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## Variables related to the informal caregivers' burden of dependent senior citizens in Spain

Jorge Garcés, Stephanie Carretero\*, Francisco Ródenas, Vicente Sanjosé

Polibienestar Research Institute, University of Valencia, Avda. De los Naranjos s/n, 46022 Valencia, Spain

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### ABSTRACT

The study aims at analyzing the psychosocial variables associated with the informal caregivers' burden of dependent older people. A sample of 296 dependent people and their informal caregivers ( $n = 153$ ) was randomly selected among users and non-users of the Spanish public In-Home Help Service (HHS) in an autonomous Spanish region (Comunidad Valenciana). Diverse variables in reference to the care context and the caregiver as well as the care recipient show major associations with the burden: those associated to disease and the social situation of the dependent person, the greater frequency and intensity of care, and the low frequency in which the caregiver receives help from others. The obtained data makes possible to establish guidelines based on the psychological and educational interventions which relieve the informal caregivers' burden of dependent senior citizens, which must be combined with respite services, in order to promote the permanence of this population group in the community environment.

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### 1. Introduction

The main objective of this work is to analyze the variables associated with the informal caregivers' burden of dependent senior citizens. Specifically, it evaluates the influence of characteristics associated to the care context and the informal caregiver as well as the health and sociofamily situation of the dependent senior citizens on the level of the informal caregivers' burden, with the final aim to establish psychosocial guidelines to relieve their burden.

In Spain, the same as in other developed countries, the dependency, i.e., the state in which persons, by reason of lack or loss of physical or psychological autonomy, require assistance or help from others to perform daily activities (Council of Europe, 1998), is currently a worrying problem, especially for women, the primary caregivers to family members and closed friends with a dependency condition. For example, the latest data from the Spanish Ministry of Work and Social Affairs reports that 84% of the informal caregivers of dependent older people are women (IMSERSO, 2004). In many cases, the burden appears as the result of the years and constant dedication of care, which the caregiver women provide to the dependent persons. This burden leads to the appearance of physical health problems and especially psychological problems, which in turn undermine their caregiver capacity. In our context, the solutions for this burden still have a limited development.

The Spanish Government has recently implemented legislative modifications in relation to the protection of dependency situations, where a new law called the Law of Promotion of Personal Autonomy and Care to Persons in a Dependency Situation is entered into force on first January 2007 (Available in English at: <http://www.seg-social.es/imserso/normativas/law-dependentpersons.pdf>). This new legislative framework will suppose greater care to dependent persons and their caregivers from the Spanish Social Protection system. Although the definitions of the measures that shall be adopted are still very general, the law has focused on respite services and economic aid to the caregivers to relieve their burden situation. Notwithstanding, as acknowledged in the White Paper on Dependency, a basic preliminary text to make government decisions and policies for this new Law, the implantation and start-up of actions are also required in favor of the well-being of the caregivers and the maintenance of the informal care system in Spain as represented by the psychosocial programs which shall contribute to prevent the abandonment and institutionalization of the dependent person (MTAS, 2005).

The complementarity and suitability of the psychosocial programs for the burdened informal caregivers with the respite services is especially relevant in Spain if we take into account the current low coverage of the respite services available in the Spanish General Public Network of Social Services such as the HHS and the Day Centers and the practically non-existent psychological care to the caregivers in or outside this type of resources from the public Administration (Garcés, 2000; MTAS, 2005).

\* Corresponding author. Tel.: +34 96 3828184; fax: +34 96 3828184.

E-mail address: [stephanie.carretero@uv.es](mailto:stephanie.carretero@uv.es) (S. Carretero).

The effectiveness in the design of the psychosocial intervention programs involves the knowledge of the main variables related to the appearance of the burden in the informal caregivers of dependent senior citizens. The results of the research, guided in the majority of cases by the theoretical framework of Pearlin by means of his Stress Process Model (Pearlin et al., 1989, 1990; Pearlin, 1991) has determined the choice for the study of the determining variables of the informal caregiver burden. In this sense, scientific thought shows the existence of multiple variables associated to the caregiver burden, among which it is possible to highlight, in Pearlin's terms, that the variables of the care context as well as the primary stress factors comprise a primary generator core of the burden whereas the secondary stress factors represent the proliferation of the emotional discomfort and burden in other areas of life.

The studies have shown that care context variables such as sociodemographic variables of the caregiver, specifically the young age, being female, the low income level of the caregiver and if this person has a job, and the relationship between the caregiver and the care recipient, such as the caregiver, the spouse, before the children and the coexistence of the day caregiver and the dependent person, appear as variables intensely related to the burden of the caregiver (Gaugler et al., 2000; IPA, 2002; FCA, 2003). Equally, the primary stress factors such as the behavioral problems of the dependent person to a great degree cause burden, emotional discomfort, exhaustion, and emotional mood disorders in the caregiver more than the cognitive deficiencies and dependency for the activities of daily life (Dunkin and Anderson-Hanley, 1998; Gaugler et al., 1999; Hawranik and Strain, 2000).

## 2. Subjects and methods

### 2.1. Sample and data collection

This study forms a part of a more extensive investigation focused on analyzing the impact of the Spanish public HHS on the informal caregivers' burden of dependent senior citizens. The sample of dependent persons was selected at random based on the population of HHS users and by means of the waiting lists of the applicants for this service, respectively, in cities of the Valencian Community (Spain) during 2001. The sample was comprised by 296 subjects, 236 dependent users of HHS and 60 non-users of HHS. The sample of informal caregivers was selected based on the 296 dependent persons chosen to form a part of this study. Of the entire sample of dependent persons, 153 had an informal caregiver who attended them: 117 users of HHS and 36 non-users of this service. Preliminary analysis has demonstrated that there are no statistically significant differences between the user and non-user caregivers of the HHS neither in their overall burden level nor in the sociodemographic characteristics of the dependent persons and their caregivers between the two groups of users (Carretero et al., 2007). For this reason, a total sample of informal caregivers ( $n = 153$ ) and dependent senior citizens ( $n = 296$ ) was taken for this work. Table 1 provides a summary of the main sociodemographic characteristics of the two samples of this study.

For its part, the data collection was performed jointly with welfare workers at the local authorities of the selected towns, and dependent people and/or their caregivers were subsequently contacted and visited at home to administer the assessment instrument. The refusal rate to participate in the study was below 10%.

### 2.2. Variables and instruments

A questionnaire was used with instruments to evaluate the following variables. Regarding to the dependent older people: (a)

**Table 1**

Sociodemographic data of the sample of dependent people and their informal caregivers (mean  $\pm$  SD) or  $n$  (%)

| Variables                                      | Dependent people  | Informal caregivers |
|--|-------------------|---------------------|
| Number   | 296               | 153                 |
| Age (years)                                    | 74.6 $\pm$ 15.2   | 62.0 $\pm$ 16.1     |
| Sex distribution                               |                   |                     |
| Women  | 218 (73.6)        | 96 (62.7)           |
| Men  | 78 (26.4)         | 57 (37.3)           |
| Marital status                                 |                   |                     |
| Single   | 51 (17.2)         | –                   |
| Married  | 92 (31.1)         | –                   |
| Separated                                      | 15 (5.1)          | –                   |
| Divorced                                       | 7 (2.4)           | –                   |
| Widow/er                                       | 131 (44.2)        | –                   |
| Education status                               |                   |                     |
| No education                                   | 236 (79.7)        | 23 (15.0)           |
| Low  | 47 (15.9)         | 103 (67.3)          |
| Middle or high                                 | 13 (4.4)          | 27 (17.6)           |
| Financial status (monthly income in Euros per) |                   |                     |
| Family unit                                    | 587.4 $\pm$ 293.2 | –                   |
| Dependent person                               | 434.9 $\pm$ 224.4 | –                   |
| Informal caregiver                             |                   |                     |
| Yes  | 153 (51.7)        | –                   |
| No   | 143 (48.3)        | –                   |
| Employment status                              |                   |                     |
| Working  | –                 | 27 (17.6)           |
| Not working                                    | –                 | 126 (82.4)          |

Sociodemographic characteristics. (b) Functional capacity for the basic activities of daily living (BADL) assessed using the Barthel Index (BI) (Mahoney and Barthel, 1965): from 0 (dependent) to 100 (independent), and the instrumental activities of daily living (IADL) index (Lawton and Brody, 1969): from 0 (maximum dependence) to 8 points (total independence), respectively. Both instruments also make it possible to collect the average number of BIADL with dependency. (c) Mental impairment by means of the Short Portable Mental Status Questionnaire (SPMSQ) (Pfeiffer, 1975), where the mental status is normal (0–2 errors) or there is the presence of a slight (3–4 errors), moderate (4–7 errors), or serious mental impairment (8–10 errors). (d) Health status, concretely currently diagnosed diseases following the classification of the "International Statistical Classification of Diseases and Related Health Problems, 10th Revision, version 2003" (ICD 10) (WHO, 2003) and the health status perceived in the last 12 months: from very bad (1) to very good (5). (e) Sociofamily situation by means of the Sociofamily Assessment Scale (SAS) (Díaz et al., 1994; Cabrera et al., 1999) whose total score reports whether the social situation is good-acceptable (5–9), is at risk (10–14), or is problematic ( $\geq 15$ ), and the APGAR Family Questionnaire (Smilkstein, 1978; Smilkstein et al., 1982), in which the higher the total score, between 0 and 10, the greater the person's degree of satisfaction with the family functioning.

The variables evaluated for the main caregivers were (a) sociodemographic profile; (b) the characteristics of their care: the sufficiency of the care, the periodicity and the time devoted to the care by means of how frequently they provide their care and the time which they devote to this task per week, the type of family or social link with the dependent person, the help from others in his/her caregiver task, the frequency in which this person helps him/her, the amount of time this involves each week, and if he/she considers this help to be sufficient; and (c) their burden using Zarit Burden Interview (ZBI) (Zarit et al., 1980, 1985; Zarit and Zarit, 1983) validated and adapted to our setting by Martín et al. (1996). The total score, ranging from 0 to 88, 22 items with five answers

(0 to 4), amounts to a total burden score where a high score is equivalent to a high burden level. A previous study carried out with this sample of caregivers has shown that this scale is comprised by three factors, which are: negative consequences of caregiving (Factor 1), feelings of incompetence (Factor 2) and negative relationships (Factor 3) (Carretero et al., 2007). The minimum score for the three factors is 0 (never) and the maximum scores are 48, 20 and 12 (very often), respectively.

### 2.3. Statistical analysis

Descriptive analysis was performed to establish the socio-demographic profile of the samples, the health profile, and the sociofamily situation of dependent senior citizens and the characteristics of the informal care. To study the existence of bivariate relations between the overall burden and each one of the three ZBI factors and, on one hand, the care and informal caregiver variables and on the other hand with the health and sociofamily variables of the dependent person, the correlation analysis of Pearson was used for continuous variables and for categorical variables the decision was made to use parametrical (ANOVA and Tukey test) or non-parametrical (the Mann–Whitney and the Wilcoxon) tests based on the size and the balance of the sample size of each comparison group. Multivariate analyses were carried out separately for both groups of variables (corresponding to dependent people and care context, respectively) to establish the predictor variables of the burden by means of the linear regression analysis by steps towards the front. Previously, to proceed to these statistical calculations, the significance criteria of the methods was assumed by steps of regression analysis, thus only considering the variables which had been significantly associated with the criteria at the bivariate level.

## 3. Results

### 3.1. Health and sociofamily profile of the dependent senior citizens

In relation to the health indicators measured, the results indicate that dependent senior citizens of this study show a slight degree of dependency in order to perform the BADL ( $\bar{x} = 61.8 \pm 37.3$  ( $\pm$ SD)); a serious dependency on others to carry out the IADL ( $\bar{x} = 3.3 \pm 2.8$ ), with an average of  $4.7 \pm 3.9$  BADL and  $3.3 \pm 2.8$  IADL with dependency, and they essentially suffer (Table 2) from diseases of the circulatory system (28.3%) and the musculoskeletal and connective tissue (16.2%) with an average number of diseases diagnosed per person equal to  $3.1 \pm 1.6$  and a health status perceived in the last year as regular (45.3%) or bad (26.7%), and they show minor mental impairment (average =  $3.8 \pm 3.3$ ).

The analysis of the sociofamily situation indicates that dependent senior citizens show a certain risk to develop a problem in the sociofamily scope ( $\bar{x} = 13.2 \pm 2.8$ ) which appears to be primarily due, as the contents of the items of the scale detailed in Table 3 indicate, to their low incomes, the failure to adequately adapt their residences, and their need for support from the social network. The results of the APGAR family questionnaire indicate the tendency towards a family normo-functionality of the dependent senior citizens interviewed ( $\bar{x} = 6.7 \pm 3.5$ ).

### 3.2. Characteristics of informal care

As shown in Table 4, the informal caregiver is usually the spouse (40.5%) or the son/daughter (28.8%) of the dependent person, who provides the daily and continual care (86.9%) during more than 28 h a week (85.0%) and who assesses that his/her care covers only part of the needs of the dependent person (42.5%) or is completely

**Table 2**

Health status and diagnosed diseases of the sample of dependent persons: *n* (%)

| Variables                                       | Occurrence  |
|---|-------------|
| Total number                                    | 296         |
| Health status in the last 12 months             |             |
| Very bad  | 29 (9.8)    |
| Bad   | 79 (26.7)   |
| Regular   | 134 (45.3)  |
| Good  | 50 (16.9)   |
| Very good                                       | 4 (1.3)     |
| Total   | 296 (100.0) |
| Diagnosed diseases in the field of <sup>a</sup> |             |
| Circulatory system                              | 176 (28.3)  |
| Musculoskeletal and connective tissue           | 101 (16.2)  |
| Endocrine, nutritional, and metabolic           | 69 (11.1)   |
| Eye and visual deficiency                       | 69 (11.1)   |
| Mental and behavioral disorders                 | 68 (6.8)    |
| Nervous system                                  | 41 (6.6)    |
| Hearing deficiency                              | 29 (4.7)    |
| Respiratory system                              | 29 (4.7)    |
| Blood and blood forming organs                  | 26 (4.2)    |
| Genitourinary system                            | 14 (2.2)    |
| Total   | 622 (100.0) |

<sup>a</sup> Note: The same person can present several diagnoses.

insufficient (29.4%). In the majority of cases, the informal caregiver also receives help from persons of his/her sociofamily scope (85.6%) in order to take care of the dependent senior citizen—in general from his/her daughters (21.4%) or the HHS (18.3%). This help from others is generally habitual (65.6%) although in 41.2% of the cases, this help does not exceed 7 h/week. In fact, 80.9% of the informal caregivers who receive help consider it to be insufficient.

**Table 3**

Outcomes of the SAS (per items): *n* (%)

| Items  | Occurrence |
|--|------------|
| Total number   | 296        |
| In the family  |            |
| Lives with the family without conflict                           | 126 (42.6) |
| Lives with the family with some conflicts                        | 17 (5.7)   |
| Lives with spouse of similar age                                 | 25 (8.4)   |
| Lives alone with family and neighbor relationships               | 121 (40.9) |
| Lives alone without family and neighbor relationships            | 7 (2.4)    |
| Family income level  |            |
| More than 1.5 times the minimum salary                           | 22 (7.4)   |
| Until 1.5 times the minimum salary                               | 51 (17.2)  |
| Until the minimum contribution pension                           | 121 (40.9) |
| LISMI <sup>a</sup> , FAS <sup>b</sup> , non-contribution pension | 90 (30.4)  |
| Without income or income is below the above                      | 12 (4.1)   |
| Residence  |            |
| Adequate for his/her needs                                       | 125 (42.2) |
| Existence of architectural barriers                              | 142 (48.0) |
| Absence of basic comfort   | 17 (5.7)   |
| Salubriousness and hygiene problems                              | 11 (3.7)   |
| Uninhabitable residence  | 1 (0.4)    |
| Social relationships   |            |
| Normal relationships   | 79 (26.7)  |
| Only with family and neighbors                                   | 90 (30.4)  |
| Only with family   | 41 (13.9)  |
| Does not leave residence, receives visits                        | 59 (19.9)  |
| Does not leave residence and does not receive visits             | 27 (9.1)   |
| Support from social network                                      |            |
| Does not require support   | 62 (20.9)  |
| With neighbor support  | 39 (13.2)  |
| Social voluntary work  | 4 (1.4)    |
| In-HHS   | 121 (40.9) |
| Requires permanent care  | 70 (23.6)  |

<sup>a</sup> LISMI: Disabled Integration Law allowance.

<sup>b</sup> FAS: Benefit of the Social Care Fund.

**Table 4**  
Characteristics of care context: *n* (%)

| Variables  | Occurrence |
|--|------------|
| Total number   | 153        |
| The informal caregiver is  |            |
| Son/daughter   | 44 (28.8)  |
| Spouse   | 62 (40.5)  |
| Other family relatives <sup>a</sup>  | 38 (24.8)  |
| Friend or neighbor   | 3 (2.0)    |
| Contracted person  | 2 (1.3)    |
| Other cases  | 4 (2.6)    |
| Periodicity of the care  |            |
| Vacation periods   | 0 (0.0)    |
| Weekends   | 0 (0.0)    |
| Daily but regular  | 16 (10.5)  |
| Daily but continual  | 133 (86.9) |
| Other  | 4 (2.6)    |
| Weekly time which the care occupies  |            |
| Less than 7 h/week   | 2 (1.3)    |
| Between 7 and 14 h/week  | 11 (7.2)   |
| Between 14 and 21 h/week   | 3 (1.9)    |
| Between 21 and 28 h/week   | 7 (4.6)    |
| More than 28 h/week  | 130 (85.0) |
| The attention and care provided in the informal scope is                     |            |
| Totally insufficient   | 45 (29.4)  |
| Covers only one part of the need   | 65 (42.5)  |
| Totally covers the need  | 43 (28.1)  |
| The primary caregiver receives help from some person                         |            |
| Yes  | 131 (85.6) |
| No   | 22 (13.4)  |
| Persons that help the caregiver in his/her care task <sup>b</sup>            |            |
| Spouse   | 18 (13.7)  |
| Son  | 18 (12.9)  |
| Daughter   | 28 (21.4)  |
| Father   | 1 (0.8)    |
| Mother   | 4 (3.1)    |
| Sister   | 12 (9.2)   |
| Brother  | 6 (4.6)    |
| Daughter-in-law  | 3 (2.3)    |
| Brother-in-law/sister-in-law   | 2 (1.5)    |
| Other family relatives   | 5 (3.8)    |
| Friend or neighbor   | 2 (1.5)    |
| Contracted person  | 6 (4.6)    |
| Others   | 3 (2.3)    |
| Only the HHS   | 24 (18.3)  |
| Frequency in which other persons help the caregiver in the care <sup>b</sup> |            |
| Habitual   | 86 (65.6)  |
| Occasional   | 45 (34.4)  |
| Amount of time of the weekly help received by the caregiver <sup>b</sup>     |            |
| Less than 7 h/week   | 54 (41.2)  |
| Between 7 and 14 h/week  | 29 (22.1)  |
| Between 14 and 21 h/week   | 14 (10.7)  |
| Between 21 and 28 h/week   | 4 (3.1)    |
| More than 28 h/week  | 30 (22.9)  |
| The caregiver considers that the help received is sufficient <sup>b</sup>    |            |
| Yes  | 25 (19.1)  |
| No   | 106 (80.9) |

<sup>a</sup> Other family relatives include: brothers, sisters, parents, aunts, uncles, grandchildren, brother/sister in laws, and other types of family relatives of the dependent person.

<sup>b</sup> The sample is equal to 131 since it only includes the caregivers which receive help from others.

### 3.3. Variables associated with the informal caregivers' burden

#### 3.3.1. Relation between the caregiver burden and the variables of the dependent senior citizens

The results (Table 5) indicate that there are significant correlations between the four indicators of functional capacity used, the mental impairment, the health status and the total score

of the caregiver burden and the Factors 1 and 2, in the sense that, the greater the impairment of the functional capacity of the care recipient, the more serious the mental impairment and the worse the health status of the dependent person, the greater the burden of his/her caregiver, the negative care consequences and feelings of incompetence to continue in the caregiving relationship. The number of diagnosed diseases solely reaches a significant statistical correlation with the feelings of incompetence factor, indicating that the more diseases the dependent person suffers, the more incompetent the caregiver feels in the provision of the care. Finally the presence of sociofamily problems increase the overall burden of the caregiver, the negative repercussions of the care, the perception by the caregiver of ineptitude to continue with the caregiver task and the emergence of negative relationships with the care recipient.

The results of the multivariate analysis (Table 6) indicate that three variables predict the overall burden of the caregiver in a joint way: the greater level of dependency to perform the IADL, the presence of social and family problems, and the perceived bad health status. This equation predicts 37% variance of the caregiver burden; the high level of dependency for the IADL and the perceived bad health status jointly determine in a significant way the presence of negative consequences of care for the caregiver. This regression equation explaining 37% variance of this factor; and the presence of social and family problems, the bad health status, the dependency to perform the IADL and the greater number of diagnosed diseases of the dependent person predict the feelings of incompetence in an overall way to continue with the care tasks of the caregiver. This equation explains the 26% variance of this factor.

#### 3.3.2. Relation between the caregiver burden and the variables of the care context

The results of the bivariate analysis between the caregiver burden and the characteristics of care indicate that the greater weekly time invested by the informal caregiver in the provision of care to the dependent senior citizen, the greater the overall burden ( $r = 0.175$ ;  $p = 0.031$ ) and negative consequences of care ( $r = 0.179$ ;  $p = 0.027$ ). Moreover, the caregivers statistically report different levels of burden based on his/her own perception of the sufficiency of the care which they supply. The a posteriori analysis indicates that the caregivers that provide sufficient as well as insufficient care experience a greater level of overall burden ( $p = 0.031$ ) and feelings of incompetence ( $p = 0.016$ ) in a significant way, than those that cover only one part of the care need; the caregivers that provide care in a sufficient way to the dependent person report a greater number of negative consequences as opposed to those who only attend one part of the help need ( $p = 0.032$ ); and the negative relationships with the care recipient are lived in a greater degree among caregivers who provide total coverage of the care need of the dependent person as opposed to the other two groups of caregivers ( $p = 0.004$  and  $p = 0.0001$ , respectively).

The Tukey test reveals that dependent older people's spouses experience feelings of incompetence to continue providing the care with greater frequency than children ( $F = 4.88$ ;  $p = 0.009$ ). Likewise, the caregivers who do not receive support from others in their provision of the care tasks significantly report greater negative feelings towards the dependent person than those that obtain help from others ( $U = 900.5$ ;  $p = 0.002$ ); among the caregivers that receive help from others to provide the care, those caregivers that receive help from other persons solely in an occasional or regular way experience a greater total burden ( $F = 3.96$ ;  $p = 0.049$ ), plus negative consequences of care ( $F = 4.24$ ;  $p = 0.042$ ) and greater negative feelings toward the dependent person ( $F = 10.57$ ;  $p = 0.001$ ) than the caregivers who commonly



**Table 5**  
Analysis of Pearson correlation of the variables of the dependent person with the caregiver burden,  $n = 153$

|                               | 1                | 2       | 3       | 4       | 5       | 6        | 7      | 8        | 9       | 10     | 11      | 12      | 13 |
|-------------------------------|------------------|---------|---------|---------|---------|----------|--------|----------|---------|--------|---------|---------|----|
| 1. TS burden                  | <i>r</i> 1       |         |         |         |         |          |        |          |         |        |         |         |    |
|                               | <i>p</i>         |         |         |         |         |          |        |          |         |        |         |         |    |
| 2. TS BI                      | <i>r</i> -0.43** | 1       |         |         |         |          |        |          |         |        |         |         |    |
|                               | <i>p</i> <0.0001 |         |         |         |         |          |        |          |         |        |         |         |    |
| 3. TN of BADL with dependency | <i>r</i> 0.48**  | -0.95** | 1       |         |         |          |        |          |         |        |         |         |    |
|                               | <i>p</i> <0.0001 | <0.0001 |         |         |         |          |        |          |         |        |         |         |    |
| 4. TS LI                      | <i>r</i> -0.55** | 0.82**  | -0.84** | 1       |         |          |        |          |         |        |         |         |    |
|                               | <i>p</i> <0.0001 | <0.0001 | <0.0001 |         |         |          |        |          |         |        |         |         |    |
| 5. TN of IADL with dependency | <i>r</i> 0.55**  | -0.82** | 0.84**  | -0.99** | 1       |          |        |          |         |        |         |         |    |
|                               | <i>p</i> <0.0001 | <0.0001 | <0.0001 | <0.0001 |         |          |        |          |         |        |         |         |    |
| 6. TS SPMSQ                   | <i>r</i> 0.35**  | -0.64** | 0.58**  | -0.60** | 0.60**  | 1        |        |          |         |        |         |         |    |
|                               | <i>p</i> <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |          |        |          |         |        |         |         |    |
| 7. TN of diagnosed diseases   | <i>r</i> 0.13    | -0.09   | 0.13    | -0.06   | 0.06    | 0.056    | 1      |          |         |        |         |         |    |
|                               | <i>p</i> <0.101  | <0.271  | <0.108  | <0.468  | <0.444  | <0.493   |        |          |         |        |         |         |    |
| 8. Health status              | <i>r</i> -0.36** | 0.41**  | -0.37** | 0.37**  | -0.37** | -0.360** | -0.104 | 1        |         |        |         |         |    |
|                               | <i>p</i> <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001  | <0.202 |          |         |        |         |         |    |
| 9. TS SAS                     | <i>r</i> 0.34**  | -0.34** | 0.34**  | -0.29** | 0.29**  | 0.335**  | 0.097  | -0.325** | 1       |        |         |         |    |
|                               | <i>p</i> <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001  | <0.231 | <0.0000  |         |        |         |         |    |
| 10. TS family APGAR           | <i>r</i> 0.02    | -0.01   | -0.00   | -0.01   | 0.03    | -0.137   | 0.119  | -0.064   | -0.096  | 1      |         |         |    |
|                               | <i>p</i> <0.819  | <0.936  | <0.976  | <0.872  | <0.778  | <0.126   | <0.180 | <0.472   | <0.277  |        |         |         |    |
| 11. ZBI F1                    | <i>r</i> 0.96**  | -0.45** | 0.47**  | -0.57** | 0.57**  | 0.375**  | 0.086  | -0.344** | 0.292** | 0.027  | 1       |         |    |
|                               | <i>p</i> <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001  | <0.289 | <0.0001  | <0.0001 | <0.762 |         |         |    |
| 12. ZBI F2                    | <i>r</i> 0.67**  | -0.28** | 0.32**  | -0.31** | 0.30**  | 0.201*   | 0.205* | -0.336** | 0.441** | -0.023 | 0.482** | 1       |    |
|                               | <i>p</i> <0.0001 | <0.001  | <0.0001 | <0.0001 | <0.0001 | <0.014   | <0.011 | <0.0001  | <0.0001 | <0.800 | <0.0001 |         |    |
| 13. ZBI F3                    | <i>r</i> 0.59**  | -0.06   | 0.14    | -0.13   | 0.13    | 0.112    | 0.067  | -0.063   | 0.200*  | -0.161 | 0.490** | 0.368** | 1  |
|                               | <i>p</i> <0.0001 | <0.442  | <0.077  | <0.103  | <0.100  | <0.171   | <0.409 | <0.440   | <0.013  | <0.068 | <0.0001 | <0.0001 |    |

Notes. TS: total score; TN: total number; LI: Lawton and Brody Index; F1 = Factor 1; F2 = Factor 2; F3 = Factor 3. \* and \*\* indicate significant bilateral correlations at  $p < 0.05$  and  $p < 0.01$  level, respectively.

share the care task with another person. Finally, the older the age of the caregiver, the greater is the probability that he/she experiences little competence to continue carrying out his/her care tasks with the dependent person ( $r = 0.233$ ;  $p = 0.004$ ); women are the persons who report the highest levels of overall burden ( $F = 8.74$ ;  $p = 0.004$ ) and have the highest probability to suffer the negative repercussions of care ( $F = 13.29$ ;  $p = 0.0001$ ); the caregivers without education feel statistically higher levels of incompetence to continue with the care tasks for the attended subject, than caregivers with some level of education (Chi-square = 7.09;  $p = 0.029$ ).

Prior to carrying out the linear regression analysis, the categorical variables that showed statistical significance in the bivariate analysis were converted to dummy variables. As can be observed in Table 7, the regression analysis performed indicate that women and a high number of hours providing care determine in a significant and joint way a greater overall burden of the caregiver as well as negative consequences of the care. The models explain the 7% and 10% variance, respectively. In relation to the second factor of the burden instrument, the low education level, and being a spouse determine in a significant and joint way the

feelings of incompetence of the caregiver about his/her ability to continue providing care. This equation explained the 6% variance. Finally, for the specific case of negative relationships with the dependent person, not receiving help from other persons and completely covering the care needs determine the existence of these relationships in a significant and joint way. This equation explains the 14% variance.

#### 4. Discussion

The main objective of this investigation has been focused on analyzing the variables associated with the informal caregivers' burdens of dependent senior citizens in a Spanish Autonomous Region (Valencian Community). Specifically, this work has studied the variables in reference to the characteristics of the provision of care, the caregiver, and the dependent person on the informal caregiver's burden in their relation with the burden to plan future interventions from psychology.

In the first place, in relation to the variables associated to the dependent person (care demands), the results indicate that the

**Table 6**  
Linear regression analysis: variables of the dependent person and the caregiver burden

| Parameters               | TS burden |       |         | Factor 1 |       |         | Factor 2 |       |         |
|--------------------------|-----------|-------|---------|----------|-------|---------|----------|-------|---------|
| $R^2$                    | 0.38      |       |         | 0.38     |       |         | 0.28     |       |         |
| Corrected $R^2$          | 0.37      |       |         | 0.37     |       |         | 0.26     |       |         |
| $F$                      | 30.15     |       |         | 45.35    |       |         | 14.28    |       |         |
| $p$                      | <0.0001   |       |         | <0.0001  |       |         | <0.0001  |       |         |
|                          | $\beta$   | $t$   | $p$     | $\beta$  | $t$   | $p$     | $\beta$  | $t$   | $p$     |
| 1. Constant              | 40.50     | 5.48  | <0.0001 | 37.63    | 15.04 | <0.0001 | 1.35     | 0.65  | <0.517  |
| 2. TS, LI                | -0.47     | -6.59 | <0.0001 | -0.54    | -7.78 | <0.0001 | -0.16    | -2.04 | <0.044  |
| 3. TS, SAS               | 0.15      | 2.15  | <0.034  |          |       |         | 0.32     | 4.22  | <0.0001 |
| 4. Health status         | -0.15     | -2.04 | <0.043  | -0.15    | -2.20 | <0.029  | -0.16    | -2.09 | <0.039  |
| 5. TN diagnosed diseases |           |       |         |          |       |         | <0.14    | 1.99  | 0.049   |

Note: In cases of the TS burden and Factor 1 the variables were presented in the order of entry in the equation, while in case of Factor 2 the sequence was 1, 3, 4, 2, and 5.

**Table 7**Results of linear regression analysis: TS burden and variables of care context:  $n = 153$ 

| Parameters             | TS burden |        |         | Factor 1 |         |         |
|------------------------|-----------|--------|---------|----------|---------|---------|
|                        | $\beta$   | $t$    | $p$     | $\beta$  | $t$     | $p$     |
| $R^2$                  | 0.08      |        |         | 0.11     |         |         |
| Corrected $R^2$        | 0.07      |        |         | 0.10     |         |         |
| $F$                    | 6.80      |        |         | 9.29     |         |         |
| $p$                    | <0.001    |        |         | <0.0001  |         |         |
| 1. Constant            | 18.85     | 2.55   | <0.012  | 10.28    | 1.87    | <0.064  |
| 2. Gender of caregiver | 0.23      | 2.93   | <0.004  | 0.28     | 3.63    | <0.0001 |
| 3. Weekly time of care | 0.17      | 2.15   | <0.033  | 0.17     | 2.22    | <0.028  |
| Parameters             | Factor 2  |        |         | Factor 3 |         |         |
|                        | $\beta$   | $t$    | $p$     | $\beta$  | $t$     | $p$     |
| $R^2$                  |           | 0.08   |         |          | 0.16    |         |
| Corrected $R^2$        |           | 0.06   |         |          | 0.14    |         |
| $F$                    |           | 5.80   |         |          | 13.77   |         |
| $p$                    |           | <0.004 |         |          | <0.0001 |         |
| 1. Constant            | 5.77      | 11.88  | <0.0001 | 0.98     | 5.06    | <0.0001 |
| 2. Educational level   | 0.18      | 2.12   | <0.035  |          |         |         |
| Help from other people |           |        |         | 0.25     | 3.13    | <0.002  |
| 3. Family link         | 0.17      | 2.03   | <0.044  |          |         |         |
| Sufficiency of care    |           |        |         | 0.22     | 2.78    | <0.006  |

Note: The variables were presented in the order of entry in the equation.

dependency for the daily activities appears as a major generator factor of burden: the high degree of dependency for the BADL as well as mental impairment are associated with greater levels of burden. On the contrary to studies present in the bibliography which have defended the supremacy of mental problems on the functional capacity (Gaugler et al., 2000; Mockus Parks and Novielli, 2000), we defend that both are important determining factors of the overall burden of the caregiver as well as the perception of the negative consequences of care and the development of feelings of impotence towards the performance of the caregiver task. Furthermore, the accumulation of daily activities with dependency and the bad health status both related with a greater physical decay appear in this study associated with a greater overall load, greater negative repercussions of care and greater feelings of incompetence, equal to that indicated by other authors (Aneshensel et al., 1995; Gaugler et al., 2000; Grunfeld et al., 2004). Nevertheless, the greater number of diagnosed diseases appears associated solely to the greater feelings of incompetence to continue with the care; thus it appears that this variable has an influence on the informal caregiver making him/her feel even more overwhelmed and reaffirming his/her lack of capacity to continue with the care that a greater demand generates for him/her. Moreover, it has observed that the sociofamily situation of the dependent person has a negative repercussion on the caregiver in all the defined scopes of the burden. In any case, and taking into account the contents of the items of the scale used to evaluate this variable and the results obtained at the family functionality level, it is necessary to indicate that the factors of a socioeconomic type, plus that of family relationships are the factors that exacerbate the informal caregiver's feelings of burden. We launch a potential explanation in the line where the lack of economic resources of the dependent person, the non-availability of a suitable residence as well as their reduced social network can limit the resources of his/her primary caregiver. For example, the lack of economic resources of the care recipient can generate an economic burden on the caregiver; having already confirmed that the cost of his/her care has serious repercussions on the caregiver (NFH, 1997; FCA, 2003; Grunfeld et al., 2004).

On the other hand, among the sociodemographic variables of the caregiver, being female appears to be the sole determining factor of the greater overall burden of the caregiver as well as the perception of negative consequences. This relation has also been detected by other authors (Chappell and Reid, 2002; Navaie-Waliser et al., 2002). Nevertheless, the gender of the caregiver will not have an influence on his/her feelings of incompetence or on his/her negative relationships with the care recipient, which maintains the idea that the care represents an opportunity cost for women. In fact, the studies show how women are the ones who in a greater degree are subjected to the negative changes in their job condition and the possibility of access to a social support network, negatively marking their self-esteem, personal development, their economic capacity and their independence (Mears, 1996; FCA, 2003). Furthermore, contrary to the results detected in other works which have related a young age with the burden (Decima Research Inc., 2002; IPA, 2002), this study indicates that the older the age of the caregivers, the higher are their feelings of a lack of a sufficient competence to continue providing the care. The low education level of the caregivers shows this same relation. The job situation is also not associated with the caregiver burden, unlike the data from other studies (Scharlach and Boyd, 1989; Bass, 2002). This inconsistent result is probably due to the low percentage of caregivers of the sample that have to combine the two tasks. Consequently, it is a topic, which remains open where its confirmation is expected in successive works.

The analysis of the variables related with the specific characteristics of the care provision, indicate, the same as that affirmed by Bass (2002), that the greater time and responsibility invested in the provision of the care, evaluated in our study by means of the variables of a greater weekly time and completely sufficient coverage of the care, determine the overall burden of the informal caregiver. Both variables have also appeared as predictors of the impairment of the caregivers' mental health (Cannuscio et al., 2002). In relation to the three dimensions of the burden, it is necessary to emphasize that the greater weekly time invested in the provision of care is only associated with the greater frequency of negative repercussions of the care task, thus the greater time investment in the care can increase the perceptions of the lack of time for oneself, for leisure activities, or for social relations, repeatedly associated with a greater burden and with the loss of social support (Chappell and Reid, 2002).

Another of the studied variables which has demonstrated its relation with the caregiver load was the type of link which joins the care provider and the dependent person. In accordance with other works (Brodaty and Hadzi-Pavlovic, 1990; IPA, 2002), we have found that it is the spouse as opposed to the children who is the informal caregiver who experiences the biggest burden; although in our specific case, this association only appears linked to greater feelings of incompetence to continue providing the care. Thus, this result would be in accordance with the affirmations of Gaugler and his group (Cossette and Levesque, 1993; Stommel et al., 1993; Zarit, 1996, 1998; Gaugler et al., 2000) who have defended that the greater emotional investment and physical closeness of the spouses explains their greater burden, whose negative consequences can be perpetuated affecting their capacity to continue providing suitable long-term in-home care.

On the other hand, the informal, instrumental-social support is not effective to reduce the levels of overall burden; these results have been confirmed in other studies (Zarit, 1996, 1998). Nonetheless, it does appear to be a major determining factor in the appearance of negative feelings in relation to those caregivers that do not receive help from other persons in their care task who experience these emotions in a greater degree due to the care of the dependent senior citizen than those who are supported by others.

As evidenced by Zarit (1996, 1998), the social support area in its relation to the caregiver burden is complex, thus the positive influence of this dimension on the caregiver burden cannot be confirmed. According to the results obtained in this study, we can intuit that the importance of the relation between the informal social support received and the burden are focused on the frequency in which it is received. This investigation indicates that the eventuality of this help is associated with a greater overall burden, plus negative consequences and relationships. Equally, it has also been argued that the absence of this relationship can be due to the presence of family conflicts (Malonebeach and Zarit, 1995; Mockus Parks and Novielli, 2000).

Definitively, diverse variables in reference to the care context and the caregiver as well as the care recipient have shown major associations with different aspects of the burden experienced by the caregiver in our study. When these variables were analyzed from a multivariate perspective, on the one hand considering the characteristics of the care and the caregiver and on the other those in reference to the care demands, the results evidenced the greater relevance of the latter as opposed to the former, at the time of determining the levels of the informal caregiver's burden. In this sense, the variables of the dependent person which predict the burden of the caregiver in a joint way manage to explain the approximately 40% variance. Specifically, the variables which are associated to a greater overall burden and/or several of their components are: a greater dependency for the performance of the IADL, a worse health status, a greater number of diagnosed diseases, and the presence of sociofamily problems. Thus, the relevance of the dependency to carry out the BADL as well as the mental impairment to determine the levels of the caregiver burden appeared at a bivariate level, they lose their importance as predictors of burden if there are other characteristics associated to the health status, the presence of socioeconomic problems and the dependency to perform the IADL. It is reiterated here the primary importance of the problems in the functional capacity of the dependent person as opposed to the mental capacity in the determination of the informal caregiver burden, compared with that indicated by other authors (Zarit, 1992; Dunkin and Anderson-Hanley, 1998; Hawranik and Strain, 2000).

In relation to the care and caregiver variables, the results indicate that the group of variables which predict the caregiver burden in a multivariate way do not manage to further explain the 14% variance. Specifically, the characteristics associated to a greater overall burden and/or several of their components are: being a female, spouse of the care recipient, not having an education, devoting a lot of time to care tasks, covering the entire amount of the needs of the dependent person and not receiving help from other people or receiving it on an infrequent basis. Finally, we indicate that the major weight of the variables associated to the dependent person and the care needs, in the determination of the burden experienced by the caregiver, detected in our study, make evident the importance of the denominated primary objective stress factors in the Stress Process Model of Pearlin (Pearlin et al., 1989, 1990; Pearlin, 1991).

## 5. Conclusions

The exhaustive analysis which we have performed until now allows us to extract a series of conclusions which are relevant at the time of proposing intervention strategies destined to relieve the informal caregiver's burden: the variables which appear to determine the caregiver burden in a greater degree in a joint way are those associated to the specific disease and social situation of the dependent person; the greater frequency and intense attention invested in the care determines the high levels of burden; the lack

of help from others and especially the low frequency in which it is received is important at the time of suffering high levels of burden; and the feelings of incompetence are important in order to determine the burden levels and are associated to old age and the lack of education.

The results of this study make it possible to propose a series of recommendations for the planning of optimum interventions addressed to the specific problems to relieve the informal caregivers' burden of dependent senior citizens, which can help the Spanish Government to make the suitable decisions. Specifically, the study proposes: (1) Psychological support by means of techniques such as ventilation of emotions, cognitive therapy, training in relaxation, etc. in order to relieve the emotional discomfort and the heavy burden as well as educational support above all focused on the incorporation of cognitive-behavioral techniques to modify the irrational thoughts of the caregivers (for example "I must not request help from my family relatives, since they have their own lives and problems") or behavioral techniques in order to know how to request help. (2) To inform and train the informal caregivers about the dependency and physical decay by means of training in coping strategies such as the redefinition of the disease or to accept the dependency as a process associated to aging or to the disease of the patient. (3) Training in skills for the assistance and care directed to senior citizens and with a low education level, which increases their perception of competence in the care to a dependent senior citizen and thus prevents the abandonment of the care. In general, these specific psychosocial components have already demonstrated their effectiveness on the informal caregivers' burden in oncological patients and those with insanity (Patterson et al., 2000; Zarit and Leitsch, 2001; Gallagher-Thompson et al., 2003; Haley, 2003; Balla et al., 2007). (4) The psychological and educational support must be included in the HHS to increase their effectiveness in the relief of the burden as other authors in more specific fields have established such as the informal caregivers of patients with dementia or hemodialysis (Brodaty, 1992; Gallart and Connell, 1997; Belasco and Sesso, 2002).

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