netten, 2004; Jeong et al., 2022; Knighting et al., 2015; Pasquarella et al., 2007; Tang et al., 2021; Thuong et al., 2021). In this case the final questionnaire on satisfaction was tailored to the

Table 1 Questionnaire of patients' satisfaction in R.H.s for the elderly

The questions we will ask you concern the judgement of the service you receive. The answers obtained will allow corrective action to be taken aimed at improving the service. They will be strictly confidential. **For each question you are asked to choose the picture that best reflects your opinion**	 **Very good 4** **Good 3** **Bad 2** **Very bad 1**
MEDICAL SERVICE	
C1. What do you think of the treatment received by medical staff?	
C2. What do you think of the speed of the medical service?	
C3. What do you think of trust in the "doctor's skill"?	
NURSING AND/OR CARE STAFFING SERVICE	
C4. What do you think of the treatment received by nursing/care staff?	
C5. What do you think of the speed of the nursing/care service?	
C6. What do you think of trust in the ability of the nursing/care staff?	
ENVIRONMENTAL CHARACTERISTICS	
C7. What do you think of the catering service?	
C8. What do you think of the appearance of the home and, in particular, your room?	
C9. What do you think of the respect of your privacy?	
HOME MANAGEMENT	
C10. What do you think of the organization of the day?	
C11. What do you think of the entertainment initiatives?	
C12. What do you think of your involvement in the management of the home?	
C13. What do you think of the links with the external environment?	
C14. If you had to give a general assessment, what do you think of the services offered to you?	

environment and had 11 specific items divided into 3 domains (Accessibility to service, (Management) Efficiency, and Effectiveness) (See Table 2).

In order to assess satisfaction, through its own synthetic measurement, not all the domains and items are to be considered equal (Wu & Yao, 2006; Kadowaki et al., 2015).

The instrument was administered to only 76 (25%) of 305 patients that, on 30/09/19 were receiving home care from a Local Health Unit in the Marche Region. These were the only patients deemed to be mentally suited for an interview by members of the Geriatric Assessment Unit (UVG in Italian version). All those selected declared their willingness to be interviewed. The reason for choosing the provinces of Pesaro-Urbino and Ancona was dictated by the interest and availability shown by the R.H. managers for the topics covered.

2.3 Data Collection—Selection of Patients and Carers/Partners and Statistical Analysis

The use of any instrument would have been greater if the opinion of patients suffering from mental and communicative disabilities could have been considered. The alternative used was that of identifying patients' responses, utilizing the advice and opinions of carers/partners (i.e.

Table 2 Questionnaire of patients' satisfaction in home care for the elderly

ASSESSMENT OF PATIENT'S SATISFACTION IN HOME CARE (ADI) WITH REGARD TO DOMAINS AND PROFESSIONAL STAFF INVOLVED

The questions we will ask you concern the judgement of the service you receive. The answers obtained will allow corrective action to be taken aimed at improving the service. They will be strictly confidential.
For each question you are asked to choose the picture that best reflects your opinion

	Very good 4	Good 3	Bad 2	Very bad 1

	UNDER THE N.H.S. (HEALTH DISTRICT)					UNDER LOCAL COUNCIL SOCIAL SERVICES (SAD)		
DOMAINS AND ITEMS OF PERCEIVED QUALITY IN HOME CARE SERVICE	**Referring to the district**	**G.P.**	**Consultant**	**Professional nurses**	**Rehab. therapist**	**Referring to local council**	**Social worker**	**Home-help**
ACCESSIBILITY (Ease of access to the service in physical, economic and cultural terms)								
D1. What do you think of the information you received before you come into ADI?		■	■	■	■		■	■
D2. What do you think of the staff visiting times (do they respect the patients' needs?)	■					■		
D3. What do you think of the clarity and comprehensibility of the language used by staff?	■					■		■
EFFICIENCY (Organized and well-functioning service)								
D4. What do you think of the keeping of appointments, the punctuality of visits and treatments?	■					■		
D5. What do you think of the attentiveness shown by staff in seeing to care needs?	■					■		
D6. What do you think of competence and knowledge of the service on the part of the staff?	■					■		
D7. What do you think of the staff stability (indicator of a well-planned service!)?	■	■				■		
EFFECTIVENESS (Ability to respond to the need to personalize and humanize care)								
D8. What do you think of the understanding and comfort the staff give to solving your problems?	■					■		
D9. What do you think of the willingness shown by staff in caring?	■					■		
D10. What do you think of the courtesy, good-manners, politeness and respect shown by the staff?	■					■		
D11. What do you think of the confidence the staff gives you?	■					■		■
D12. How do you judge, regardless of your opinions already expressed, the service offered by the staff on the whole?	■					■		

■ Not Applicable

spouses, relatives, partners and/or other people who were closely involved in the care of the patient), given that it has been established that they can accurately represent the satisfaction of the patients (Lavizzo-Mourey et al., 1992; Seckler et al., 1991; Williams et al., 2016) (See Fig. 1).

It was important to ensure that there was appropriate consistency between where responses were given by the patients themselves and where carers/partners had been involved. For this reason, comparisons were made of the answers from the two different groups. This was done by identifying a group of carers/partners relating to patients who had already been interviewed and asking them to assess the quality of the service offered to the patient they were involved with. Then, a comparison was made between the judgement of the patients and those of the carers/partners, utilizing a relative index of agreement, to establish the equivalence of opinions between these two groups of people (arrow A on Fig. 1). Furthermore, to test the representativeness of the judgement of patients who were not able to be interviewed, a group of their carers/partners was randomly chosen. Their satisfaction scores were assessed and compared with those of an analogous cohort, based on the previous group of carers/partners (arrow B on Fig. 2). This could be used to demonstrate indirectly the representativeness of carers/partners of patients mentally frail for measuring satisfaction of care received (arrow C on Fig. 1).

Bias indices were computed by dividing the mean difference between carers/partners and patient scores by the standard deviation of the patient response. This allowed to determine if carers/partners consistently over- or under-rated the satisfaction of elderly patients. Paired t-tests were used to assess the statistical significance of bias.

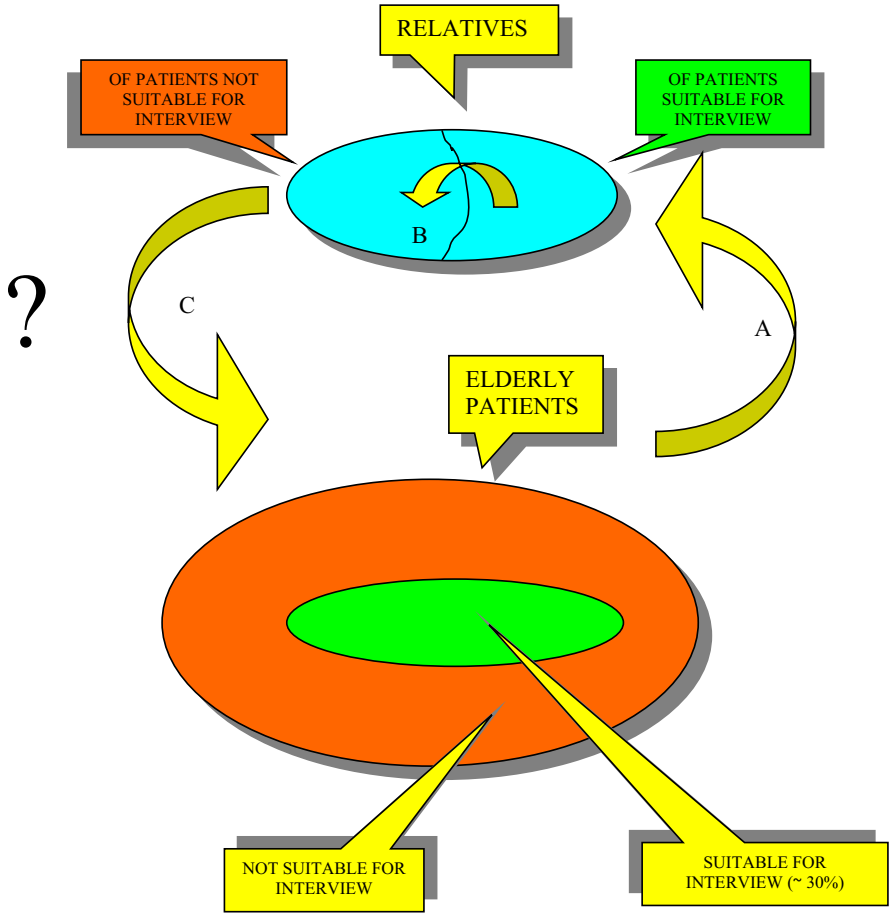

Fig. 1 Selection of patients and carers/partners

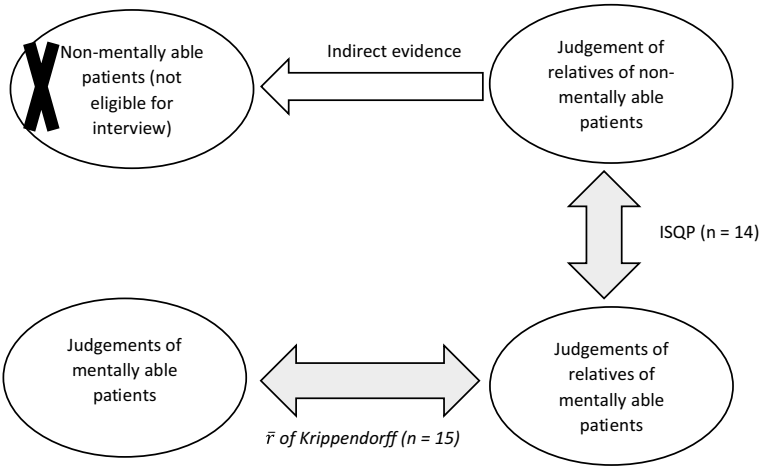

Fig. 2 Steps formeasuring patient satisfaction in homecare: selection of patients and carers/partners

2.4 Measurement of Psychometric Proprieties

2.4.1 Reliability (Internal)

Internal reliability refers to the consistency of a measure and how closely related a set of items are as a group. The instruments' internal consistency was assessed using Cronbach's α. A coefficient of at least 0, 7 is generally thought to indicate good reliability.

2.4.2 Reliability (External)

The stability and reliability of the two questionnaires was assessed by administering the questionnaires two weeks after first administration by different interviewers. The test evaluates the likelihood that a given measure will yield the same description of a given phenomenon if the measurement was repeated (test–retest). Krippendorff's coefficient (an Inter-Class Correlation coefficient, (ICC)) assesses response comparability and was used for this purpose (Carmines & Zeller, 1979; Rocher, 2015; Streiner et al., 2015). Its values range from 0 to 1 and correspond to levels of agreement as follows: >0.60, good agreement; 0.41–0.60, moderate agreement; ≤ 0.40, fair agreement. (Nunnally & Bernstein, 1994; Pierre et al., 1998; Wong et al., 2019).

Furthermore, the correlation coefficient r_i and tests of homogeneity were used to test the correlation between each item and relative sub-scales.

3 Results

3.1 Instrument Reliability in Residential Homes

The results relative to the tests of external and internal reliability (See Table 3) (using Krippendorff's $\overline{r}$, Cronbach's α coefficient and the correlation coefficient r_i between each item and relative sub-scale) demonstrated that for most items the chosen instrument keeps good stability over time and between different interviewers. High reliability values for users were noted for confidence in the physician's ability (C3) with 0.92, and for catering services (C7) with 0.84. The lowest values were found in respect of privacy (C9) with 0.42 and in the overall comfort of the room (C8) with 0.43. For carers/partners however, the same tests of reliability proved to be more positive. In fact, the values of the coefficients range from the maximum of 1 for the treatment received from medical staff (C1) and for trust in nursing and/or care staff, to a minimum of 0.77 for patients' involvement in the management of the home (C12). For the item relating to the overall judgment (C14), the value of the coefficient of agreement was 0.71 for users and 0.97 for carers/partners. The results obtained were in conformity with other studies (Autosufficienza, 2021;Gasquet et al., 2003;Lavizzo-Mourey et al., 1992). All the values found for Cronbach's α and homogeneity were to be considered satisfactory: for the subscale of nursing services, the value of 0.81 was considered to be excellent.

3.2 Satisfaction Scores in Residential Homes

Elderly patients conveyed limited poor satisfaction with institutional regime and environment (60.00 and 71.67, respectively), and expressed more satisfaction for nursing and care

Table 3 External and internal reliability in residential homes (Test–retest and agreement between observers) (internal consistence and item-scale correlation)

Items/Domains	Patients (n = 29)	Carers/ partners (n = 29)			
	$\bar{r}$	$\bar{r}$	α	r_i	Homogeneity
Physician services	0.70	1	0.71	0.62	0.45
C1-Medical treatment	0.68	0.89		0.42	
C2-Rapidity of service	0.92	0.86		0.51	
C3-Confidence in the physician's ability					
Nursing and care services	0.77	0.99	0.81	0.75	0.60
C4-Nursing treatment	0.78	0.91		0.54	
C5-Rapidity of service	0.63	1		0.69	
C6-Confidence with nursing and care staff					
Environment	0.84	0.93	0.60	0.40	0.42
C7-Catering service	0.43	0.80		0.45	
C8-Overall comfort of the room	0.42	0.91		0.31	
C9-Privacy					
Institutional regime	0.73	0.81	0.58	0.34	0.39
C10-Daily routine	0.72	0.87		0.28	
C11-Entertainment initiatives	0.79	0.77		0.12	
C12-C12 –Patient's involvement in the management of the home	0.76	1		0.42	
C13-Outside relationships					
C14-Global satisfaction	0.71	0.97			

services and physician services (79.33 and 74.22, respectively). Carers/partners' ratings were higher than elderly patients' evaluations for all four scales. They ranged from 66.25 for institutional regime to 91.67 for nursing and care services. However, like the elderly patients, carers/partners provided higher scores for nursing and care services and physician services (91.67 and 82.22, respectively) than for environment and institutional regime (78.22 and 66.25, respectively).

3.3 Concordance Between Carers/Partners and Elderly Patients in Residential Homes

The comparison with analogous measurements obtained on carers/partners (See Table 4) showed that in a residential environment there was no overlapping, because the opinion of almost all the carers/partners showed a higher level of satisfaction than that of the patients using the service (the respective mean values were 79.59 and 71.31; $p < 0.01$).

For only one of the four scales (institutional regime), the ICC of patient-carer/partner pair reached an acceptable level (0.4). However, this ICC was only 0.59, which is only a fair level of patient and carer/partner concordance (Koo & Li, 2016). For the other three scales, the ICC was very low (0.10 to 0.30).

Moreover, the overall agreement of the whole scale (ICC = 0.29) is statistically irrelevant.

The disagreement observed between residents and carers/partners led to the following conclusions: carers/partners of residents in homes for the elderly cannot accurately express the satisfaction of the patients in three out of four domains examined in the context of

Table 4 Satisfaction scores for the services offered for patients and carers/partners. Residential homes of the provinces of Pesaro-Urbino and Ancona (n = 29 pairs of patients/carers/partners). Year 2019

Items/domains	Patients (n = 29)		Carers/partners (n = 29)		Means difference	Index of bias	*p* value	Agreement patients-carers/partners
	Means $\overline{x}$ [1]	S.D	Means $\overline{Y}$ [1]	S.D	$\overline{Y}$-$\overline{x}$	IoB[2]	p[3]	ICC[4]
Physician services	74.67	23.00	82.67	17.00	8.00	0,35	.138(n.s.)	0.30(n.s.)
C1-Medical treatment	72.33	28.33	85.00	23.00	12.67	0,45	.067(n.s.)	
C2-Rapidity of service	75.67	29.33	79.00	20.67	3.33	0,11	.619(n.s.)	
C3-Confidence in the physician's ability	74.22	23.67	82.22	15.89	8.00	0,34	.136(n.s.)	
Average subscale score								
Nursing and care services	79.33	20.67	89.67	15.67	10.34	0,50	.036*	0.10(n.s.)
C4-Nursing treatment	77.00	20.00	92.00	14.33	15.00	0,75	.002**	
C5-Rapidity of service	81.67	19.00	93.33	16.33	11.67	0,61	.015*	
C6-Confidence with nursing and care staff	79.33	17.78	91.67	12.44	12.34	0,69	.003**	
Average subscale score								
Environment	74.67	26.33	82.67	21.00	8.00	0,30	.206(n.s.)	0.15(n.s.)
C7-Catering service	69.00	23.33	71.33	21.33	2.33	0,10	.693(n.s.)	
C8-Overall comfort of the room	71.33	14.67	80.67	21.00	9.34	0,64	.055(n.s.)	
C9-Privacy	71.67	16.67	78.22	13.78	6.55	0,39	.108(n.s.)	
Average subscale score								
Institutional regime	80.33	31.67	77.00	30.00	-3.33	-0,11	.683(n.s.)	0.59*
C10-Daily routine	64.33	28.00	70.00	25.67	5.67	0,20	.425(n.s.)	
C11-Entertainment initiatives	7.00	16.33	23.00	28.33	16.00	0,98	.011*	
C12-Patient's involvement in the management of the home	88.33	20.33	95.00	11.67	6.67	0,33	.131(n.s.)	
C13-Outside relationships	60.00	19.00	66.25	14.17	6.25	0,33	.161(n.s.)	
Average subscale score								
Average total score	71.31	14.08	79.59	8.41	8.29	0,59	.009**	0.29(n.s.)
C14-Global satisfaction	69.00	28.00	79.33	22.67	10.33	0,37	.128(n.s.)	

[1]Scores range from 0 (lowest possible satisfaction) to 100 (highest possible satisfaction)

[2]Mean patient/proxy difference divided by the standard deviation of the patients' responses:

0–0.19 (absent); 0.2–0.49 (small);

0.5–0.79 (moderate); 0.8 and more (large). A positive sign indicates positive bias (i.e., carers/partners overestimated score)

[3]Pairedt test between patients' and their carers'/partners' scores to assess whether the bias was significantly different from zero

[4]Intraclass correlation coefficient (95% confidence interval):0.8(almost agreement); 0.6–0.8 (substantial agreement); 0.4–0.6 (moderate agreement); 0.4(poor agreement)

n.s., not significant; *p < 0.05; **p < 0.01

the homes studied. As a consequence of this result, the following analyses were conducted solely on the population of 177 residents.

3.4 Instrument Reliability in Home Care

Many Italian satisfaction studies (Castelnovo et al., 2008; Ferrara et al., 2015) conducted in the field of home care are based on non-validated tools, which very often include only one general question. However, the literature on this subject unanimously confirms that the evaluation of patients' satisfaction is more valid if it measures several distinct dimensions (Calnan et al., 1994; Porter, 2004a, 2004b; Sitzia & Wood, 1997; Ware et al., 1977). For this reason, it is important to assess the psychometric proprieties of the instruments.

Regarding the external reliability of the instrument used in this context, the examination of the various Krippendorff's $\bar{r}$ coefficients of agreement were applied to the data regarding a random subset of roughly 1/3 of the 76 mentally able patients, i.e. 25 patients. They completed the questionnaire again two weeks after the first interview in order to assess test–retest reliability. The results (Table 5) reveal a relatively high agreement in levels of satisfaction both regarding general practitioners (G.P.'s) (0.70 ÷ 0.95) as well as professional nurses (0.68 ÷ 0.94). These professionals were the only ones involved in the service. (Krippendorff, 1970).

The internal consistency, measured through Cronbach's α coefficient (Streiner et al., 2015), was good for both domains (0.80 ÷ 0.89 for G.P.'s.; 0.70 ÷ 0.85 for professional nurses) and for the instrument as a whole (0.91 for G.P.'s and 0.88 for professional nurses). Such values are consistent with the literature on patient satisfaction (Abusalem et al., 2013; Atmojo et al., 2020; Gasquet et al., 2003).

Table 5 External and internal reliability in home care (Test–retest and agreement between observers) (internal consistence and item-scale correlation)

	G.P.'s (n = 25)			Nurses (n = 25)			Distr (n = 25)
Items/Domains	$\bar{r}$	α	r_i	$\bar{r}$	α	r_i	$\bar{r}$
Accessibility	–	0.82	–	–	0.72	–	0.95
D1-informative material[a]	0.77		0.75	0.82		0.57	
D2-visiting hours	0.80		0.74	0.83		0.56	
D3-understandable language							
Efficiency	0.84	0.80	0.52	0.84	0.70	0.41	
D4-reliability in the appointments	0.70		0.69	0.74		0.54	
D5-attentiveness shown by staff	0.70		0.67	0.74		0.43	
D6-ability in the service	-		0.51	0.79		0.33	
D7 -stable staff[b]							
Effectiveness	0.84	0.89	0.78	0.94	0.85	0.75	
D8 -encouragement inspired by staff	0.73		0.78	0.68		0.62	
D9-willingness in care	0.70		0.67	0.77		0.46	
D10 -good manners	0.95		0.91	0.89		0.82	
D11-ability to inspire trust and confidence							
D12-Overall satisfaction		0.91			0.88		

[a]Managed by local health district

[b]The G.P.'s were always the same

The correlation r_i between each item and relative sub-scale (built in every domain) varied between 0.51 and 0.91 for G.P.'s and 0.33 and 0.82 for professional nurses. Almost all the measures exceeded the aforementioned limit value of 0.4.

3.5 Concordance Between Carers/Partners and Elderly Patients in Home Care

Demonstrating that carers/partners can accurately express the opinion of patients, even if they are still able to express it, lends credibility to the answers provided by carers/partners for their relatives. For these reasons it was necessary to evaluate the comparability of the answers between two different groups: that of the users and that of their carers/partners. To this end, the home care population of a single district (Urbino district) was chosen in order to eliminate the variability attributable to this factor (different district manager, different care staff, etc.). Among the users already interviewed, a group of carers/partners was identified (n = 15) who were asked to evaluate the service provided to the patients they were involved with, using a slightly modified satisfaction questionnaire. The comparison showed a significant agreement with Krippendorff's $\bar{r} = 0.80 \div 0.95$ for general practitioners and $\bar{r} = 0.52 \div 0.85$ for professional nurses. It can therefore be argued that the ability of carers/partners of mentally healthy users to represent the satisfaction of their care is both good and consistent (See Table 6).

To further investigate the consistency of responses, a group of carers/partners (n = 14) was randomly chosen from those who were linked with patients who were unable to participate in the interview. Overall satisfaction was then measured using a weighted synthetic index of perceived quality (ISQP). The latter was calculated by using the single scores after their normalization in the interval [0, 1], where 0 indicates maximum dissatisfaction while 1 indicates full satisfaction. A comparison was made between synthetic quality indices, only in relation to professional nurses: one involved the responses given by patients who were interviewed, with an analogous one relating to the patients who were not interviewed (See Fig. 2). The comparison between the two mean values did not show significant differences according to Student's t-test (See Table 7).

The agreement observed between patients and carers/partners led to draw the following conclusions: the carers/partners of elderly home care patients accurately expressed the satisfaction of the patients in all the domains examined in the context of the home care

Table 6 Inter observer agreement between patients and carers/partners for G.P.'s and nurse. Home care in a district of Marche Region (n = 15 pairs of patients/carers/partners). Year 2019

	G.P.'s	Nurses
Items/Domains	$\bar{r}$	$\bar{r}$
Accessibility	0.82	0.75
D2-visiting hours	0.80	0.52
D3-understandable language		
Efficiency	0.84	0.77
D4-reliability in the appointments	0.87	0.70
D5-attentiveness shown by staff	0.81	0.78
D6-ability in the service	–	0.80
D7 -stable staff[b]		
Effectiveness	0.95	0.85
D8 -encouragement inspired by staff	0.83	0.72
D9-willingness in care	0.87	0.75
D10 -good manners	0.90	0.80
D11-ability to inspire trust and confidence		

Table 7 Satisfaction scores per item and perceived quality of care index (ISQP)

	Carers/partners of mentally able patients (n = 14)	Carers/partners of mentally frail patients (n = 14)	
Items	Score	Score	ISQP difference
Accessibility	0.90	0.90	
D1-informative material	0.92	0.94	
D2-visiting hours			
D3-understandable language			
Efficiency	0.89	0.89	
D4-reliability in the appointments	0.90	0.87	
D5-attentiveness shown by staff	0.86	0.87	
D6-ability in the service	0.91	0.90	
D7-stable staff			
Effectiveness	0.87	0.87	
D8-encouragement inspired by staff	0.85	0.86	
D9-willingness in care	0.96	0.85	
D10-good manners	0.90	0.86	
D11-ability to inspire trust and confidence			
Perceived quality of care index (ISQP)	0.90	0.88	0.02(n.s.)

service. Therefore, it would be possible to use the judgements expressed by carers/partners to have a holistic view of all 305 patients' satisfaction.

3.6 Quality Measurement and Construction of a Composite Index in Home Care

Following the methodology already used in a health district of the Marche region (Franci & Corsi, 1998), Table 8 displays the results of the Delphi exercise. This technique is a forecasting process framework based on the results of multiple rounds of questionnaires sent to a panel of expert. The responses are aggregated and shared with

Table 8 Weights, assigned through Delphi system, to domain and items of quality of care, and final weights for the calculation of an index of perceived quality of care (ISQP in Italian version)

		G.P.s		Nurses	
Domain/ Weight	Item	Item weight	Final Weight	Item weight	Final Weight
Accessibility 0.30	D2-visiting hours	0.56	0.17	0.56	0.17
	D3-understandable language	0.44	0.13	0.44	0.13
Efficiency 0.33	D4-reliability in the appointments	0.30	0.10	0.25	0.08
	D5-attentiveness shown by staff	0.28	0.09	0.22	0.07
	D6-ability in the service	0.42	0.14	0.30	0.10
	D7-stable staff	–	–	0.23	0.08
Effectiveness 0.37	D8-encouragement inspired by staff	0.32	0.12	0.32	0.12
	D9-willingness in care	0.23	0.09	0.23	0.09
	D10-good manners	0.20	0.07	0.20	0.07
	D11-ability to inspire trust and confidence	0.25	0.09	0.25	0.09

the group after each round. Fifteen experts were involved, and it only required three iterations for the variability of their assessments to be minimized for both domain and item. The panel was made up of persons in charge of the districts (4), the president of the Court for the Rights of Sick People (1) and with the various professional persons involved in providing the service (10): general practitioners and professional nurses. These experts were selected so that they represented the different professional training and experiences. On observing the weights of each domain, it was immediately evident that the greatest importance was given to effectiveness; thereby considering it to be the most important characteristic of an ideal home care service. Efficiency of the service and accessibility followed.

This approach also enabled the determination of final scores (calculated by multiplying the item weights by those of the corresponding domain). The aim was to give a different importance to each item in order to obtain a composite ISQP. The latter was calculated by using the single scores after their normalization in the interval [0, 1], where 0 indicates maximum dissatisfaction and 1 indicates full satisfaction:

$$ISQP = \sum_{i=1}^{n} p_i w_i$$

where p_i represents the normalized score (i.e., variables in the interval [0,1]), reported in each single item and w_i is the final weight. The normalization of the scores is obtained using the formula $p_i = (x_i - 1)/3$ where x_i represents the judgment of satisfaction expressed. The value of n was 9 for G.P.'s and 10 for professional nurses. The ISQP synthetic index also varies in the interval [0, 1]. The values of this index (See Table 9) reveal judgements near to maximum satisfaction for professional nurses (0.92); slightly less for those given to G.P.'s (0.82). A disaggregated analysis shows that patients recognize, in the items regarding language comprehensibility and good manners, the strong points of the service for both professional figures.

Table 9 Satisfaction scores per item and perceived quality of care index (ISQP)

	G.P.'s (n = 64)	Nurses (n = 75)	District
Items	Score	Score	Score
Accessibility	0.85	0.93	0.34
D1-informative material	0.84	0.98	
D2-visiting hours			
D3-understandable language			
Efficiency	0.72	0.92	
D4-reliability in the appointments	0.80	0.93	
D5-attentiveness shown by staff	0.82	0.87	
D6-ability in the service	-	0.89	
D7-stable staff			
Effectiveness	0.78	0.89	
D8-encouragement inspired by staff	0.81	0.89	
D9-willingness in care	0.86	0.95	
D10-good manners	0.84	0.88	
D11-ability to inspire trust and confidence			
Perceived quality of care index (ISQP)	0.82	0.92	

A moderate source of dissatisfaction can be seen in the item relative to reliability in appointments regarding G.P.s (0.72) The greatest dissatisfaction lies in the domain of accessibility and concerns the availability of relevant information.

3.7 Determinants of Patients' Satisfaction. Logistic Regression Analysis

To identify the best predictors on the overall judgement, we used logistic regression analysis. This type of statistical model is often used for classification and predictive analytics. It is a statistical method similar to linear regression since logistic regression finds an equation that predicts an outcome for a binary variable, Y, from one or more response variables, X. However, unlike linear regression the response variables can be categorical or continuous, as the model does not strictly require continuous data.

To this end, the dependent variable was recodified in two ways: "substantially unsatisfied" (codes 1 and 2) and "substantially satisfied" (codes 3 and 4). The analysis conducted with the stepwise method (Fabbris, 1997) showed that, in residential services, the variables that were more suggestive of overall satisfaction were linked to the treatment received from nursing and care staff, to the catering and to the overall comfort of the room (See Table 10). Stepwise selection techniques are frequently used, particularly in prediction problems or in situations with a large number of exposure variables, to find a small number of covariables for inclusion in regression models. Stepwise selection allows for the simultaneous adjustment of the other covariables in the regression model while identifying covariables having a statistically significant influence (Steyerberg et al., 1999). In comparison, for home services the key variables within the model were confidence transmitted by the doctor, visiting hours, competence of nursing service and support given by the same staff (See Tables 11 and 12).

Table 10 Parameter estimates for the logistic regression model in residential homes (n = 197)

Variable	B[a]	S.E.[a]	Wald[b]	D.F	Sign	R	exp. (b)[c]
C4	1.9028	0.7728	12.5601	2	0.0019	0.2172	6.7043
C4 (1)	2.6738	0.7617	6.0622	1	0.0138	0.1496	14.4944
C4 (2)			12.3235	1	0.0004	0.2385	
C7	2.1084	0.6779	12.3939	2	0.0020	0.2151	8.2354
C7 (1)	2.4908	0.7400	9.6748	1	0.0019	0.2056	12.0709
C7 (2)			11.3284	1	0.0008	0.2267	
C8	1.8965	0.6091	12.4911	2	0.0019	0.2163	6.6625
C8 (1)	2.5061	0.7896	9.6939	1	0.0018	0.2059	12.2574
C8 (2)			10.0751	1	0.0015	0.2109	
Constant	−4.4642	1.0898	16.7803	1	0.0000		

C4 Nursing treatment, For all the variables used, the dummy:

C7 Catering service (1) if the old modality is code 3

C8 Overall comfort (2) if the old modality is code 4 The old modalities code 1 and code 2 are fused in the residual modality

Table 11 Parameter estimates for the logistic regression model in home care. G.P.'s (n = 75)

VARIABLE	B[a]	S.E.[a]	Wald[b]	Sign	exp. (b)[c]
D11	3.11	0.90	11.96	0.001	22.45
D2	1.49	0.72	4.30	0.038	4.43
Constant	− 16.66	4.40	14.37	0.002	

D11 Ability to inspire trust and confidence

D2 Visiting hours

Table 12 Parameter estimates for the logistic regression model in home care. Nurses (n = 75)

VARIABLE	B[a]	S.E.[a]	Wald[b]	Sign	exp. (b)[c]
D2	2.26	0.86	6.88	0.009	9.59
D6	2.19	0.73	8.89	0.003	8.96
D8	1.43	0.70	4.21	0.040	4.20
Constant	− 20.82	4.91	17.98	0.000	

D2 Visiting hours

D6 Ability in the service

D8 Encouragement inspired by staff

Further notes for Tables 10, 11 and 12

[a]B is the estimated coefficient, with standard error, S.E

[b]The ratio of B to S.E., squared, equals the Wald statistic. If the Wald statistic is significant (i.e., less than 0.05) then the parameter is useful to the model

[c]exp(b) or the odds ratio, is the predicted change in odds for a unit increase in the predictor. The "exp" refers to the exponential value of B. When exp(b) is less than 1, increasing values of the variable correspond to decreasing odds of the event's occurrence. When exp(b) is greater than 1, increasing values of the variable correspond to increasing odds of the event's occurrence

4 Discussion

Patient satisfaction is an indicator of healthcare quality and can also be seen as an outcome measure.

The objective of this preliminary study was to develop two reliable questionnaires regarding patient satisfaction that were easy to administer to patients in care either in residential settings or in their own homes. We aimed at developing these two instruments in order to facilitate the use of self-reported levels of satisfaction as an outcome indicator of the quality of care in the services studied. This specific research is relevant today, especially as territorial services concerning the planning of care for the elderly are at present being reorganized in Italy.

Indeed, the quality assessment approach used in residential care, utilizing face-to-face interviews and a13-items standardized questionnaire, placed emphasis on medical care, nursing care, environmental characteristics and the institutional regime. Due to physical and mental impairment, elderly patients are often unable to participate in satisfaction studies, so regular visitors, such as a carers/partners can give valuable information on patient satisfaction. This study found, however, that patients' satisfaction in three areas—nursing, care services, and environment—was consistently overestimated

by carers/partners. Therefore, it is not possible to quantify patient satisfaction in residential homes for the elderly by using interchangeably the responses of patients and carers/partners.

The following considerations should be taken into account:

- The low concordance found in the research between patients and carers/partners for perception of quality of care has been found in other studies (Rogers et al., 1994). This could be explained by differences between patients and their proxies in their perception of needs, which strongly influences their assessment of care quality.
- Epstein et al. (1989) argued that differences in evaluation depended on the level of knowledge of the carers/partners of internal and external factors. Patients are in contact with both such factors and are therefore influenced by both; whilst the judgment of carers/partners is influenced only by the most obvious external factors. This could explain the good agreement observed in the institutional regime domain.
- Further studies (Proctor et al., 1992) have shown that carers/partners are more influenced by organizational factors in their assessments, while patients' judgment is conditioned in particular by the methods of provision of care by the staff.
- Carers/partners are often relatives who may have participated in the choice of the residential home. Therefore, their overestimation of satisfaction ratings could be explained by their feeling some sense of guilt for having chosen this form of care and seeking forms of comfort to justify their decision.
- The exclusion of mentally disabled patients from the survey, certainly introduces a bias which could be reduced if relevant information can be collected through data about staff load (i.e. care procedures, pain management, quality of treatment). It should be kept in mind that care staff are able to express useful judgments on the quality of life of the elderly, but not on satisfaction; and will tend to evaluate patient satisfaction based on their own preconceptions. (Mitchell et al., 1996; Rosenthal & Shannon, 1997).

Since the evaluation of staff will differ from the evaluation of patients, carers/partners should be fully involved in the evaluation of care processes and in decisions regarding care for older people in residential care.

In respect of home care, the research used a methodological approach to assess the quality from a patient's perspective in a Local Health District of Marche Region. At the same time the questionnaire provided a consumer-based indicator of quality, which can be used as an outcome or performance measure to examine changes in satisfaction over time. It also enables comparisons to be made between providers within various Local Health Authorities of the Italian regions, in respect of the 11 items and 3 distinct domains, viz. accessibility, efficiency and effectiveness, which can then be weighted to measure overall perception of satisfaction (as was illustrated by the above Delphi process).

The research questionnaire was designed to overcome shortcomings identified in the existing literature. The specific purpose was to provide a standardized, general scale of home care satisfaction that is relatively brief, is easy to administer, and meets standard psychometric criteria for validity and reliability.

Unlike what was observed in residential homes, for home care services carers/partners of elderly patients could accurately express the satisfaction of the patients in all the domains examined. One potential reason for this is that the carers/partners chose this service knowing all the burdens that would be placed on the carers/partners themselves. It is therefore understandable why there is an overlap of judgments between patients and their carers/partners.

The logistic regression analysis showed that in residential homes, patients' satisfaction mostly depends on their vital and biophysical needs; with nursing treatment, catering services and overall comfort being the most important predictors of the overall satisfaction of the elderly in all 17 homes investigated. It was also possible to interpret satisfaction judgments for both general practitioners and nurses relatively well. The reasons for greater satisfaction with the general practitioner concerned the ability to inspire trust and confidence, and the visiting hours. There was a very similar picture for the professional nurse, with satisfaction centered on the visiting hours, professional ability, and the encouragement inspired.

Finally, it should be emphasized that the questionnaires are not themselves neutral tools. This is because the way in which the questions are asked, how they are ordered and relate to each other, and the related responses, are all elements capable of influencing the answers of the interviewees. Opinions, expectations and other elements of the surveys are of a subjective nature. Indeed, ageing patients who develop a relationship with care staff may be reluctant to offer any criticism even when a program component does not operate optimally. Furthermore, it should be noted that the way in which the questionnaire is administered, i.e. face-to-face, can certainly influence the responses. Therefore, it is acknowledged that the factors of potential interest for the evaluation of response errors are too numerous for all to be examined in the context of the research.

5 Further Research

Accessibility was highlighted as a critical issue that requires improvement for home care. One potential development in this regard would be the use of telemedicine, which can facilitate interactive telecommunication for the medical diagnosis and treatment of patients in remote areas and could be an economical way to enable the wider deployment of services and medical facilities. This could undoubtedly benefit elderly patients who live far from a hospital and would have difficulty with travelling. Because patients are the only ones who can comment on how they were handled and if the care they received fulfilled their expectations, telehealth, like traditional modes of healthcare delivery, mostly depends on patient satisfaction reports. If patients are dissatisfied with the remote healthcare services they are receiving, the service becomes unnecessary and expensive. (Kruse et al., 2017). Consequently, with the increasing use of telehealth, it is important to maintain patient satisfaction as a key quality indicator, regardless of modality of delivery. Healthcare organizations continue to develop technology-based care to meets the needs of patients and providers. Thus, in order for telehealth developers to be flexible in their approach and take into account any perceived issues or shortfalls, the voice of the consumer must be heard on a constant basis.

Given the above, how the use of telemedicine might help improve patient satisfaction in respect of access is a suitable subject for further research. This would involve the development of a valid and reliable measure of patient satisfaction for telehealth. Quantitative instruments may facilitate such analysis, but could be vulnerable to positive bias, and therefore whether an accurate comprehensive satisfaction measure is possible using quantitative ratings alone or a mixed approach (quantitative and qualitative) would need to be investigated, including the determination of the most efficient and effective means of collecting patients' views.

6 Conclusions

The increasing size of the ageing population in Italy and its demands on care services place pressures on the quality of the services delivered. It is essential to maintain high standards of care and this research highlights that measuring patient satisfaction is a key indicator of both the quality of care and the outcome of care. It has developed two practical instruments which can be used to elicit patients' satisfaction in residential care and in home care, which have been validated in terms of psychometric performance. It also established the degree of consistency between patients' responses and those of carers/partners, which is particularly relevant where patients might suffer from physical and/ or mental frailty. Therefore, it usefully supports the expansion of the evaluation and monitoring of care quality in these sectors.

Exploring the essence of patient satisfaction when residing in residential and in home care is highly warranted. Such knowledge and the well adapted questionnaire scales for the residential population and for home care are beneficial and important for the further development of care quality in other regional contexts. The present study suggest that the two questionnaires utilized revealed an acceptable and good fit to the data, considering their validity and reliability. With a few little adjustments to enhance performance, the questionnaires could serve as reliable instruments for measuring patient satisfaction in the two services investigated.

The application of the methodology developed in this work to small areas in this district, certainly presents limitations linked to the specificity of the demographic and social context. On the other hand, services of this type, due to their nature, must be sized and organized at district level, remaining as close as possible to the conditions of needs present in the various elementary areas into which the district territory is divided.

Finally, in a context like the Italian one, where the law decree for the reform of elderly care was recently approved, this conclusion seems satisfactory and complete. It is hoped that this study on the evaluation of patient satisfaction in the two services investigated will serve as a stimulus and starting point for other contributions that will allow further clarification of an issue that is too often addressed in emotional terms or simply removed from the political and academic debate.

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