Gender differences regarding informal caregivers of older people

This is the accepted version of the article:
Del-Pino-Casado R, Frias-Osuna A, Palomino-Moral PA, Martinez-Riera JR. Gender Differences Regarding Informal Caregivers of Older People. J Nurs Scholarsh. 2012; 44(4):349-57.

doi: 10.1111/j.1547-5069.2012.01477.x

ABSTRACT

Purpose: The aim of this study was to examine differences related to gender among informal caregivers serving older disabled individuals.

Design and methods: A secondary analysis of the most recent national cross-sectional survey, wich was conducted in Spain on informal caregivers who served older individuals (65 years or more), was conducted in 2011 (*N* = 1,272, probability sample). The relationships between gender and intensity of care (amount and type of care provided), duration of caregiving, subjective burden, and satisfaction with caregiving were analysed by bivariate and multivariate procedures.

Findings: No statistically significant gender differences were found with regard to the intensity of care, the duration of caregiving or satisfaction; however, subjective burden was found to differ between men and women, and this difference was statistically significant (Odds Ratio = 1. 98; $p = 0.012$).

Conclusions: Because this study was conducted in Spain, a country with strong patriarchal norms regarding to caregiving and familism, whereas gender differences in intensity of care have been reported in countries with low familism, we conclude that cultural diversity can influence the relationship between gender and intensity of care. In the other hand, our study increases the evidence in support of there being gender-based differences in subjective burden among family caregivers serving older people in Western industrial countries. Finally, the results of our study support the hypothesis that sources of satisfaction are more strongly related to the caregiver's personal context and characteristics than to his or her gender.

Clinical relevance: These findings support the following recommendations regarding nursing interventions: (1) nurses should take into account specific cultural patterns in caregiving to improve their understanding concerning the relationships between gender and intensity of care, and (2) gender should be taken into account in interventions that are tailored towards addressing subjective burden.

KEYWORDS

Gender differences, objective burden, subjective burden, caregiving, older people, nursing.

In industrialised countries, increases in life expectancy lead to greater levels of disability in older individuals and increase the demand for long-term care (Organisation for Economic Cooperation and Development [OECD], 2009). In these countries, the bulk of the care for older people is provided by the family and, more specifically, by women in the family (although there are marked differences in the latter across countries) (OECD, 2005). Furthermore, in countries with fewer gender differences in informal caregivers (e.g., the USA, which has a female to male ratio of 1.5 : 1), these differences increase only when highly dedicated caregivers are the focus of the study (National Alliance for Caregiving and AARP, 2004).

Theoretical models, which attempt to explain the stress related to caregiving, are often based on the transactional stress theory proposed by Lazarus and Folkman (1984). Of these models, the most commonly used is the Pearlin Stress Process Model (Pearlin, Mullan, Semple, & Skaff, 1990). Within this framework, the caregiver's subjective burden (otherwise referred to as caregiver burden) is defined as a caregiver's level of distress in several areas (caregiver health, psychological well-being, finances, social life, and the relationship between the caregiver and the recipient of care) as it relates to the caregiving situation (Zarit, Reever, & Bach-Peterson, 1980). Objective burden has been correlated with subjective burden (Pinquart & Sorensen, 2003a), and subjective burden has been correlated with anxiety (Cooper, Balamurali, & Livingston, 2007), depression (Pinquart & Sorensen, 2003a; Schoenmakers, Buntinx, & Delepeleire, 2010) and physical health (Carretero, Garces, Rodenas, & Sanjose, 2009).

Because providing informal care for a disabled older adult is stressful (Aneshensel, Pearlin, Mullan, Zarit, & Whitlatch, 1995) and can be detrimental to caregiver health (Pinquart & Sorensen, 2003b), the greater participation of women in informal care is a source of health inequality. In addition to this inequality (based on the greater exposure of women to health risks), women may also be at greater risk for the negative consequences of caregiving and may feel less satisfied with caregiving than men.

Several researchers have analysed gender differences in intensity of care, duration, and consequences of caregiving. In a systematic review and meta-analysis that integrated the results of

229 studies published from 1983 to June 2005, Pinquart and Sorensen (2006) found that women provided a greater amount of care and had higher levels of subjective burden and depression and lower levels of subjective well-being and physical health than men, whereas there were no gender differences in duration of caregiving. Vitaliano et al. (2003), Yee and Schulz (2000), and Miller and Cafasso (1992) presented similar findings; Vitaliano et al. (2003) conducted a systematic review and meta-analysis of studies published prior to 2001 and found evidence of poorer physical global health among female caregivers; Yee and Schulz (2000) conducted a narrative review of studies published from 1985 to 1998 and found higher levels of subjective burden in female caregivers, as well as higher levels of depressive symptomatology, anxiety, and general psychiatric symptomatology; regarding intensity of care, they found that women spent more time on caregiving than men. Miller and Cafasso (1992) conducted a systematic review and meta-analysis of studies published from 1980 to 1990 and found that women experienced higher levels of subjective burden than men.

Although these findings regarding gender differences in caregiving are relevant, they are not entirely convincing for several reasons: 1) Pinquart and Sorensen (2006) found a high degree of heterogeneity in their results, and the factors explaining this heterogeneity have not been analysed; 2) Miller and Cafasso (1992) and Vitaliano et al. (2003) conducted systematic reviews; however, the number of studies included was small; and 3) Yee and Schulz (2000) conducted a narrative review and encountered several studies with divergent results. In addition, all global effect sizes were less than 0.35 based on the results of the meta-analyses (Miller & Cafasso, 1992; Pinquart & Sorensen, 2006; Vitaliano, et al., 2003). Furthermore, European studies in general and Mediterranean studies in particular were underrepresented in these previous reviews regarding to gender difference in intensity of care, duration, and consequences of caregiving. Based on the results of several studies (Fokkema, Bekke, & Dykxtra, 2008; Jenson & Jacobzone, 2000; Mestheneos & Triantafillou, 2005), there is a Mediterranean model of informal care that is characterised by the following: (a) positive family attitudes regarding the care of older dependent relatives and, therefore, greater levels of family involvement in care (in terms of both coverage and services); (b) the belief in the obligation of women to provide care, which leads to higher rates of female participation in informal caregiving; (c) almost no participation of female caregivers in the labour market, and (d) lower levels of formal caretaking (also in terms of coverage and services), which is, to some extent, because of family attitudes towards caregiving. Thus, it is important to clarify whether findings from previous reviews are consistent with those in a Mediterranean context. In the present study, we sought to identify the relationship between gender and intensity of care, duration of caregiving and subjective burden in a Mediterranean setting and to clarify whether these relationships are identical or different from those in other regional contexts. The analysis from previous issues could support early detection and early intervention on negative consequences of caregiving.

Regarding satisfaction with caregiving, several studies (e.g., Kramer, 1997) have highlighted the need to analyse both positive and negative aspects of caregiving to better understand the caregiving process. In addition, some studies have shown that satisfaction is negatively related to subjective burden and depression (Pinquart & Sorensen, 2003a) and positively related to positive outcomes such as physical health (Billings, Folkman, Acree, & Moskowitz, 2000), mental well-being (Liew, et al., 2010), and positive affect (Wilson-Genderson, Pruchno, & Cartwright, 2009). Few studies have analysed gender-based differences in satisfaction with caregiving, and these have produced mixed results: some studies found evidence of less satisfaction among female caregivers (e.g., Kuuppelomaki, Sasaki, Yamada, Asakawa, & Shimanouchi, 2004), whereas others indicated a lack of gender differences (e.g., McKee, et al., 2009).Therefore, more studies are required on this issue to clarify the existence of gender differences. In the present study, we attempted to analyse the relationship between gender and satisfaction with the caregiving.

Basing on the previous reasoning, we tested the following hypotheses:

H1: There are gender differences in the intensity of care given by informal caregivers of older people.

H2: There are gender differences in duration of caregiving among informal caregivers of older people.

H3: There are gender differences in subjective burden among informal caregivers of older people.

H4: There are gender differences in satisfaction with caregiving among informal caregivers of older people.

We chose a significance level of 0.05 to reject the null and accept these hypotheses. Testing previous hypotheses, we can compare the situation of caregiving in a Mediterranean context with that in other contexts and enhance our knowledge about the caregiving process to develop interventions tailored to gender differences.

Methods

Design, Setting and Sample

Our study, which was conducted in 2011, consisted of a secondary analysis of data (Institute of Elderly and Social Services [IMSERSO], 2004b) from the most recent national cross-sectional survey about informal caregivers serving older individuals (65 years or older) (IMSERSO, 2005). The survey was developed by the Spanish government and was conducted using multistage sampling. The first stage consisted of stratified cluster sampling, whereby primary sampling units (municipalities) and secondary units (sections) were selected. In the second stage, individuals were recruited through random sampling (the original sample, *N* = 1,504, Table 1) to ensure that the sample was representative of Spanish households (precision: ± 2.5%, confidence level: 95%). The primary data were collected in 2004. Since that time, there have been no analyses of these data regarding the relationship between gender differences and caregiving. The primary data, which do not personally identify the caregivers, are available free on the Internet (IMSERSO, 2004b).

From the previous sample, we selected caregivers with no more than one recipient of care because caregivers who had more than one care recipient were only assessed regarding the care provided to the recipient who received more attention. Therefore, the inclusion of these caregivers would have created measurement bias regarding the intensity of the care provided. The resulting sample (the analysed sample, *N* = 1,272, Table 1) exhibited a precision of ± 2.7% and a confidence level of 95%. According to Peduzzi et al. (1996), this sample size allowed us to include up to 24 covariates in a logistic regression model, considering a minimum prevalence of the dependent variable of 20%. Distributions of caregiver age, caregiver gender, relationship to the recipient of care and primary caregiver status within the resulting sample were similar to those in the original sample (see Table 1).

Measures

Sociodemographic characteristics of caregivers. The data regarding caregiver gender (male / female), caregiver age (in years), the caregiver's relationship to the recipient of care (spouse, child, other relative or non-relative), whether the caregiver had primary caregiver status (yes / no), employment status (employed / not employed), and the duration of the caregiving relationship (in years) were collected using single questions.

Intensity of care. The intensity of the care provided was assessed based on various factors. The first factor assessed was the amount of care provided, which was measured using the Hours of Care Index (National Alliance for Caregiving, 2009). This index includes four intervals: up to 8 hours per week, between 9 and 20 hours per week, between 21 and 40 hours per week and over 40 hours per week. The second factor assessed was the type of care provided, and this was recorded as either instrumental activities of daily living (IADLs) only or activities of daily living (ADLs) with or without IADLs. The third factor assessed was the provision of a specific type of ADL care (yes / no). The ADLs assessed were feeding, bathing, dressing, incontinence, transferring, and ambulating. The fourth factor assessed was the number of ADLs for which assistance was provided (range of 0–6). The amount of care provided was assessed in the original sample using two questions that explored the number of days of care (every day, more than three times per week, once or twice per week, once or twice per month or infrequent care) and the average number of hours spent on caregiving each day (less than 1 hour, 1 to 2 hours, 3 to 5 hours, 6 to 8 hours, or more than 8 hours; if the number of hours exceeded 8 hours per day, the exact number of hours was recorded). We generated the previously mentioned Hours of Care Index based on the responses to these questions.

Caregiver subjective burden. In the original sample, there were two statements related to the concept of subjective burden ("I feel like I am trapped in a dead end" and "Caring for this person is an excessive burden on me") (IMSERSO, 2004a), and the responses to both statements were measured using a Likert scale ("strongly agree", "agree", "neither agree nor disagree", "disagree", or "strongly disagree"). We created a new variable from the two previous statements termed "subjective burden", for which there were two potential answers: yes (when the caregiver responded with "agree" or "strongly agree" to both previous statements) and no (other answers). The accuracy of this new variable was determined in a previous study (Del-Pino-Casado, Frias-Osuna, & Palomino-Moral, 2011) through analysis of the concordance between this new variable and a "gold standard", the Caregiver Strain Index (Robinson, 1983). This new variable yielded a high criterion validity with the Caregiver Strain Index (the area under the ROC curve was 0.855 [95% confidence interval -CI-: 0.787 – 0.923]).

Satisfaction with caregiving. Satisfaction with caregiving was assessed using a single Likert-type statement ("caring for this person gives me great satisfaction") (IMSERSO, 2004a). The responses were provided using a five-point Likert scale ("strongly agree", "agree", "neither agree nor disagree", "disagree", or "strongly disagree"). We consolidated the original five Likert options into three ("agree", "neither agree nor disagree" and "disagree"). The opinions of an expert panel, consisting of 17 subject matter experts, were used to determine the content validity according to the methods of Lawshe (1975). The expert panel consisted of both professors with significant experience in caregiving research (7) and case management nurses with at least three years of experience in attending caregivers (10), and the content validity ratio was 1. A re-test was performed after one month to measure the reliability of the statement using a weighted kappa coefficient with quadratic weights. The kappa coefficients for obligation and reciprocity were 0.87. According to Landis and Koch (1977), this level of agreement is considered to be almost perfect.

Data Analysis

Means and percentages were used for the descriptive analysis. The chi-square test and the Student's *t*-test for independent means (or Mann-Whitney's *U*-test when normality or homoscedasticity were not present) were employed for the bivariate analyses, and a logistic regression was used within the multivariate analysis to determine gender differences while controlling for the duration of caregiving and the intensity of care. There is a sufficiently high level of evidence to suggest that these variables are related to subjective burden (Pinquart & Sorensen, 2003a). A p value < 0.05 was used to determine statistical significance for the bivariate and multivariate analyses. Statistica 8.0 (StatSoft Inc., Tulsa, OK, USA) was used for the statistical analysis.

Results

Descriptive Data

The descriptive data regarding the sample population of caregivers are shown in Table 1 (see the analysed sample) and Table 2. The average caregiver age was 54.0 years (range 16 to 90), and most caregivers were the primary caregivers for their patients (86.2%). They were also mainly women (83.2%), and they tended to be the children of the elderly individuals for whom they were providing care (60.3%). The caregivers had been caring for these individuals for an average of 6.09 years, and most spent more than 40 hours per week caregiving (61.9%) and assisted with one or more ADLs (64.2%; average 3.35). Twenty-one per cent of caregivers experienced subjective burden.

Gender Differences in Intensity of Care and Duration of Caregiving

There were no statistically significant differences in the amount of care provided by women and men in the entire analysed sample (see Table 3). When we differentiated between the subjects based on caregiver status (primary vs. secondary caregivers), there were no statistically significant differences in the levels of care provided by men and women who were secondary caregivers (n = 175; p = 0.86, chi-square test); however, there were statistically significant gender differences among the primary caregivers (n = 1,097; over 40 hours: 77.0% for men vs. 67.7% in women, p = 0.014, chi-square test).

There were no statistically significant gender differences in the type of care provided and the number of ADLs assisted (see Table 3). Regarding gender within specific areas of ADLs care, the only statistically significant difference was found in bathing (higher for female caregivers; Table 3). When we performed a sub-group analysis by caregiver status, previous significant difference remained in the sub-group of primary caregivers but not in the sub-group of secondary caregivers (Table 3).

Concerning the duration of caregiving, there were no statistically significant differences between women and men, although there were statistically significant differences in the sub-group of secondary caregivers (higher for in male caregivers; Table 3).

Gender Differences in Subjective Burden

According to the bivariate analysis, women were more likely than men to experience subjective burden (22.7 vs. 12.9; Odds Ratio [OR] = 1. 98; 95% OR CI = 1.15 – 3.39; Cohen's w-index: 0,161; $p = 0.012$). When the intensity of care was controlled for (the number of ADLs addressed and the amount of care) and the duration of caregiving was analysed using a binary logistic regression, the adjusted OR was similar to the previous OR (see Table 4).

Gender Differences in Satisfaction with Caregiving

Although more men than women felt satisfied with caregiving (83.9% vs. 80.4%), these differences were small, and they were not statistically significant based on either the bivariate analysis (chi-square test; Phi: 0.034; $p = 0.479$) or the multivariate analysis (multinomial logistic regression; $p = 0.605$) when the intensity of care (the number of ADLs and amount of care) and the duration of caregiving were controlled for.

Discussion

Intensity of Care

In our study, although female caregivers provided a greater amount of care and assisted with more ADLs needs than male caregivers, these differences were small and not statistically significant. Therefore, our findings did not support hypothesis H1 regarding gender differences in intensity of care.

Our findings were consistent with those of another Spanish study conducted by Crespo and López (2008), which used a cross-sectional survey and did not find gender differences in terms of caregiving hours. However, our results differed from those reported in reviews that included studies conducted in other contexts, in which women spent more time in caregiving (Pinquart & Sorensen, 2006; Yee & Schulz, 2000) and provided more personal care than men (Miller & Cafasso, 1992; Pinquart & Sorensen, 2006; Yee & Schulz, 2000). Our findings showed a specific pattern regarding the relationship between gender and intensity of care in Spain, a country with high familism and female involvement in caregiving. In addition, our findings matched those of Lai et al. (2007), Hsiao (2010) and Akpinar et al. (2011). These researchers found no gender-based differences in terms of intensity of care for populations with high familism and patriarchal caregiving, i.e., with low male involvement in caregiving. Therefore, our findings support the idea that cultural diversity, specifically the Spanish emphasis on female caregiving and familism, affects the relationship between gender and intensity of care. The influence of cultural diversity on gender differences in caregiver involvement must be taken into account when defining risk profiles for caregivers.

In our study, there was a lack of statistically significant gender differences in terms of the amount of care in the overall sample; however, there were statistically significant gender differences among primary caregivers (with more care administered by men). These findings could be explained by the reasons why men engage in caregiving in Spain. Caregiving for family members has traditionally and culturally been considered a female responsibility in Spain (IMSERSO, 2005), and institutionalisation is the least preferable option (Fokkema, et al., 2008; IMSERSO, 2005). Thus, when a man becomes a primary caregiver, it might be because all of the female caregiving options within the family have been exhausted. However, more research is required on this issue.

Duration of Caregiving

Although female caregivers served as caretakers for a longer period of time than male caregivers, this difference was not statistically significant. Therefore, our findings did not support hypothesis H2 regarding gender differences in duration of caregiving and were consistent with those of Pinquart and Sorensen (2006). Our findings suggest that the duration of caregiving in primary caregivers could be more determinate by the caregiving context and the availability of caregivers than by gender-related issues such us socialization, identity, or caregiving motives.

Subjective Burden

Our findings, showing a slightly greater subjective burden for women, supported hypothesis H3 about gender differences in subjective burden. These findings are consistent with the results of the systematic reviews and meta-analyses conducted by Pinquart and Sorensen (2006) and Miller and Cafasso (1992) as well as those reported in the narrative review conducted by Yee and Schulz (2000). The results obtained by Pinquart and Sorensen (2006) revealed the existence of small gender differences (Cohen's d = 0.34). Miller and Cafasso also discovered the existence of small gender differences (without controlling for objective burden). Yee and Schulz (2000) also obtained evidence of gender differences but did not report the size of the effect because of the narrative review structure of their study.

Despite the absence of studies from Mediterranean countries in previous reviews, our findings were consistent with those presented in the selected reviews. Thus, our findings support the suggestion that there are no culturally based differences in the level of subjective burden experienced by female and male caregivers in Western industrialised countries.

Although the gender-based differences for subjective burden in our study were small, we agree with Pinquart and Sorensen (2006) that these differences must be taken into account for clinical practice because of the effect size measures. For instance, an OR of 1.98 indicates that female caregivers were almost twice as likely as male caregivers to experience subjective burden. In addition, based on Cohen's criteria (1992), the w-index value of 0.161 was of practical significance.

Gender differences in subjective burden could indicate a differentiated appraisal of the caregiving situation in women and men which is culturally rooted. Recent studies have expanded upon this issue showing that female caregivers had more over-responsibility and self-sacrifice than male caregivers (Ussher & Sandoval, 2008).

Satisfaction with Caregiving

We did not find gender-based differences in the satisfaction associated with caregiving, and thus, hypothesis H4 was rejected. These findings were consistent with those of Andren and Elmstahl (2005), Grant and Nolan (1993), Mafullul and Morriss (2000), and McKee et al. (2009), although the study by Mafullul and Morriss (2000) had low statistical power because of the size of the sample, and the other studies were performed with convenience samples and without controlling for confounding variables. Our findings differed from those of Ekwall and Hallberg (2007), Kuuppelomaki et al. (2004) and López et al. (2005), which demonstrated less satisfaction among female caregivers; however, these results were also obtained using convenience samples and without controlling for confounding variables. Thus, our findings could indicate that the sources of satisfaction are related more to the caregiver's personal context and characteristics than to gender roles. Nevertheless, further research is necessary to establish solid conclusions.

Study Limitations

Our study had certain limitations. First, it employed a cross-sectional design, which may have caused the under-representation of fragile caregivers and may have prevented us from studying changes over time. However, the absence of a temporal relationship should not affect the direction of the relationship between gender and subjective burden because gender is always placed before subjective burden. Second, our study employed secondary data analysis. However, the institution responsible for collecting the data was the Spanish Ministry of Labour and Social Affairs, which guarantees the validity of the original data. Moreover, the variables used in our study were validated (in the case of subjective burden and satisfaction) or are commonly used in caregiving research (in the case of the other variables). Third, we worked with only a subsample of the original sample. However, there were no statistically significant differences between the two samples in terms of caregiver age, caregiver gender, relationship to the recipient of care and primary caregiver status.

Conclusions

Despite the abovementioned limitations, we can draw several conclusions from this study. First, cultural diversity can influence the relationship between gender and intensity of care. This study, in which no gender differences in intensity of care were found, was conducted in Spain, which is a country with strong patriarchal norms regarding caregiving and familism. By contrast, gender differences in intensity of care have been reported in countries with low familism. Second, our findings replicate the lack of relationship between gender and duration of caregiving. Third, our study increases the evidence in support of there being few gender-based differences in subjective burden among family caregivers serving older people in Western industrial countries, and our results were similar to those published in existing reviews, although our study was conducted in a different cultural context. Fourth, there were no gender-based differences in satisfaction associated with caregiving in our study. This finding supports the suggestion that sources of satisfaction are related to the caregiver's personal context and characteristics rather than to gender roles.

These findings support the following recommendations regarding nursing interventions, which are intended to promote health and quality of life in home caregivers serving older relatives: (a) nurses should take into account specific cultural patterns in caregiving to improve understanding of the caregiving process concerning the relationships between gender and intensity of care, and (b) gender should be taken into account in interventions that are tailored towards addressing subjective burden.

Clinical Resources

1. American Association of Retired Persons: www.aarp.org
2. Family Caregiver Alliance: www.caregiver.org
3. National Family Caregivers Association: http://www.thefamilycaregiver.org
4. National Alliance for Caregiving: http://www.caregiving.org
5. Support for Alzheimer's and Dementia Caregivers:
   http://helpguide.org/elder/alzheimers˙disease dementia support caregiver.htm

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FIGURES AND TABLES

Table 1

Description of the Analysed Sample Population and Comparison with the Original Sample

		Analysed sample (*N* = 1,272)			Original sample (*N* = 1,504)			*P* (1)
		%	*M*	*SD*	%	*M*	*SD*	
Age (years)			54.0	14.4		53.2	14.1	0.937^{b}
Gender	Female	83.2			83.6			0.748^{a}
	Male	16.8			16.4			
Relationship	Spouse	20.9			18.1			0.890^{a}
	Offspring	60.3			61.8			
	Other relatives	16.3			17.3			
	Non-relatives	2.4			2.7			
Employment status	Employed	24.0			26.0			0.206^{a}
	Not employed	76.0			74.0			
Primary caregivers		86.2			86.1			0.937^{b}

(1) *p*-value for the differences between the analysed sample and the original sample.
^{a} Chi-square test; ^{b} Student's *t*-test.

Table 2

Description of the Analysed Sample Population (II)

		%	*M*	*SD*
Duration of caregiving (years)			6.09	6.36
Amount of care (per week)	Up to 8 hours	10.1		
	From 9 to 20 hours	10.6		
	From 21 to 40 hours	17.4		
	Over 40 hours	61.9		
Type of care	Only IADLs	35.8		
	ADLs (with or without IADLs)	64.2		
Number of ADLs assisted	All caregivers		2.15	2.19
	ADL-assisting caregivers		3.35	1.86
Subjective burden		21.1		

Note. ADLs: activities of daily living; IADLs: instrumental activities of daily living.

Table 3

Gender-based Differences in the Intensity of Care and Duration of Caregiving

		Whole sample (*N* = 1,272)			Primary caregivers (*n* = 1,097)			Secondary caregivers (*n* = 175)		
		Female	Male	*p*	Female	Male	*p*	Female	Male	*p*
Amount of care per week (%)	Up to 8 hours	10.1	9.9	0.184[a]	5,6	3,9	0,014[a]	33,7	38,9	0,27[a]
	From 9 to 20 hours	11.0	8.5		8,1	7,3		26,3	13,9	
	From 21 to 40 hours	18.2	13.6		18,7	11,8		15,4	25	
	Over 40 hours	60.7	68.1		67,7	77,0		24,3	22	
Type of care (%)	Only IADLs	35.3	38.3	0.394[a]	29,9	33,1	0,393[a]	62,2	62,9	0,998[a]
	ADLs (with or without IADLs)	64.7	61.7		70,1	66,9		37,8	37,1	
Number of ADLs assisted (*M*)	All caregivers	2.18	1.98	0.205[b]	2,33	2,14	0,271[b]	1,42	1,18	0,549[b]
	ADL-assisting caregivers	3.37	3.2	0.326[b]	3,83	3,17	0,27[b]	3,33	3,2	0,501[b]
Specific ADL care provision (in ADL-assisting caregivers) (%)	Feeding	20.6	16.8	0.209[a]	21,4	17,9	0,293[a]	16,5	11,4	0,454[a]
	Bathing	61.3	52.1	0.013[a]	66,6	56,2	0,008[a]	33,4	33,3	0,982[a]
	Dressing	42.2	35.5	0.072[a]	45,3	39,3	0,145[a]	25,9	14,13	0,143[a]
	Incontinence	28.9	23.8	0.131[a]	30,6	24,7	0,117[a]	20,6	19,4	0,877[a]
	Transferring	39.6	42.7	0.397[a]	42,2	47,2	0,218[a]	25,9	19,4	0,416[a]
	Ambulating	25.9	27.1	0.714[a]	27,2	28,7	0,696[a]	19,4	17,1	0,755[a]
Duration of caregiving in years (*M*)		6.1	5.94	0.734[b]	6,54	5,82	0,188[b]	3,68	6,56	0,042[c]

Note. ADLs: activities of daily living; IADLs: instrumental activities of daily living.

[a] Chi-square test; [b] Student's *t*-test, [c] Mann-Whitney's *U*-test.

Table 4

Gender Differences in Subjective Burden (step-wise binary logistic regression)

	B	*p*	Adjusted *OR*	95% CI
Step 1: Gender (exposed: woman)	0.681	0.013	1.98	[1.15, 3.39]
Step 2: Previous step plus: duration of caregiving	0.634	0.022	1.89	[1.10, 3.24]
Step 3: Previous step plus: amount of care per week	0.662	0.018	1.94	[1.12, 3.35]
Step 4: Previous step plus: number of ADLs assisted	0.601	0.033	1.83	[1.05, 3.17]

Note. ADLs: activities of daily living. The OR of each step has been adjusted for the variables appeared in the previous steps.

RESPOND TO DECISION LETTER

1. Reviewer: 1

1) On p. 3, line 1, the sentence shows (in parenthesis) that the variable "intensity of care" is synonymous with the variable "subjective burden". In your study, however, these are two different variables.
We deleted "objective burden" to avoid misunderstanding.

2) I suggest making the H2 affirmative, like the rest of your research hypotheses. The aim of the research hypothesis is to assert there are differences in the variables of interest beyond chance. The challenge, then, is to reject the null which asserts "no differences" between the variables of interest. That is why a researchers need to identify a level if significance, so that she/he can say the differences were not due to chance.
We took it into account (please, see blue text on page 4 -last paragraph- and page 10 –last par., 2nd line).

3) Hence, after the lists of research hypotheses (page 5) please indicate the level of significance you would accept to reject the null and accept your hypotheses.
We took it into account.

4) One other point, Table 3 (page 20) shows a significant P level (0.072) for dressing under ADL. You only mentioned bathing (page 9). If P of 0.072 is correct, then there would be two sub-variables that showed gender differences in the ADL. Please re-evaluate those values.
We used a significance level of 0.05. We think that a p level of 0.072 is not significant.

2. Reviewer: 2

Overal comments:
It is curious for me about the originalty of this manuscript. Although the authors argued that insufficient studies were found to discuss the gender differences regarding informal caregivers of old people in European, they mentioned at least three articles (Fokkema et al., 2008; Jenson & Jacobzone, 2000; Mestheneos & Triantafillou, 2005) which examined such topic previously. (P.3 Last paragraph).
In our manuscript, we referred to gender differences in intensity of care, duration, and consequences of caregiving (we specified this issue in the manuscript; please, see blue text on page 3, 2nd par.), and the three articles mentioned only examined the participation by gender on caregiving, i.e., the gender of caregivers.

Also, the authors may want to further proof-read the manuscript to make it easier to read. E.g., n = 1,284 instead of 1.284 (abstract)
We took it into account.

Abstract:
(1) Suggested to provide more information in "design and methods section (e.g., settings, participants, data collection methods, etc)
We took it into account (please, see blue text). We removed the sentence in the purpose: "The factors analysed included the intensity of care, duration of caregiving, subjective burden, and satisfaction", because it is redundant with the new information included in the design and methods.

(2) May quote some figures in "findings"
We took it into account (please, see blue text).

(3) Some sentences in "conclusion" replicate with the "findings".
We rewrote the first sentence in conclusions.

(4) Since it is not a cross-country survey, the findings is not strong enough to conclude that "cultural diversity affects the relationship between gender and intensity of care" (conclusion) and the first recommendation in "clinical relevance"
We reworded this conclusion and this recommendation in the abstract and in the main text (please, see blue text on pages 12 and 13).

Background/Introduction
(5) The authors may want to explain why would it be importance to study gender differences on intensity of care, duration and perceived burden in caregiving (P.4 para 1, last sentence)
We took it into account (please, see blue text on page 4, 1st par.).

Methods
(6) Not sure if the survey contains information on the employment status of informalcaregivers? (P.6)
We included "employment status" in the Sociodemographic characteristics of the caregivers (please, see page 6 and table 1).

Results
(7) The study sample included both primary (86.2%) and secondary (13.8%) caregivers. Would it confound with the findings? When the authors provided sub-group analysis for intensity and duration of caregivings (P.8), have they performed subgroup analyses of primary/secondary cargivers on subjective burden and satisfaction?
We included the sub-group analysis for intensity and duration of caregivers in table 3 and the most relevant results of this analysis in the text (please, see blue text on page 9, 1st and 2nd paragraphs).
We performed sub-group analysis for subjective burden and satisfaction but the subgroup results were equal to those of the whole sample. Thus, we thought it would be best not to include this issue in the manuscript because it did not add anything to this manuscript.

Discussion and Conclusion
(8) It would be helpful if the authors can explain their findings (what are the possible reasons to lead the findings), instead of reporting the findings repeatedly.
We tried to extend the discussion in those issues that we have considered insufficient (please, see blue text in "Discussion").

Tables
(9) May delete the column of CIs since the focus of this paper is not on the reporting of population survey (Tables 1 & 2).
We took it into account.

(10) May add the cargiving status (primary/secondary caregiver) in table 3. It is one influential confoudning factor; may need to do subgroup analysis on it
We took it into account (please, see comments to the recommendation #7).

(11) When the authors used step-wise binary logistic regression in table 4, not sure if the adjustment of odds ratio in each step. Not sure if the OR of each step is adjusted for the variables appeared in the previous steps only, or they are adjusted for all variables appeared in the final model.
The OR of each step is adjusted for the variables appeared in the previous steps only. We included a note in table 4 clarifying this issue.

3. Other changes:

- We corrected and error in the sample size (*N* = 1,272; please, see abstract –design and methods- and page 5, last line).
- We took advantage to complete the data analysis section (please, see blue text).