Author's response to reviews

Title: Economic valuation of informal care on cerebrovascular accident survivors

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Author's response to reviews: see over
Dear Editor

The authors greatly appreciate the comments received by the reviewers. We hope that the modifications and clarifications included in the manuscript have improved the clarity and quality of work.

The reviewers’ comments are answered one by one.

Finally, as has been suggested, an expert translator has revised the text.

Reviewer’s report
Title: Economic valuation of informal care on cerebrovascular accident survivors
Version: 7 Date: 19 February 2013
Reviewer: Nikki McCaffrey
Reviewer’s report:
General comments

This study is a useful contribution to the field of research on the costs of informal care for CVA survivors in Spain and addresses an important and relevant issue, the ‘hidden’ costs of informal care. The paper could benefit in the following ways: greater clarity is needed on how the research adds value (where is the gap in the literature); further detail is required on how the survey sample was selected and what services/tasks are provided under ‘state-provided home care’; the conclusion needs separating into a discussion and conclusion section; further explanation is required to justify the conclusion that the reported costs of formal care for dependant people are ‘a far cry’ from the cost of informal care; more discussion is needed on the generalisability of the study findings; and a comparison with international estimates would be informative.

1. Major compulsory revisions
1.1. How does the research address a gap in the literature? Background, Paragraph 5, sentence 1 - the objective of the study is clear and succinct. However, although other studies valuing the costs of informal care for CVA survivors are cited it is not clear how this study addresses a gap in the literature. Is this study the first to evaluate informal care costs for CVA survivors in Spain? Is this the first study to examine the relationship between degree of dependency of the care recipient and the total hours of informal care in Spain? How does this study add to the body of knowledge in this research space?

Response:

We have added the following paragraph in the Background section:

“As far as we know, only one study published to date has applied a cost-of-illness design using a national sample to CVD in Europe (Leal et al. 2006). This study revealed that non-healthcare costs accounted for 38.9% of the overall costs of the disease, with informal care being the most substantial item among non-healthcare costs (54.4% of this item). Studies which calculate such global estimates are uncommon in the literature, since they require very rich
sources of data. In Spain, research has been published describing informal care in patients who have had a CVA, although these studies were either performed on small samples of patients or used mathematical models (Hervas-Angulo, 2006. Hervás-Angulo, 2007. Lopez-Bastida J, 2012. Navarrete-Navarro P, 2007), and only one such study (Hervas-Angulo, 2006) analyzed the influence of the degree of dependence on care hours received. Informal care is a societally relevant resource, since any absence of informal caregivers requires the care time needed by the patient to be substituted by professional social services (formal care). Obtaining data on informal care rendered would reveal the reduced societal burden of CVA avoidance or, in cases of CVA occurrence, the data would help prevent patients from progressing to a state of great dependence.”

REFERENCES:


Moreover, we have added the following information related to the Discussion section:

“Our study estimates the total cost of non-professional care provided to persons who have suffered a CVA, using the Survey on Disability, Independent Living and Dependency 2008. The present study is the first to use an official scale to identify the degree of dependency of people with CVA. Although other works have evaluated informal care in CVA taking into account level of dependency, methodological differences between the studies, including the use of different dependency scales, prevents the comparison of their respective results (Dewey, 2006. Hervas-Angulo, 2007. Fattore, 2012). On the other hand, other works with a solid methodology for measuring costs and which have included the cost of informal care, did not control for level of dependency in CVA survivors (Saka, 2009 Youmman, 2003. Pearson, 2012, Patel, 2004, López-Bastida, 2013; Leal et al. 2006).”

References:


1.2. Survey sample

Methods, Paragraph 2 – A sample of 96,075 households complete the survey rather than the entire population of Spain? If so, please provide details of how the sample is selected to aid evaluation of how representative the sample is of the Spanish population.

Response:

We have revised the paragraph in order to clarify it:

“In order to fulfill the objective of providing national, regional, and provincial estimates with a certain degree of reliability, the survey sample was comprised of 96,075 households and a stratified two-stage sampling was used (for details, see reference (NSI, 2008)). Of the total sample, 22,795 persons with disabilities were identified and interviewed in depth. Personal interviews were used to collect individual information; in exceptional cases, these face-to-face
interviews were complemented with telephone interviews. Among the variables included in the EDAD-08 survey were the personal characteristics of the persons with disabilities (including whether or not they received personal care and, if so, the length of time of the care received), characteristics of the caretaker persons (when identified), and which activities were provided under informal care.”

REFERENCES:

1.3. What services/tasks are provided under ‘state-provided home care’.
The valuation methods, Paragraph 2, sentence 2 – rates of ‘state-provided home care’ are used to estimate substitution costs. Please provide details about what services/tasks ‘state-provided home care’ includes to aid interpretation of the results and translation to other settings. This paragraph is repetitious and would benefit from further editing.

Response:
We decided to change the entire paragraph to make it more compressible.

“Using 2008 as our base year, we designed three scenarios for estimating replacement or substitution costs. In the first scenario, the hours of care were valued at the average official wage for social services home care in the 3 autonomous regions of Spain with the lowest hourly wage (IMSERSO, 2009). The value used was 7.67 euros per hour of care. In the second scenario, we used the average hourly wage reported by all of the autonomous regions. The average hour of care was estimated at 12.71 euros. In the third scenario, the same government source was used to determine the hourly wage for care in each autonomous region. These regional wages ranged from 6.2 to 22.8 euros.”

Reference:

1.4. Conclusions, general
Please separate the conclusion into two separate sections, discussion and conclusion.

Response:
Following the reviewer’s suggestion we have separated the conclusion in two separate sections.

1.5. Conclusions about the costs of informal care
Conclusions, Paragraph 2, sentence 4 – the authors state the reported costs of formal care for dependant people (in Spain?) are ‘a far cry’ from the cost of informal care yet the estimates in the manuscript overlap the estimates of formal care. Further explanation is required to justify this conclusion.
Response:

We have added the following paragraph in order to explain the conclusions:

“Although the legislative Act on the Promotion of Personal Autonomy and Care for Dependent Persons has driven the growth of spending on dependent care for communities and local government, this financial support was already earmarked before the passage of the law; dependent-care support in 2003 represented 0.32% of GDP, raising to 0.64% in 2010 (Spanish Ministry of Health and Social Policies, 2011). Even with the legislation in force, these figures are paltry when compared to the cost of informal care for CVA survivors cited in this study.”

Reference:

1.6. Limitations
Conclusions, Paragraph 3, general - whilst some limitations of the study are discussed generalisability of the findings (or lack of?) to other countries should be included. Furthermore, an elevation factor is used to extrapolate the sample data to the entire population. It would be helpful if the limitations and uncertainty associated with the elevation factor were discussed to assist evaluation of the robustness of the informal caregiver cost estimate.

Response:

We thank to the reviewer for this comment.

We stress in the Discussion section that a relevant limitation of the analysis is that we are making an extrapolation of results to the national level.

“Another limitation of the analysis is seen in the extrapolation of results to the national level, using the elevation factors contained in the EDAD-08 survey. As in any study based on a given sample which is then extrapolated to a larger population, the results are subject to a margin of uncertainty.”

1.7. International comparison
Conclusions, Paragraph 3 - how do the informal care costs in Spain compare with other international estimations?
Response:

We added a “Comparison with other studies” section:

“Originally, Spain provided low levels of social protection expenditure for long-term care (CLD) compared to other European countries (Comas Herrera et al.). Thus, the Spanish care model for people with limitations on their autonomy relies to a much greater extent on family care (informal care) than do other European countries, which devote greater resources to professional care (ANCIEN Reports, several authors). This discrepancy must be considered before extrapolating the findings of this work to other countries, where it is expected that the number of hours of informal care in patients surviving a CVA would be less, with greater involvement of care professionals.”


2. Minor Essential Revisions
2.1. General comments - the terms ‘stroke’ and ‘CVA’ are applied in the manuscript. For non-clinical readers, how are the two related? Are they the same thing? Which is the current term? Suggest use one term only throughout the manuscript to avoid any confusion.

Response:

We thank to the reviewer for this comment.

We have reviewed the text and only the term CVA is applied.

2.2. General comments - there are numerous instances where cerebrovascular accident is spelt in full despite definition of the abbreviation CVA in the background section, paragraph one.

Response:

We have reviewed the manuscript and we have used abbreviation instead of the full definition.

2.3. Title - I suggest the title is updated to clarify that the analysis is conducted in a Spanish population, e.g. ‘Economic valuation of informal care for cerebrovascular accident survivors in Spain’.

Response:
We have changed the title to: Economic valuation of informal care in cerebrovascular accident survivors in Spain.

2.4. Abstract, Background, general - the links between the background sentences need strengthening. Currently, it is difficult to see how informal care costs link with the need for more social services.???

Response:

We have included in the Background section the following sentences:

“Informal care is a societally relevant resource, since any absence of informal caregivers requires the care time needed by the patient to be substituted by professional social services (formal care). Obtaining data on informal care rendered would reveal the reduced societal burden of CVA avoidance or, in cases of CVA occurrence, the data would help prevent patients from progressing to a state of great dependence.”

2.5. Abstract, Background, sentence 2 - ‘survivors of CVAs in Spain’. This population description needs updating to either CVA survivors with loss of autonomy (dependency) or CVA survivors with some type of disability to be consistent with the defined population elsewhere in the manuscript. Furthermore, this more explicitly defines the study population.

Response:

We have corrected the text in the Abstract:

“The aim of this study was to estimate the social cost of non-professional (informal) care provided to survivors of cerebrovascular accidents (CVA) with some type of disability in Spain.”

2.6. Abstract, Methods, sentence 1 - should ‘who provide care’ be ‘who provide informal care’?

Response:

We thank to the reviewer for this comment. The text has been revised and the term “informal care” has been included.

2.7. Abstract, Methods, sentence 2 - suggest the type of statistical analysis used should be stated here.

Response:

We have included a brief description of the statistical analysis used.

2.8. Abstract, Results, sentence 1 - clarify 329,500 is an estimate based on an extrapolation.
Response:

We have corrected the text in the Abstract:

“The number of disabled people diagnosed with CVA totaled 1,975 (329,544 people when extrapolating to the national population using the elevation factor provided by EDAD-08). Of these, 1,221 individuals (192,611 people extrapolated to the national population) received at least one hour of informal care per week.”

2.9. Abstract, Results, sentence 3 - clarify how many scenarios were explored, e.g. ‘...depending on which of the three scenarios were chosen’.

Response:

We have included information on the unit cost per hour to clarify the scenarios.

2.10. Background, general - overall, the background section is well-structured. However, paragraph 4 flows more naturally from paragraph 2. Is paragraph 3 perhaps redundant? If not, a stronger link is needed between paragraphs 2 and 3.

Response:

We appreciate this comment. We decided to remove paragraph 3 from the Background because it did not add any worthwhile information.

2.11. Background, sentence 2 - 2004 WHO estimations of CVAs are cited. Are there more recent data available?

Response:

We thank the reviewer her comment. We have proceeded to update and replace the previous reference with these others:


2.12. Methods, Paragraph 1, sentence 1 – it would be helpful if an example was provided of how the 2008 Survey was adapted from the 1999 Survey.

Response:

We have added the following sentence in Methods:

“The main improvement of EDAD-08 over the 1999 study is its adaptation to the new International Classification of Functioning, Disability and Health (WHO, 2001). Previously, interviewees were asked directly if they had a disability. In the EDAD-08 study, however, questions examined the limitations in activity experienced by the subject, as proposed by the ICF. Interview questions like those in the EDAD-08 study make it possible to identify the limitations and disabilities from a wider and more objective point of view.”

Reference:

2.13. Methods, Paragraph 3 - a definition of informal care is provided but is unclear. This is important information given the diverse definitions of informal care reported in the literature. The current definition suggests that an informal caregiver is a person who is not a professional social worker but has a family/social bond with the care recipient. Therefore, a paid friend/family member could be an informal caregiver by this definition. Is an informal caregiver someone who is unpaid? If so, this should be explicitly stated.

Response:

We have revised the paragraph where we defined ‘informal care’.

“In this study, informal care was defined as the attention provided to an individual with limitations in autonomy when conducting one or more of his/her daily activities, this attention being provided by persons who are not professional social workers. The key attribute of these care persons is that the determining factor causing the informal caregiver to accept the role is a family or social bond between him/her and the person with limited autonomy. Receiving compensation from another family member for these services does not disqualify the service as non-professional in nature.”

As the reviewer pointed out, there is no single definition of informal care in the literature. Depending on the country where the study is conducted and its culture of family care, or the design of the database used, the definition may vary slightly between studies.

2.14. Methods, Paragraph 3, sentence 1 - the manuscript states, ‘Informal Care is defined...’ Where? In the Survey? In this study? The valuation methods, general comments - the valuation methods are clearly described.
Response:

In order to clarify informal care as applied in this paper, we have included “In this study” at the beginning.

2.15. The valuation methods, Paragraph 1, sentence 3 - I’m unsure what the authors are trying to communicate in this sentence and how this fits with the other information provided. Perhaps this sentence should be reworded for clarification.

Response:

We decided to remove the sentence because it did not add valuable information.

2.16. The valuation methods, Paragraph 3 – describe the methodology first and then suggest why the estimates are likely conservative.

Response:

We have revised the paragraph. Also, we have included the following text in the discussion section.

“The authors have censored to a maximum of 16 hours per day the informal care provided by a primary caregiver. This limit assumes that the caregiver has at least eight hours for rest, personal care, and other activities. Since in many cases this time may be less than indicated, setting this limit would provide a conservative estimate of the time of informal care. Although it seems fair to suggest that daily care time can be 24 hours, and despite the fact that the time spent on tasks belonging to the category of "joint production" must be considered, the decision of the authors to choose a limit of 16 hours is modifiable. In the economic valuation analysis performed, several thresholds (12, 14, 16, and 18 hours) can be employed as a sensitivity analysis depending on whether the analysts prefer to be more or less conservative in their estimations.”

2.17. The valuation methods, Paragraph 3, sentence 5 - how many cases were excluded?

Response:

There were 1,629 persons (265,508 using the elevation factor) who stated they need a caregiver attention. However, 14% of them did not state the hours of care (meaning that they did not answer the question about hours of caregiving). So we could not include in the analysis 228 persons (40,737 using the elevation factor). We have included this percentage in paragraph 3, sentence 5.

“…14% of total CVA survivors who stated they needed personal attention did not indicate the hours of caregiving needed...”
2.18. Results, Paragraph 1, sentence 1 – 1,975 CVA survivors were identified from the 96,075 households?

Response:

Yes, it is correct.
As we explain in the Methods section:

“The number of disabled people diagnosed with CVA amounted to 1,975 individuals (329,544 people extrapolated to the national population). Of these, 1,221 (192,611 people extrapolated to the national population) received at least one hour of informal care per week.”

2.19. Results, Paragraph 1, sentence 4 - please clarify whether 208,864 primary caregivers is the extrapolated estimate.

Response:

Yes, this is correct. However, both statistical analysis and economic valuation were performed using data from all informal caregivers whose time of caregiving was recorded. This means that we only used data from 1,221 (192,611 using elevation factor) primary informal caregivers for the economic evaluation and for the statistical analysis.

2.20. Results, Paragraph 3 – please provide the total N.

Response:

As we have indicated in the previous response, we only used data from those informal caregivers who provided care at least one hour per week. We appreciate this comment. We think that it may be necessary to include here the total primary informal caregivers. We have added the total N in Results, Paragraph 3 (N=192,611).

2.21. Results, Paragraph 4, sentence 1– the sentence states that the greatest proportion of the load is borne by primary caregivers. As opposed to what/ who else? Please clarify.

Response:

We should stress that we identified a mistake in the number of hours of informal care provided. The correct figure is 852 million instead of 8.52 billion. The figure was incorrectly written in the text. However, economic valuations were performed correctly with the figure of 852 million, so it does not alter the results previously indicated.

The estimated hours of informal care amounted to 852 million. The greatest portion of the hours of care was provided by main caregivers (731.8 million hours of informal care-close to 86% of total). The rest of time was provided by other informal caregivers.
2.22. Table 2, table heading – please report the total N.

Response:

The authors appreciate this comment. Including total N in Table 2 will help readers to correctly identify the information shown in this table.

3. Discretionary revisions
3.1. Methods, Paragraph 3 - which characteristics of the caregivers and living situation are collected?

Response:

Most of the caregivers’ characteristics are described in Table 1. Usual sociodemographic information was collected during the interview. The authors decided to include in Table 1 the most relevant caregivers’ characteristics. Regarding the living situations, we should stress that in fact we meant “activities” instead of “living situations”. Activities provided by informal caregivers are described in Results section, paragraph 2. We apologize for this misunderstanding; we think that the cause was a bad translation from the Spanish.

3.2. Results, Paragraph 1 – how do the caregiver characteristics compare with caregivers of other diseases? Internationally? This information would add interest to the manuscript, although is not essential.

Response:

It is extremely difficult to answer the question posed by the reviewer. A systematic review of the international literature and a detailed comparison of the characteristics of carers would require another type of work than the one proposed in this article.

4. Minor issues not for publication

4.1. Background, Paragraph 1, sentence 1 - no need to abbreviate DALYs as this term isn’t used again in the manuscript.

Response:

The authors appreciate this comment. It is true that the abbreviation does not appear elsewhere in the manuscript, and thus we have removed this abbreviation from the text.

4.2. Methods, Paragraph 2 – suggest rearrange the paragraph so that sentence 3 (regarding the sample size) comes before sentence 2 (period of data collection).
Response:

This paragraph has been substantially modified

4.3. The valuation methods, Paragraph 3, sentence 7 – the maximum number of hours of informal care per day was set at 16 hours, not the average.

Response:

We thank the reviewer her comment.

Lastly, we censored at 16 the maximum of daily hours per caregiver. That is, we assumed a daily period without care of eight hours per informal caregiver. Therefore, in cases where the number of hours of care per day exceeded 16 hours (17-24), the time was treated as 16 hours.

4.4. Statistical analysis, sentence 1 – this is a long sentence. Perhaps break the sentence down to aid readability.

Response:

We have performed a critical review of this paragraph. Now this sentence is quite shorter and we believe readers will be able to understand the information more quickly.

4.5. Results, Paragraph 1, sentence 3 – typo ‘ACV’ should be ‘CVA’

Response:

We have reviewed the entire manuscript and have removed all such abbreviations.

4.6. Results, Paragraph 3, sentence 2 – a colon needs inserting after ‘heavy burdens’. The list is rather long. The sentence would benefit from shortening by creating two lists of related items. Similarly, I would suggest finishing sentence 3, paragraph 3 after ‘...go on holiday’ as the subsequent items do not directly relate to free time.

Response:

We inserted colon “heavy burdens” and the paragraph ends after ‘...to take care of themselves’ because we thought this percentage is valuable information for caregiver burden.

4.7. Table 1, table heading – typo ‘caregirvers’

Response:
We have reviewed the entire text in order to identify more typos. We have corrected this typo and we ensure that there are no more typos in the text.

4.8. References, general – journal titles are abbreviated in some references but provided in full for others, e.g. no. 20 ‘Health Econ’, whereas no. 21 ‘Health Economics’. Be consistent; either provide all journal titles abbreviated or write them out in full.

Response:

We have checked all references in order to avoid these typos.

4.9. References, no 19 – capitalisation for ‘december’

Now in reference #21 (formerly #19), “December” appears instead of “december”.

4.10. References, no 27 – provide the year of publication

Response:

We have provided the year of publication in all references.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

The text has been reviewed in detail by an expert translator.

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests.

Reviewer's report

Title: Economic valuation of informal care on cerebrovascular accident survivors

Version: 7 Date: 3 December 2012

Reviewer: Arthorn Riewpaiboon

Reviewer's report:
There is no clear definition of informal care. The authors stated as daily activities. The authors should refer to references with definition of informal care activities and then define the scope used in this study.

Response:

We have rewritten the paragraph where we define ‘informal care’. Informal care was defined as the attention provided to an individual with limitations in his autonomy to conduct one or more of his/her daily activities, this attention being provided by persons who are not professional social workers. The key aspect lies in fact that the determining factor for the informal caregiver for accepting the role of caregiving is the family or social bond that exists between him/her and the person with limited autonomy. Merely receiving compensation from another family member does not disqualify it as a non-professional caregiving role.

There is no explanation of a limitation of 16 hours a day.

Response:

We have included the paragraphs below in order to clarify the reason to limit on 16 hours a day of caregiving.

“The authors have censored to a maximum of 16 hours per day the informal care provided by a primary caregiver. This limit assumes that the caregiver has at least eight hours for rest, personal care, and other activities. Since in many cases this time may be less than indicated, setting this limit would provide a conservative estimate of the time of informal care. Although it seems fair to suggest that daily care time can be 24 hours, and despite the fact that the time spent on tasks belonging to the category of "joint production" must be considered, the decision of the authors to choose a limit of 16 hours is modifiable. In the economic valuation analysis performed, several thresholds (12, 14, 16, and 18 hours) can be employed as a sensitivity analysis depending on whether the analysts prefer to be more or less conservative in their estimations.”

Data collection method is not clear:

- how relate between the national survey and 1,975 CVA in the Results

Response:

We have added more information in order to make the Results section clearer. Now the Results section includes people interviewed (1,975) and national representative population obtained by applying the elevation factor (national weights) provided by the EDAD-08 survey (329,500).

- how to estimate the total time (8.52 billion hours)

Response:
The number of hours of informal care was assessed by carefully applying diverse criteria to data contained in the EDAD-2008, which led to estimates of the number of informal care hours that were on the low side or conservative. First, the person who had a disability (or the person providing information on the household) was asked if the person having the disability received assistance or social care because of his/her disability and how many hours a day on average he/she received the help of others, not including the care and services provided at day centers or other services provided by professionals. This question was used to exclude cases in which care is mainly provided by domestic workers, hired healthcare professionals, state run social services, social services provided by non-government entities (NGOs, associations) or private companies. Some survey respondents indicated that the person with disabilities received social care, however they did not say who provided the care or how many hours of care were given. These cases were not included in our estimate of the hours of informal care. Thus, the estimate was calculated based on the hours of care provided by family, friends, and neighbors (daughters, sons, mother, father, spouse or partner, sisters, brothers, grandmothers, grandfathers, grand-daughters, grand-sons, other relatives and friends or neighbors). Lastly, our conservative approach led us to set the average number of hours a day a person with disabilities receives care at sixteen. That is, we assume a daily period without care of eight hours. Therefore, in cases where the number of hours of care per day exceeded 16 hours (17-24), it was treated as 16 hours. Additionally, we developed another scenario which did not set a maximum of 16 hours of care and used the hours of care provided by people who answered this question.

When we obtained the weekly time of informal care, we translated this time to annual terms. Then, we used population weights for extrapolating individual results to population estimations.

We should stress that the correct figure is 852 million instead of 8.52 billion. The figure was incorrectly written in the text. However, economic valuations were performed correctly with the figure of 852 million, so it does not alter the results previously indicated.

For the analysis

- the fitted models must be provided and methods used for estimating time needed for each level of disability must be explained.

Response:

We classified individuals according to their degree of dependence. To do this, we used the EDAD-08 questions to match them with the Official Scale used in Spain in 2008 for measuring the level of dependency.

This Official Scale is based on a questionnaire as well as the direct observation of the dependent candidate by a qualified professional. For the case of people with intellectual or cognitive impairment, an informed proxy respondent must answer the questionnaire. The determination of the degree of dependency takes into account medical reports and the use of
prostheses. The Official Scale considers 47 tasks grouped into 10 activities (eating and drinking, control of physical needs, washing oneself, other physical care, dressing and undressing, keeping one’s health, mobility, moving inside the home, moving outside the home and housework) and considers four degrees of support: supervision (if the dependent only requires that a third person prepare the necessary elements to perform the activity), partial physical attention (when the third person has to participate actively), maximum physical attention (if the third person has to substitute the dependent individual in the execution of the activity) and special attention (the dependent individual suffers behavior disorders that makes the provision of the task by the third person difficult). The questionnaire for people who suffer mental illness or have any kind of cognitive impairment includes six additional tasks referring to the ability to make decisions (which is the case of people with schizophrenia). The final score is the sum of the weights of the tasks for which the individual has difficulty, times the degree of supervision required and the weight assigned to that activity (for additional information see (Real Decreto 504/2007)).


A multivariate analysis using the number of hours of informal care provided by a primary caregiver per week (not limited to a maximum of 16 hours a day) as the dependent variable was performed using ordinary least squares regression to obtain the Eicker-White heteroscedasticity robust covariance matrix estimate. In Model 1, the control variables were age, sex, and education of the persons receiving care, in addition to the degree of dependency. In Model 1a, a limit of 16 hours per day was applied as a maximum number of informal-care hours. The explanatory variables in this model were the same as in Model 1. In Model 2 (the 16-hour daily limit was applied in Model 2a) the control variables were age, sex, and education of the persons receiving care; degree of dependency; and size of the town of residence. In Model 3 (the 16 hour a day limit was applied in Model 3a), the dependent variables were the same as in Models 2 and 2b, with the addition of the variable of a live-in caregiver. In Model 4 (the 16 hour a day limit was applied in Model 4a), the control variable “region of residence” was added. In Model 5 (the 16 hour a day limit was applied in Model 5a), information was added on whether the person who received care also received formal care.

Figure 1

\[ H_i = \beta_0 + \beta_1 * A_i + \beta_2 * S_i + \beta_3 * E_i + \beta_4 * D_i + \beta_5 * T_i + \beta_6 * C_i + \beta_7 * R_i + \beta_8 * F_i + \varepsilon_i \]

Where:

- \( H_i \) = hours of informal care per week (primary caregiver); \( A_i \) = age of care recipient; \( S_i \) = sex of care recipient; \( E_i \) = education of care recipient; \( D_i \) = degree of dependence of care recipient; \( T_i \) = size of city or town of residence; \( C_i \) = live-in caregiver; \( R_i \) = region of residence; \( F_i \) = formal care provided to care recipient.
Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

The text has been reviewed in depth by an expert translator.

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests: I declare that I have no competing interests.