Positive and negative impact of caregiving to older adults: a structural equation model

Impatto positivo e negativo del caregiving a persone anziane: un modello di equazione strutturale

Ercole Vellone[1] Roberta Fida[2] Antonello Cocchieri[3] Alessandro Sili[4]
Giovanni Piras[5] Rosaria Alvaro[6]

ABSTRACT

Caregivers represent an important source of care for older adults. Many studies focused on the negative aspects of elder caregiving but few studies have analyzed also the positive effects. In addition, no studies have considered contemporarily the positive and the negative impact of caregiving to elderly people on the same people using a structural equation modeling.

The purpose of this study was to examine the contribution of elder care recipient factors, caregiver factors and caregiving factors in determining the positive and negative impact of informal caregiving to older adults using a structural equation model.

A cross-sectional design was used to study eighty caregivers of older people. Several instruments were used to measure elder care recipient factors (functionality, cognition, behavior); caregiver factors (socio-demographics, depression, stress, quality of life, and perceived health); caregiving factors (time from caregiving, time of care, social restriction, place of living, expenses, and living with the elder care recipient); and the positive and the negative impact of caregiving.

Caregivers were 59.7 years old while elderly people were 84.0. Several factors were significantly correlated with the positive and negative impact of caregiving. However, when these factors were entered in a structural equation model, only female gender and social restriction predicted the negative impact, while caregiver's quality of life and caregiving expenses predicted both the positive and the negative impact.

The results of this study suggest a new framework of caregiving to older adults where the outcomes depend more on caregiver and caregiving factors than on older person characteristics. More research is needed with a larger sample to test further the model outlined in this study.

Key words: Caregiving, Older adults, Caregivers' quality of life, Female gender, Caregiving expenses, Social restriction.

RIASSUNTO

I caregivers rappresentano una fonte importante di assistenza per gli anziani. Molti studi si sono concentrati sugli aspetti negativi del caregiving ad una persona anziana ma pochi ne hanno analizzato anche gli effetti positivi utilizzando un modello di equazione strutturale.

Lo scopo di questo studio è stato di esaminare il ruolo di alcuni fattori (relativi all'anziano che riceve l'assistenza, al caregiver e al caregiving) nel determinare un impatto positivo o negativo del caregiving ad una persona anziana.

E' stato adottato un disegno descrittivo per studiare 80 anziani. Gli strumenti utilizzati misuravano fattori relativi all'anziano (autonomia, stato cognitivo e disturbi comportamentali); fattori del caregiver (dati sociodemografici, depressione, stress, qualità della vita e salute percepita); fattori del caregiving (inizio dell'assistenza, tempi di assistenza, restrizione sociale, luogo di vita, spese e convivenza con l'anziano) ed impatto positivo e negativo del caregiving.

I caregiver avevano un'età media di 59,7 anni, gli anziani di 84,0. Diversi fattori studiati erano significativamente correlati con l'impatto positivo e negativo del caregiving ma quando questi fattori sono stati inseriti in un modello di equazione strutturale solo il sesso femminile e la restrizione sociale erano predittori dell'impatto negativo del caregiving. La qualità di vita del caregiver e le spese connesse al caregiving erano predittori sia dell'impatto positivo sia dell'impatto negativo.

I risultati di questo studio delineano una nuova struttura concettuale relativa al caregiving a persone anziane in cui gli outcome dipendono più dal caregiver e dal caregiving piuttosto che dalle caratteristiche della persona anziana. Sono necessari ulteriori studi su un campione più ampio per testare ulteriormente il modello delineato in questo studio.

Parole chiave: Caregiving, Anziani, Qualità di vita del caregiver, Sesso femminile, Spese connesse al caregiving, Restrizione sociale.

INTRODUCTION

Informal caregivers represent an important source of care for older adults in all countries. Caregivers provide elderly people with important support in long-term, home-based, and community-based care systems (Cassie et al., 2008; Elliott et al., 2008) that helps to save public money, (Hollander et al., 2009)

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[1] RN, MSN, Assistant Professor, University "Tor Vergata", School of Nursing, Rome, Italy
[2] PhD, Faculty of Psicology, Sapienza University of Rome, Italy
[3] RN, MSN, PhD Student, University "Tor Vergata" School of Nursing, Rome, Italy
[4] RN, PhD, University "Tor Vergata", U.O.C. Direzione Infermieristica Policlinico Tor Vergata, Roma
[5] RN, MSN, Home care Service Azienda Sanitaria Locale, Oristano, Italy
[6] RN, MSN, Associate Professor, University "Tor Vergata", School of Nursing Rome, Italy
Contacting author: Ercole Vellone, School of Nursing University Tor Vergata, Rome. E-mail: ercole.vellone@uniroma2.it

to maintain quality of life, functional ability and health of the care receiver (Karlsson et al., 2008; Lai et al., 2005), and to reduce the elderly person's institutionalization (Mittelman et al., 2006).

Research on informal caregiving has been mainly focused on the negative aspects of providing care (stress, depression, loss of money, poor quality of life and health), but it has been demonstrated that giving care to older persons can be perceived also as a positive experience (Hanyok et al., 2009) with satisfaction, gain, personal growth, reward, and feeling of usefulness that give meaning to the experience and reduce depression and stress (Kuuppelomaki et al., 2004; Shirai et al., 2009). Caregiving is considered a complex task but, as some authors have underlined (Nolan et al., 1996; Rapp et al., 2000), it is unlike to provide a comprehensive explanation of the outcomes of informal care to older adults if the research focus is only on the negative effects of caregiving.

According to the McKee et al (2003) and Balducci et al (2008) the positive impact of caregiving is a caregiver's perception based on coping, worthiness of caregiving, good relationship with the care-receiver, and the feeling to be appreciated as a caregiver; the negative impact of caregiving is a perception of caregiving as too demanding, causing difficulties in the relationship with family members and friends, causing negative effects on physical health and psychological wellbeing, causing financial difficulties and a feeling of being "trapped".

Although it has been demonstrated that caregivers of elderly people can experience both a positive and a negative impact due to caregiving, few studies have analyzed these two aspects together in the same subjects (Andren et al., 2005; Lopez et al., 2005; Seoud et al., 2007).

These studies have also yielded contradicting results because some have reported that the positive and negative impact of caregiving is a two-dimensional experience (Lopez, et al., 2005) where these two aspects coexist and are unrelated, others (Balducci, et al., 2008; McKee, et al., 2003) that caregiving is a one-dimensional experience with positive and negative ends to that continuum.

The purpose of this cross-sectional study was to examine the contribution of several factors in determining a positive and a negative impact related to informal caregiving to older adults and analyzing the data using structural equation modeling (Figure 1). Specifically, we hypothesized that elder care recipient factors, caregiver factors and caregiving factors have an effect on both positive and negative impact of informal caregiving. We employed this approach for two reasons: first, structural equation modeling is particularly well suited for investigating simultaneously the nomological net among the different constructs related to informal caregiving; second, within this framework we can test simultaneously how a set of independent variables impact two different outcomes, that is, the positive and negative impact of informal caregiving.

LITERATURE REVIEW

Research has demonstrated that there are several sources of positive and negative impact of caregiving to elderly people. These sources are related to the elder care recipient, the caregiver, and the caregiving (Figure 1).

Elder care recipient factors

In general, physical impairment, cognitive deterioration, and behavioral problems of the elder care recipient are associated with a negative impact in caregiving that result also in high level of stress and burden and poor quality of life in caregivers (Lai, 2009; Lin et al., 2005). However, there have been also other studies (Kuwahara et al., 2001; Mehta, 2005) in which the older adult conditions such as functional and mental deterioration did not result in a negative impact of caregiving.

Caregiver factors

Caregiver factors that influence the caregiving perception are caregiver's socio-demographics (gender, age, education, and relationship with the elder care recipient), depression, stress, quality of life, and perceived health. Female caregivers are generally more depressed, stressed and with a lower sense of mastery than men (Marco et al., 2010; Mehta, 2005). Kuuppelomaky et al. (2004) and Ekwall et al (2007) found also that female informal caregivers are more unsatisfied than male. In contrast, other authors (Andren, et al., 2005) did not find any significant difference due to the impact of caregiving in relation to gender when they evaluated psychological factors such as stress, depression and anxiety.

A number of studies have looked at caregiver's age as factor determining a positive or a negative outcome of elder caregiving. Kim (Kim et al., 2006) and Mafullul and Morris (Mafullul et al., 2000) found high level of burden in caregivers of elderly people but this variable was higher in those with younger age. Also caregiver's education can influence the impact of caregiving and studies on this topic have reported different results: Kim et al (Kim et al., 2007) showed that perceived benefits of caregiving were higher in less educated caregivers, instead Bien et al (Bien et al., 2007) reported that more educated caregivers perceived a more positive impact due to caregiving.

The relationship with the elder care recipient is a factor that improves or worsens the impact of caregiving. Koerner et al (Koerner et al., 2009) found that the spouses of the older adults perceived more benefits from caregiving that other type of caregivers. Similar results were found by other authors (Bien, et al., 2007; Savard et al., 2006) who found more satisfaction (so, a positive impact) in spouse caregiver and in adult children caregivers as well. In contrast with the above studies Sewitch et al (Sewitch et al., 2004) found that spouses and the adult children caregivers of frail older adults were the most vulnerable to the negative impact of caregiving and so less satisfied by caregiving.

Several studies have looked at depression, stress, quality of life, and perceived health of caregivers. In general, depression and poor health in caregivers are associated with a negative impact of caregiving (Kim, et al., 2006; Lai, 2009). It has been also observed that the above issues are correlated with cognitive, functional, and behavioral problems in the care receivers (Kim, et al., 2006; Tibaldi et al., 2007)

Caregiving factors

Positive and negative impact in caregiving can be also influenced by factors due to caregiving per se such as time from caregiving, time of care, social restriction, place of living and expenses due to the caregiving. In this area, some authors have found that the negative impact of caregiving is stable and does not change over time (Levesque et al., 2008; Martinez-Martin et al., 2008a). Others found that the more time passed from the beginning of caregiving, the less caregivers experience a negative impact (Nir et al., 2009). Another caregiving variable is time spent by caregivers to look after the older adult including free time spent for leisure activities. In general, the impact is more negative when caregivers spend more time in elder caregiving (Dressen et al., 2007; Ferrara et al., 2008; Rezende et al., 2010), and less negative when they can have leisure activities (Hirano et al., 2011). In a study (Poulin et al., 2010) in which time spent in caregiving was evaluated as active helping and help on call, it was found that active helping resulted in a positive impact instead the help on call in a negative.

The large amount of the given care, the little time for themselves, and the reduced free time can produce social restriction and isolation in caregivers. Smith et al. (2009) reported that those who are not the spouses of the patients suffer more for social restriction, even thought Robison et al (2009) did not find that caregiving per se lead to social restriction.

Some studies have looked at the different perception of caregiving in relation to the place of living and have found that rural caregivers of older adults are more burdened, access fewer formal support services, and have poorer health conditions than those living in urban areas (Bedard et al., 2004; Bien, et al., 2007). However some authors suggested that the place of living does not change the way caregiving is perceived rather the caregiver or the care recipient characteristics (McKenzie et al., 2010).

A number of studies have shown that caregiving increases caregivers' expenses and reduces their income. In particular, this happens when the care recipient has reduced ADL abilities (Kang et al., 2007; van den Berg et al., 2008) that in turn can have a negative impact on caregiving (Kim et al., 2009; Lai, 2009; Yun et al., 2005).

In conclusion, although many studies have been carried out on variables that can have a positive or a negative impact on the perception of caregiving to older adults, their results are still not consistent. In addition, most studies have considered separately the variables associated to the negative and positive outcomes of caregiving. No prior research has analyzed in a single model the elder care recipient factors, caregiver factors and caregiving factors in determining a positive and a negative impact of caregiving to older adult persons.

Conceptual Framework

Based on the literature, a conceptual framework explaining the relationships between elder care recipient factors, caregiver factors and caregiving factors and the positive and negative impact in providing care to an older person was developed to guide this study (figure 1). We hypothesize that each factor can produce a positive or a negative outcome. For example research has demonstrated that the higher the functional and the cognitive impairment in the elder person, the higher the negative outcomes in caregivers and vice versa (Lai, 2009; Lin, et al., 2005; Schreiner et al., 2003). Research has also demonstrated that younger caregivers are more prone to be negatively impacted by caregiving than older caregivers (Mafullul, et al., 2000) and that there is a positive correlation between the time spent in caregiving and its negative impact and vice versa (Rezende, et al., 2010). So, based on the literature, the same variable (for example, caregiver's age, older adult cognitive and functional impairment, time of caregiving) can result in both a negative and a positive impact.

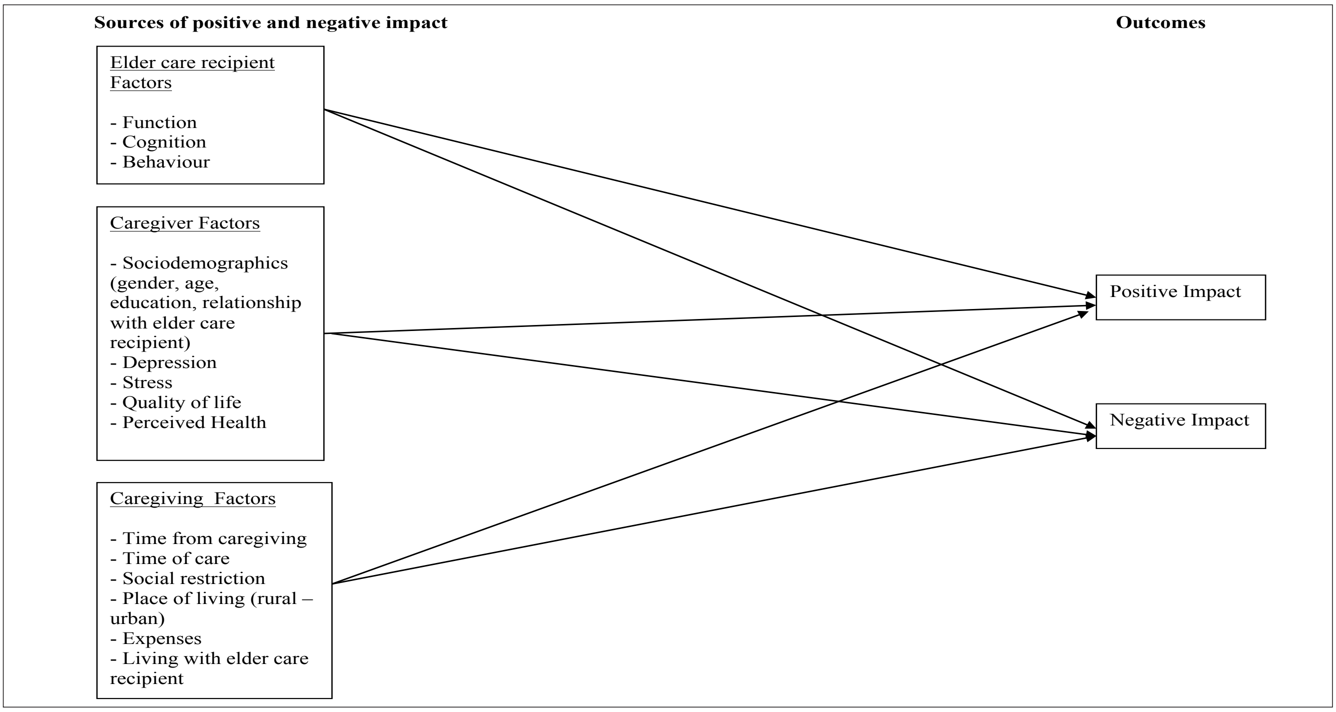

Figure 1. The Initial Conceptual Framework Guiding the Study

METHODS

Design

A cross-sectional design was used to study 80 caregivers of older adults.

Sample and procedures

Setting. Caregivers participating in this study were living in several cities in Sardinia (Cagliari, Arbus, Guspini, Ghilarza and Abbasanta) one of the bigger Italian island 200 Km off of its western coast of Italy.

Ethical considerations

The study underwent ethical approval before data collection.

Inclusion criteria

To be enrolled in the study, caregivers had to provide unpaid support at least four hours per week to a person 65 years and older. These criteria have been adopted in prior studies conducted on caregivers of elderly people (Lamura et al., 2008). Patients were enrolled by contacting general practitioners, religious organizations, door-to-door and by snow-ball procedures. When potential participants were approached, the aims of the study were explained and if they agreed, after signing the informed consent, the instruments were completed. All approached caregivers participated in the study.

Instruments

Instruments to measure Elder care recipient factors

The following instruments were used to measure factors related to elder care recipients:

1. The Barthel Index (BI) (Mahoney et al., 1965) was used for assessing elderly person functions in performing basic activities of daily living (e.g personal hygiene, bathing, feeding). Possible score range from 0 to 100, the higher the score the more the independence in self-care performance. This instrument has been widely used and proved for its reliability and validity (McDowell, 2006). Cronbach's alpha in the present study was 0.89.
2. The Mini Mental State Examination (MMSE) (Folstein et al., 1975) is a widely used instrument to measure cognitive functions. Possible score are from 0 to 30 with a higher score meaning a better cognitive function. Cronbach's alpha of this instrument in the present study was 0.83.
3. The Neuropsychiatric Inventory - Patient Subscale (NPI-PS), (Cummings et al., 1994) is an instrument for assessing 12 problematic behaviors in older adult (e.g. delusions, hallucinations, agitation). The instrument is completed by the caregiver who has to report the frequency of behavioral symptoms (0= never; 1 = occasionally; 2 = often; 3 = frequently; 4 = very frequently) and their severity (1 = mild; 2 = moderate; 3 = severe). By multiplying the frequency of symptoms for their severity, it is possible to have a score for each item, with a possible score from 0 to 12. It is also possible

to obtain a total score summarizing the score for each item (possible score from 0 to 144). The higher the score the worse the behavioral symptoms. The NPI-PS has been proved for its psychometric properties (Cummings, et al., 1994; Cummings, 1997). Cronbach's alpha values for NPI-PS frequency and gravity were 0.62 and 0.69 respectively in the present study.

Instruments to measure Caregiver factors

For these purposes the following instruments were used:

1. Selected Questions from the Eurofamcare Questionnaire (2008). This instrument was developed by a panel of experts involved in a large European research aimed to study characteristics, coverage and usage of services for supporting family caregivers of elderly people.
   For the purposes of this study, selected questions were those to collect demographic data about caregiver such as gender, age, education, relationship with the elderly person, as well as employment status, and monthly income.
2. The Hospital Depression Scale (HDS), (Zigmond et al., 1983). It is the depression scale of the Hospital Anxiety and Depression Scale (HADS) consisting of 7 items. The possible score of the HDS is from 0 to 21 where higher score means higher level of depression. The HDS has good psychometric properties (Zigmond, et al., 1983) and has been used in several study involving caregivers of elderly people (Joling et al., 2008; Martinez-Martin et al., 2008b). Cronbach's Alpha of the HDS in the present study was 0.83.
3. The Neuropsychiatric Inventory - Caregiver Subscale, (Cummings et al., 1994). Each item of the patient subscale also allows to measure caregiver's stress for each symptoms on a 5-point-Likert scale from 0 (no stress) to 5 (extreme stress). Summarizing the score for each item a total score can be obtained (from 0 to 60): the higher the score the higher the perceived stress from caregivers. The Cronbach's alpha value was 0.70 in this study.
4. SF-36 (Ware et al., 1992) is a generic instrument for measuring quality of life (QOL). For the purpose of this study only the two items measuring quality of life in general and perceived health have been used. These items use a 5-point-Likert scale from "very good" (1) to "very poor" (5).
   A higher score means a worse QOL and health. The SF-36 has been used in many studies with caregivers of elderly people (Ho et al., 2009).

Instruments to measure caregiving factors

Factors related to caregiving were measured with the following instruments:

1. Selected Questions from the Eurofamcare Questionnaire (Balducci, et al., 2008). This instrument has questions related to caregiving such as time of care, place of living (rural or urban) and the perception of expenses. For this last variable three options were available: "low", "fair", "high".
2. The Modified Social Restriction Scale (MSRS) (McKee et al., 2001) measures restriction in caregiver's life due to caregiving. For the purpose of this study, the modified version by Balducci et al (Balducci, et al., 2008) was used. It consists of the following two items: "If you were ill, is there anybody who would step in to help with the care receiver?"; "If you needed a break, from your caring role, is there someone who would look after the care receiver for you?" Responses to these items are based on a 3-point-Likert scale from 1 ("Yes, I could find someone quite easily") to 3 ("No, there is no one"). The total score of the MSRS goes from 2 to 6, where a higher score means more restriction due to caregiving. Cronbach's alpha of this instrument was 0.89 in a previous study (Balducci, et al., 2008), and 0.74 in the present study. Because no data on the instrument's validity are reported in the literature, the concurrent validity of the scale was tested in the present study correlating the MSRS score with caregiving hours and the HDS. Pearson's r correlation resulted in a value of 0.23 ($p < 0.03$) with caregiving hours and 0.37 ($p < 0.001$) with the HDS. So, concurrent validity of the MSRS was established.

Instruments to measure the positive and negative impact

Positive and negative impact of caregiving were evaluated by the Carers of Older People in Europe (COPE) Index (McKee, et al., 2003). This is a 15-item instrument designed to measure, by separate scales, the perceived support (four items), the positive impact (COPE PI, six items), and the negative impact (COPE NI, five items) of caregiving to older people. The tool has been developed in a trans European study that included Italy (Balducci, et al., 2008; McKee, et al., 2003) and has been tested for reliability and validity. For the purpose of this study, only the COPE PI and the COPE NI were used. Cronbach's alpha of the COPE PI and the COPE NI were 0.76 and 0.84 respectively in the present study.

The COPE PI can have a possible range from 5 to 20 where a higher score means a more positive impact of caregiving. The COPE NI has a possible range from

6 to 24 with a lower score meaning a more negative impact of caregiving.

Data analysis

As preliminary analysis means, SDs, ranges, frequencies and percentages were computed. Then correlations of elder care recipient factors, caregiver factors and caregiving factors with the COPE PI and COPE NI were computed using Pearson's correlation.

Variables significantly correlated with COPE PI and COPE NI were then analyzed using a structural equation modeling with maximum likelihood parameters' estimate.

According to a multifaceted approach to the assessment of the models' fit (Tanaka, 1993), taking into account the Hu and Bentler recommendations (Hu et al., 1998; Hu et al., 1999), the following fit indices were considered: (a) the Chi square, (b) the Comparative Fit Index (CFI; (Bentler, 1990), (c) the Root Mean Square Error of Approximation (RMSEA; (Steiger, 1990), and (d) the Standardized Root Mean Square Residual (SRMR; (Jöreskog et al., 1993).

In structural equation modeling, the $\chi 2$ value is obtained from the minimum of the fitting function used to derive parameter estimates, and it is usually considered a measure of fit rather than a test statistic (e.g., (Byrne, 1994). Accordingly, its value is an indicator of the correspondence between the sample and the fitted covariance matrices. However, its dependency on sample size makes it quite probable to obtain large values in large samples and small values in small samples. This fact has led to the development of alternative ways for assessing the goodness of fit. The CFI assesses the reduction in misfit of a population target model relative to a population baseline model in which no structure is specified. Usually, values equal to or higher than .95 are indicative of a good fit (Hu, et al., 1999). The RMSEA index is a criterion that takes into consideration the error of approximation in the population (i.e., the extent to which the null hypothesis that the population covariance matrix Σ is adequately reproduced by a set of parameters Θ is true). Values up to .05 indicate a good fit, and values as high as .08 represent a reasonable error of approximation in the population (Browne et al., 1993). This index also has the advantage of measuring the parsimony of the model, because it takes into consideration the model's degrees of freedom. Finally, the SRMR index is an absolute index that is reported as a summary statistic based upon residuals between the elements of the implied and observed covariance matrices. Values lower than .08 indicate an adequate fit (Hu, et al., 1998; Hu, et al., 1999). SPSS 19 and Mplus 6.1 were used to analyze the data. Level of significance was set at $p < 0.05$.

RESULTS

Sample description

Eighty caregivers and related elder care recipients participated in the study. As reported in table 1, caregivers were mainly female, almost 60 years old and married.

In most cases caregivers were the older adult's sons or daughters. Education was not very high among participants with three quarters of the sample having an elementary or middle school education. Most caregivers were not employed with 1,000 Euros of income per month. Caregivers spent an average of 101 hours per week in providing care (more than 14 hours per day) and had been caring for the elders for 47 months (almost four years).

Table 2 reports socio-demographic data about the elderly care recipients. More than two third of the sample was composed of females aged more than 80 years.

Variables	Mean (SD)	Ranges	N	%
Gender				
Male			10	12.5
Female			70	87.5
Age	59.7 (12.87)	24 - 83		
Civil Status				
Married			57	71.3
Widowed			4	5
Divorced			1	1.3
Single			18	22.5
Relationship with elderly				
Spouse/Partner			12	15
Child			30	37.5
Sibling			8	10
Daughter or Son-in-low			12	15
Nephew/Niece			8	10
Other			10	12
Education				
Elementary School			39	48,8
Middle School			23	28,8
High School			13	16,3
University Degree			5	6,3
Employment				
Yes			12	15
No			68	65
Monthly Income (Euros)	1068.38 (257.22)			
Hours of caring per week	101.05	15-168		
Time length of caregiving (months)	47,17 (46,19)	4-264		

Table 1. Sociodemographic data of caregivers (n = 80)

Variables	Mean (SD)	Ranges	N	%
Gender Male Female			 22 58	 27,5 72,5
Age	84,03 (8,35)	65-99		
Civil Status Married Widowed Single			 23 44 13	 28,8 55,0 16,3
Living Condition Alone With Children With Spouse With a Paid Caregiver			 20 27 22 11	 25 33,8 27,5 13,8
Monthly Income	716,67 (194,08)	450-950		

Table 2. Sociodemographic data of elder care recipients (n = 80)

Scale	Mean (SD)	Ranges
Elder care recipient scales		
BI	40.44 (23.67)	0 - 95
MMSE	17.04 (7.53)	4 - 30
NPI – PS	36.71 (16.48)	0 - 79
Caregiver scales		
HDS	7.81(3.69)	1-20
NPI – CS	17.96 (9.02)	0 - 36
SF – 36 - QOL	2.71 (0.64)	2 - 4
SF – 36 - Health	3.49 (0.71)	2 - 5
Caregiving scales		
MSRS	3.95 (1.28)	2 - 6
Outcome Scales		
COPE PI	16.15 (2.37)	10 - 20
COPE NI	13.67 (4.09)	6 - 21

Table 3 Scale Scores

Note. BI = Barthel Index; MMSE = Mini Mental State Examination; NPI PS = Neuropsychiatric Inventory Patient Subscale; HDS = Hospital Depression Scale; NPI CS = Neuropsychiatric Inventory Caregiver Subscale; MSRS = Modified Social Restriction Scale; COPE PI = Caregiver of Older People in Europe Positive Impact Index; COPE NI = Caregiver of Older People in Europe Negative Impact Index;

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. BI	1																		
2. MMSE	0,38**	1																	
3. NPI-PS	-0,27*	-0,58**	1																
4. Cageriver Gender +	-0.06	-0.1	0.14	1															
5. Caregiver Age	-0.01	-0.12	-0.01	-0,32**	1														
6. Caregiver Education	0,25*	0.27	-0.09	-0.04	-0,61**	1													
7. Relationship with Patient ^	-0.21	-0.06	0.05	0.13	-0.11	0.09	1												
8. HDS	-0.19	-0,53**	0,38**	0.05	0,46**	-0,45**	-0.03	1											
9. NPI-CS	-0,28**	-0,64**	0,94**	0.13	0.01	-0.12	0.05	0,45**	1										
10. SF-36 - QOL	-0,28**	-0,41**	0.18	-0.11	0.19	-0,26*	0.14	0,51**	0,25*	1									
11. SF-36 - Health	-0.07	-0,34*	0,24*	-0.11	0,32**	-0,28**	-0.02	0,57**	0,31**	0,58**	1								
12. Month of care	-0.07	-0.14	0.08	0.02	0.09	-0.05	-0.04	0.12	0.03	-0.03	0.15	1							
13. Weekly hours of care	-0,24*	-0,41**	0,24*	-0,26*	0,46**	-0,34**	0	0,48**	0,33**	0.17	0,23*	0.09	1						
14. MSRS	-0.12	-0.12	0.15	-0.06	0.11	0.03	0.1	0,34**	0,22*	0.21	0.12	-0.14	0,23*	1					
15. Place of living †	0.12	0.21	0	0	-0.12	0,26*	0	-0.08	0.01	-0.05	0.05	-0,25*	-0.11	0,26*	1				
16. Level of Expenses	-0,51**	-0,30*	0.18	0,30**	-0.14	-0.16	0,25*	-0.02	0.15	0.06	0.02	0.13	0.03	-0.15	-0.04	1			
17. Caregiver Living With Patient □	0.03	-0.07	0.03	-0,24*	0,33**	-0.18	0.02	0,24*	0.13	-0.01	0.07	0	0,73**	0.14	0.02	-0.14	1		
18. COPE PI	0,39**	0.26	0.03	0.02	0.05	0.1	-0.18	-0.01	0.03	-0,23*	-0.03	-0.18	-0.12	0.08	-0.02	-0,46**	0.02	1	
19. COPE NI	0,40**	0,47**	-0.21	-0,15*	-0.11	0.2	-0,26*	-0,44**	-0,24*	-0,67**	-0,36**	-0.04	-0.19	-0,35**	-0.025	-0,25*	-0.03	0,45**	1

Table 4. Correlation matrix of the measured variables

Note. BI = Barthel Index; MMSE = Mini Mental State Examination; NPI PS = Neuropsychiatric Inventory Patient Subscale; + Caregiver Gender: 0 = Male; 1 = Female; ^ Relationship with Patient: Child = 0, other then child = 1; HDS = Hospital Depression Scale; NPI-CS = Neuropsychiatric Inventory Caregiver Subscale; SF-36 – QOL: SF-36 item measuring quality of life; SF – 36 Health; SF-36 item measuring health; MSRS: Modified Restriction Scale; † Place of Living: 0 = rural, 1 = urban; □ Caregiver living with patient: 0 = no, 1 = yes; COPE PI = Caregiver of Older People in Europe Positive Impact Index; COPE NI = Caregiver of Older People in Europe Negative Impact Index; * p < 0.05; ** p < 0.001.

More than a half of the sample was widowed and only one quarter had been living alone. For most elderly people the monthly income was about 700 Euros on average.

Table 3 reports the scores of all the used scales.

Correlations with the COPE PI and the COPE NI

Table 4 reports the correlation matrix of the measured variables. COPE PI (positive impact) was correlated with the Barthel Index measuring activities of daily living (ADLs), caregiver's QOL, and the perceived level of expenses. That is, caregivers who had a more positive impact of caregiving were those caring for elderly people with higher functionality, those who perceived themselves with better QOL, and had lower expenses. The Barthel Index (ADLs) and MMSE scores, caregiver's gender (female) relationship with the older adult (son/daughter), depression, caregiver stress, QOL and health, social restriction, and expenses, significantly correlated with the COPE NI (negative impact). So, caregivers who experienced a more negative impact related to caregiving were: female and adult children caregivers, those taking care of more dependent older adults, caregivers of elder persons with more cognitive deterioration, caregivers who were depressed, stressed, with a worse QOL and health, those with social restriction, and more expenses.

Model testing

Variables significantly correlated with COPE PI and COPE NI were considered as independent variables in the structural equation modeling (figure 2). Results showed that all indeces of fit were good with the only exception of RMSEA that was higher than .05 but lower than .08 representing a reasonable error of approximation in the population (χ2 (2)= 2.79, p = .25; CFI= .99, TLI = .97; RMSEA =.07, (CI = .00 – .24); SRMR =.034). COPE PI score was explained from the caregiver QOL and the perceived expenses related to caregiving. The COPE NI was significantly explained by caregiver gender (female), caregiver QOL, social restriction and expenses. None of the elder care recipient factors explained either the COPE PI or the COPE NI.

DISCUSSION

Only few studies have been reported in the literature on positive and negative impact of caregiving to older adults. In general, much of the prior research has studied factors influencing either the positive or the negative impact of caregiving but no studies have simultaneously analysed these two outcomes together in the same subjects by a structural equation modelling approach.

Prior research has demonstrated that the older persons' cognitive deterioration, physical impairment and behavioural problems can determine a negative outcome in caregivers (Lai, 2009; Lin, et al., 2005; Schreiner, et al., 2003) but our study demonstrated that none of the factors related to the elder care recipient explained either the positive or the negative impact of caregiving. However, no prior studies have used structural equation modelling to study contemporarily many variables and their effect in determining a positive and negative outcomes of caregiving. This finding could mean that elder care recipient problems per se have not a direct impact (neither positive nor negative) on how caregiving is experienced by caregivers. Prior research was not in agreement that physical disabilities, cognitive impairment and behavioural problems determined negative outcomes in caregivers (Kuwahara, et al., 2001; Lai, 2009; Lin, et al., 2005; Mehta, 2005; Schreiner, et al., 2003). However, because in our study almost all the variables involved in the caregiving process to an older person were considered,

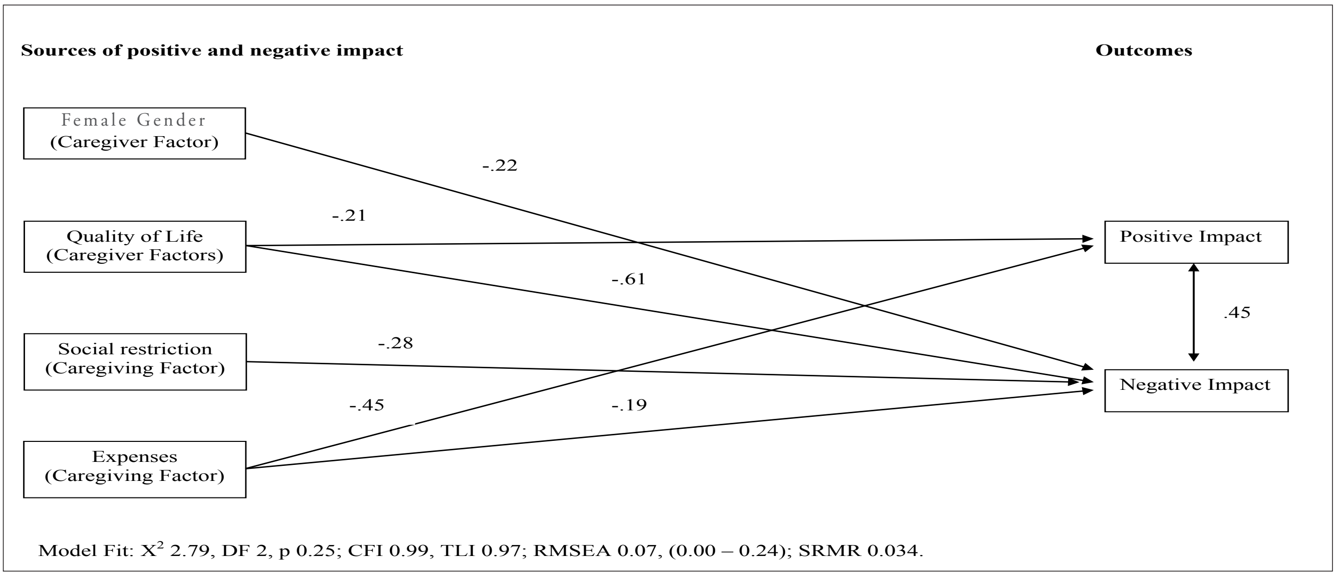

Figure 2. The Final Model Tested by the Structural Equation Modeling

this allowed us to identify their unique contribution in determining a positive or a negative impact.

Two of the four independent variables in the model were caregiver factors: gender (female) and QOL. Surprisingly, depression and stress, that were both correlated with the positive and negative impact, were not significant in predicting the model's outcomes. Many studies have found that female caregivers are more negatively affected by caregiving than men (Schreiner, et al., 2003;Mehta, 2005; Marco, et al., 2010), and many studies have also found that higher QOL in caregivers contributed to better caregiving outcomes (Kim, et al., 2006; Lai, 2009; Lin, et al., 2005). Actually, depression might be considered an aspect of QOL so, although it was not a significant predictor in the model, it could have influenced QOL as the Pearson's r showed in the correlation between the SF-36 QOL and the HDS scores. QOL predicted both the positive and the negative impact but much more the negative than the positive (beta weight -.61 and -.21 respectively). This means that higher QOL in caregivers has better results in decreasing the negative outcomes of caregiving than in improving the positive outcomes.

Social restriction of caregivers predicted the COPE NI scores, while the perceived expenses predicted both the positive and negative impact; however expenses had a higher beta weight for the positive than the negative impact (-.45 vs. -.19). In several studies caregivers complained an increase of their expenses due to caregiving (Kim, et al., 2009; Lai, 2009; Yun, et al., 2005) but no studies have found a so important role in determining an impact on how caregiving is perceived. Perhaps spending money for caregiving does not allow caregivers to spend money for leisure activities, holidays, personal interests and this produces stress that in turn has negative outcomes. It was surprising to note that time of care and living with the elderly care recipients were not predictors of positive and negative impact: generally more time spent in care is associated with a more negative impact but this was not a result of our study.

Care recipient factors did not result in any significant direct relationship with the positive and negative impact of caregiving in the present study. However, it should be noted that these factors could have indirectly influenced the caregiver's social restriction and expenses: perhaps caregivers taking care of more problematic older adults have also a restriction in their social life and spend more money in care. Further research, with a larger sample, could test by a new structural equation model, an indirect effect of care recipient factors.

The results of this study contributed to clarify the dimensions of the positive and the negative impact of caregiving to elderly people. It seems that these two constructs are both monodimensional and bidimensional: they are monodimensional because some predictors (caregiver's QOL and perceived expenses) had an effect both of the positive and the negative impact and these two constructs were correlated; they are bidimensional because some variables influenced only one of the construct and not both of them.

Limits and recommendations

One of the first limitation of our study was the small sample size. Further studies should be carried out with larger samples to corroborate the results of this research. Another limitation is related to the area were participants were enrolled: even though Sardinia is an Italian region it has some cultural characteristics that could be not representative of the rest on Italy (Vellone et al., 2011). So, future studies should be conducted with caregivers and elderly people of other Italian regions.

The role of family was not considered in the present work although many studies have emphasized the importance of family in supporting the caregivers (Vellone, et al., 2011). However such studies would require specific instruments for measuring family support that have not yet validated for the Italian culture.

Further studies should deepen the model identified in the present research to find if other variables can significantly influence the positive and the negative impact of caregiving. Because the expenses related to caregiving were both a predictor of positive and negative impact, future studies should be focused also on the economical aspect of caregiving to older adults in order to figure out if a consistent economical support for caregivers would result in fewer older person institutionalizations. Further studies could be also focused in determining if elder care recipient factors have an indirect effect on caregiver and caregiving factors.

Implication

The model tested in the present study suggests an explanation of factors that affect positive and negative impact in caregiving. If we are to presume valid findings, one might suggest specific interventions that clinicians can take into consideration when caring for caregivers of elderly people. Female caregivers were more prone to a negative impact so interventions should take particular attention for them. Caregiver's QOL should be also highly considered by clinicians as it was a predictor of both positive and negative outcomes of caregiving: improving caregiver's QOL would have a double results either in the positive or in the negative impact of caregiving. It warrants further investigation as to the meaning of this dual impact from quality of life. Social restriction resulted in a negative effect of caregiving, so effort should be implemented to avoid caregiver isolation. There may be a connection to the load of caregiving and social isolation that needs further exploration. Like caregiver's QOL, expenses had a direct effect on both positive and negative impact. It is arduous to find a solution for this problem in a time of several restrictions for the national health services, however people who are responsible of these services should find all resources to be used by caregivers also involving voluntary services. This could allow caregivers to reduce their expenses in care.

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