Author's response to reviews

Title: Factors associated with the utilization and costs of health and social services in frail elderly patients

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Author's response to reviews:

Title: Factors associated with the utilization and costs of health and social services in frail elderly patients

Point-by-point response
Date: 11 May 2012

Reviewer: Esther Iecovich

Reviewer's report:

Major revisions

2. Background – the background lacks a theoretical framework of the study. For example, the conceptual model of Andersen (Andersen R. National health surveys and the behavioral model of health services use. 2008. Medical Care, 46 (7): 647-653) that relates to individual and contextual factors affecting service use can be an appropriate conceptual background for this study.

Our response: We thank the reviewer for this comment. In the revised draft we have included Andersen's model as a theoretical framework.

In the Background, we now write as follows:

When developing elderly care policies we need to know why people are using health and social care, and which factors are related to equitable access to care. Andersen’s behavioural model of health service use (4, 5) provides a useful theoretical framework for assessing the multiple dimensions of access to care. The model contains three sets of predictive factors: predisposing, enabling and need factors for explaining health services utilization. The model has been found useful in gerontological research as it can be adapted according to the research question (6) (7) (8) (9). In our study we applied behavioural model to a sample of frail elderly persons to assess their use of services.
3. Methods – on p. 6 – use of services- can you please explain why data on outpatient care services in the private sector were obtained from the SII registers, whereas data on outpatient care services in the public sector were based on self-reports of the respondents?

Our response: We used national registry data on the use of health care services, whenever possible. The SII registers include data on reimbursed costs for private sector health care, so they cover all private sector health care use. Because of lack of registry data on the use of public sector outpatient health care services, a questionnaire was used to collect information.

Can you clarify what do you mean by "professional home care"?

Our response: A significant part of total care for elderly is informal care. We used term “professional” referring to publicly financed care provided by municipalities. Now, we have changed the expression to “formal home-help services provided by municipalities”.

What you mean by saying: "For those cases where changes occurred in the use of services during the follow-up, the annual data consisted half of the services used at the baseline and half of the services used at the follow-up."

Our response: The costs of used services were annual costs. If registry data were available, we collected service use data for a 12 months’ period. However, due to the lack of registry data, the data on the utilization of social care services were obtained from the municipal social and health care officials, using a questionnaire. They collected data on social service use from their clients’ individual care and service plans. The data were cross-sectional, that is, collected at baseline and 12-month follow-up. If a change in the use of social services had occurred during the year, we did not have the information of the exact date when it had happened. So, for those cases when changes occurred in the use of services during the 12 month follow-up, the annual costs were calculated by adding together 6 months of services used at the baseline and 6 months of services used at the follow-up.

In Methods, we write as follows:
Data on the utilization of social care services were obtained from questionnaires. We asked the municipal social and health care officials to collect data on service use from their clients’ individual care and service plans. The data derived from questionnaires were cross-sectional both at baseline and 12-month follow-up. For those cases where changes occurred in the use of services during the follow-up, the annual data consisted 6 months of services used at the baseline and 6 months of services used at the follow-up.

Please change the number of tables so that table 3 will come after table 2 in a sequential order.

We have made this change.
Why costs of social services was categorized into 3 categories and not used as a continuous variable as you did for health services?

Our response: All subjects had used health care services and therefore, all have health care costs, but due to the fact that informal care is a common way to organize care for elderly, there were 240 subjects how had not used social services at all. In MODEL 2, we checked which factors were associated with social service utilization overall. For those who had used social services, living arrangement had a major impact on the costs and it caused a stair effect on costs. First stair persons are living at home and their costs are low (under 1500 euro), second stair persons are living in ordinary sheltered housing and we were able to see a cost shift in the distribution of costs (1500-6000 euro), third stair persons are living in sheltered housing with 24-hour assistance (costs over 6000 euro). We categorized the costs of social care because the distribution was rising in steps and the assumptions of continuity did not hold (MODEL 3).

In Methods, we now write as follows:

Due to the fact that informal care is a common way to organize care for elderly, there were 240 subjects how did not use social services at all (‘No’ in MODEL 2). For those who used social services, living in sheltered housing causes stairwise effect to costs. Because the distribution was rising in steps and the assumptions of continuity did not hold, we categorized the costs of social care (MODEL 3).

The HRQoL measure you used – Is it the SF 36? If positive can you explain the reason for using the 15D score?

Our response: The HRQoL we used was not SF36 but 15D. The 15D questionnaire is a generic HRQoL instrument that consists of 15 dimensions. 15D is developed in Finland and it has been used in several national studies. We wanted to compare our results with earlier national results.

Can you provide references for each of the measures you used and their reliabilities.

Our response: We have now added references to the measures used in this study (FIM, GDS, MMSE, HRQoL 15D). They are all validated measures.

Regarding the definition of "integration of health and social care sectors" (p. 9) – this is a too general definition and based on subjective assessments rather than on objective defined criteria and therefore the reliability and validity of this concept seems to be problematic. Integration of services can include various forms and levels.

Our response: We agree that integration is a multidimensional phenomenon and our variable has major limitations. Also the translation of the question needs corrections. We are referring to administrative integration only. This means join budgeting and management. There is evidence that administrative and financial integration can help to achieve several policy objectives.
In Methods, we now write as follows:

**Heading: Administrative integration of the health and social care sectors at municipal level**

At municipal level, we investigated if municipalities had integrated the administration of their health care and social services (joint budgets and management). We asked the municipal social and health care officials: “Is your local health and social care administration integrated or not?” (yes/no).

4. Results – Please provide data on the extent to which the differences between the two groups (Table 1) were statistically significant. Calculation of costs (p.10) is unclear – if mean cost was 10300 Euro with 48% of it were for health services how comes that average cost for social services was 8654 euro. Can you clarify?

Our response: The mean total costs were 10300 euro (n=732). There were 240 subjects who had not used social services at all. When calculating the mean costs of the social services, we included only those subjects who had used social services (n=492). When calculating the total costs, all of the subjects were included. Those who have zero costs in social care thus affect the mean total costs of care.

In the revised draft we now provide data on the differences between the two groups (Table 1).

5. Discussion – In the results you do not relate at all to the impact of integration of services on their use and costs, whereas latter on in the discussion you conclude that improved health was connected with integrated care (p.12). Can you clarify? Furthermore, in your discussion you elaborate on the significance of integrated care but this is not at all reflected in the results’ section.

Our response: We have clarified Discussion and now write:

In our study, a connection was found between the utilization of social care services and perceived health. Those who reported improvement in their health status during the preceding year were more frequent users of social care services. According to Andersen, effective access to care is established when use of services is connected with improves in health status (5). Our finding supports the evidence that if a person receives adequate support and social care services, his or her need for health care services may be reduced (32). Currently, the municipalities are cutting down support services and targeting services only for those who are in the highest need, which may, in the long run, result in increased costs of health care. Earlier studies have shown that ADL-dependent subjects and those at risk of depression had significantly more hospital stays (19).

This is consistent with the literature emphasizing the significance of integrated care for the elderly (33-35). Still, when need factors were controlled for, municipalities with integrated health and social care sectors had similar patterns in access to care and similar costs as compared to municipalities without such
integration.

In Methodological considerations we now write:

In the multivariate models, we introduced explanatory variables mostly at the patient level. At the municipality level, we focused on the question of integrated services. We measured integration with one question concerning the administrative integration, and this may be insufficient to describe the multidimensional phenomena of integration.

Minor revisions

1. Abstract – Move the details of the research sample size to the methods. In the results I would suggest to use the term "poor functional status" rather than "poor functional independence". The conclusions should be more succinct.

Our response: We have made the changes as suggested.

Reviewer: jimmie kristensson

Reviewer’s report:

Thank you for giving me the opportunity to read and review this manuscript. The manuscript has some interesting results. However I have some questions, especially regarding the method and the manuscript is in need of revision and clarification before it is suitable for publication. Please, see my specific comments below.

Major compulsory revisions:

1. The aim would benefit from being clarified. First: The aim contains the words influence and effects and I am not convinced that the study design is strong enough for causal inferences. I think that the term association is more preferable when the analysis is based on cross sectional data. Second: The term patient characteristics could be more specific and it is not elderly in general that are in focus – it is frail older people. The last is important since the author’s state in their discussion that external validity may be limited.

Our response: We thank the reviewer for comments which we found very useful and help us to improve the manuscript.

In the revised draft we now write:

The purpose of our study was to identify patient-level characteristics and municipality-level service patterns that may be associated with the use and costs of health and social services for frail elderly people.

2. The background is short and contains interesting facts. However, it is a bit too short and needs to be elaborated so that the key concepts in the aim are defined and visible. This is needed in order to make the research problem clearly described and motivated.
Our response: In the revised manuscript we have made several changes: We have included a theoretical framework (Andersen's behavioural model of health service use) and we have included a brief explanation of the social and health care services in Finland to help international readers to compare our results with other countries. We have clarified the purpose of our study.

3. The first statement in the background lacks references. It is true that the increasing demand for healthcare and social services requires a more integrated care for older people – but it is not always true that this requirement leads to a more intense collaboration between service providers. There is literature stating that collaboration is not working and that older people’s health care and social services are fragmented - which may have an impact on quality of care and health economics.

Our response: We say in the manuscript: “Traditionally, the health care and social service sectors have operated separately. The growing demand for integrated services and the rising costs are leading to a more intensive collaboration between the health care and social service providers.” We didn’t make a statement on behalf or against the integration. It is known that integration has its benefits and weaknesses. We have added the reference: International Journal of Integrated Care – Vol. 4, 3 September 2004 – ISSN 1568-4156 – http://www.ijic.org/Developing integrated health and social care services for older persons in Europe, Kai Leichsenring.

In Discussion, however, we state: “Our findings indicate that the administrative structure alone does not ensure that integration of care has positive effects. Earlier studies have suggested that community based integrated health and social care services might better meet the multiple demands of the population, especially among frail elderly population (33, 36, 37). Based on our results, it seems that success of integration may depend on the combination of methods and strategies selected to achieve this objective.”

4. The second paragraph in the background has a strong Finnish focus (which could be motivated if it is clearly stated in the aim)

Our response: We have now added a brief explanation of the social and health care services in Finland to help international readers to compare our results with other countries, and we have abbreviated the text.

In the second paragraph we now write:

In Finland, social and health services are largely financed with public funds, and the principal goal is that services are equitably accessible to everyone (2). The stated national targets for services for over 75 years old people are: 92 % are living at home independently or using appropriate health and welfare services, 14 % are receiving regular home care, 5-6 % are receiving informal care-support, and 8-9 % are living in sheltered housing with 24-hour assistance or in long-term care in health centre hospitals (3).
5. As described in the third paragraph in the background: It is well known that several variables are associated with health service utilization and costs in older people. This section could be elaborated and be more specific in terms of previous results.

Our response: We agree with this, and in the third paragraph we now write:

When developing elderly care policies we need to know why people are using health and social care, and which factors are related to equitable access to care. Andersen’s behavioural model of health service use (4, 5) provides a useful theoretical framework for assessing the multiple dimensions of access to care. The model contains three sets of predictive factors: predisposing, enabling and need factors for explaining health services utilization. The model has been found useful in gerontological research as it can be adapted according to the research question (6) (7) (8) (9). In our study we applied behavioural model to a sample of frail elderly persons to assess their use of services.

6. The term frailty is not defined and described in the background

Our response: In Methods, we have added the inclusion criteria and the definition of frailty:

In the revised draft we now write:

The inclusion criteria were age of 65+ years, progressively decreasing functional ability, and risk of institutionalization within 2 years. The definition of frailty is based on the Pensioners’ Care Allowance benefit granted by the Finnish Social Insurance Institution (SII). This definition covers biological, physiological, social, and environmental changes.

7. Integrated care needs to be more clearly defined in the background

Our response: We agree that integration is a multidimensional phenomenon and our variable has major limitations. Also the translation of the question needs correction. We are referring to administrative integration only. This means joint budgeting and management. There is evidence that administrative and financial integration can help to achieve several policy objectives.

In Methods, we now write as follows:

Heading: Administrative integration of the health and social care sectors at municipal level

At municipal level, we investigated if municipalities had integrated the administration of their health care and social services (joint budgets and management). We asked the municipal social and health care officials: “Is your local health and social care administration integrated or not?” (yes/no).

8. The design and population section would benefit from a clarification about the study design. One of my main concerns is about the design in general. The sample was part of a previous experimental study meaning that some (it is not
stated how many) received an intervention – which could have effected their level of service utilization. I am not convinced that just controlling for rehabilitation in the analysis is enough to erase the effects of the intervention (since the intervention must have been complex). The motivation for the design choice and statistical analysis needs to be clearer, and more information is needed about the RCT in order for the reader to assess its impact on the results in the present study. My main question is, however: Why did the authors not use only those in the control group for this study?

Our response: We admit the concern of the design is justified. The subjects were originally recruited to participate in a randomized controlled trial concerning a geriatric rehabilitation programme designed for frail elderly persons. Half of the subjects received rehabilitation. We have earlier reported on the results of a cost-effectiveness analysis of the rehabilitation, and the costs per person of health and social care services were similar in both groups (rehabilitation and control). There were not statistically significant differences.

We have controlled this in all dimensions:

1. All measurements were baseline information (functional assessments, living conditions, informal help) so it is impossible that intervention had influenced those.

2. Mean annual health and social care costs were similar in both groups (rehabilitation and control) and there were not statistical differences between the groups. (Reported in J Rehabil Med. 2010 Nov;42(10):949-55. Economic evaluation of a geriatric rehabilitation programme: a randomized controlled trial. Kehusmaa S, Autti-Rämö I, Välaste M, Hinkka K, Rissanen P.)

3. The rehabilitation variable was not statistically significant in any of our models.

9. Another main concern is that data about consumptions and costs are based on various sources and in general there is a need for a clearer description of the various data sources and registers and their features –and how for instance costs were calculated. This is important for assessing validity and reliability.

Our response: In Methods, we write: “The total expenditure of health and social services utilization was determined by multiplying the use of services by their standard unit costs. For the monetary valuation of health and social care services, we used Finnish standard costs information (23). Because we used standard costs, any variation in the costs variables resulted from differences in the utilization of services.”

In Discussion, we write:

“In lack of national registers, data on municipal primary health care and social care services were collected through questionnaires that were completed by the elderly participants and by the representatives of the local social and health care units. In Finland, municipalities are the main provider of services for the elderly, and therefore, municipal records on service use are comprehensive and reliable.
Furthermore, a vast majority of the costs were calculated from registry data, which in Finland are regarded to be very reliable (38).

10. The inclusion criteria’s needs to be clarified: What was the definitions of weakened functional ability and need of regular home help.

Our response: In Methods, we have added the inclusion criteria and the definition of frailty in the text:

The inclusion criteria were age of 65+ years, progressively decreasing functional ability, and risk of institutionalization within 2 years. The definition of frailty is based on the Pensioners’ Care Allowance benefit granted by the Finnish Social Insurance Institution (SII). This definition covers biological, physiological, social, and environmental changes.

11. The self reported questionnaire about outpatient utilization: What were the participants asked about: Number of visits, telephone contacts etc and within what time frame?

Our response: The participants were asked about the number of visits during the preceding year. We did not ask about telephone contacts because there is no national standard cost information for telephone contacts.

In the revised draft we now write:

A self-reported questionnaire was used to collect information about the number of visits to the public sector outpatient care during the preceding year.

12. The section describing the various models of service utilization may be better suited under the analysis section

Our response: On the basis of other comments we have received, there is a need to describe the models more specifically and clarify the categorization of the social service costs. That is why we decided not to move this description to the analysis section.

13. Under the paragraph functional assessment: It is not clear if this data was based on self-reports or physiotherapist assessments. It is not clear how the authors dealt with aspects related to cognitive impairments: For instance: What happened if a participant were judged to have a low value on the MMSE? Did that person still answer questions about QoL and changes in health status and did that person fill out a self-reported questionnaire as well. If so: How did the authors deal with aspects related to reliability and ethics.

Our response: For this study, the assessments were carried out at the local health centres in each subject’s home municipality by three independent and accredited examiners, who were qualified physiotherapists, extensively trained for these assessments, and without any role in the intervention. The 15D questionnaire had been sent in advance to each subject who was asked to complete and bring it along to the health centre. The questionnaire was checked by the examiner on arrival at the health centre and any incomplete sections were
completed by interviewing the subjects.

In Methods, we now write: The assessments were carried out by three accredited examiners. --- The questionnaire was checked by the examiner and any incomplete sections were completed by interviewing the participants.

14. Under statistical analysis: This part would benefit from a clearer description of the quality of the analyses. The authors stated that they did check for correlations but no information is given about other aspects related to statistical validity: for instance R values and, when suitable, residual analysis.

Our response: We used multilevel modelling in the analysis in order to capture the two level structures of data (patient and municipality levels). The problem with multilevel analysis is that while it is an advanced method, it cannot produce similar R-values or residual analysis as traditional regression analysis.

15. The discussion contains interesting aspects. However in some paragraphs the authors repeat their results and do not discuss them and in some places the conclusions are not clearly motivated in the results or founded in previous research. It is for instance plausible to assume that a decrease in social services may cause higher costs for health care- however, frail old people are known to have complex needs and co morbidity and it is possible that their medical need is not fulfilled within the social service sector so it is not fragmentation but declining health that causes a great need for health care – and therefore costs.

Our response: We agree with this and have now made several changes in the structure of Discussion.

In the revised draft we now write:

In our study, a connection was found between the utilization of social care services and perceived health. Those who reported improvement in their health status during the preceding year were more frequent users of social care services. According to Andersen, effective access to care is established when use of services is connected with improves in health status (5). Our finding supports the evidence that if a person receives adequate support and social care services, his or her need for health care services may be reduced (32). Currently, the municipalities are cutting down support services and targeting services only for those who are in the highest need, which may, in the long run, result in increased costs of health care. Earlier studies have shown that ADL-dependent subjects and those at risk of depression had significantly more hospital stays (19).

Reviewer: Joan Gené Badia

Reviewer’s report:

The paper is of interest because it analyses if the municipal social services are equitable and explores the relationship between the social care and the health
care in the frail elderly. It is of general interest because many European countries have social services managed at the municipal level.

Although methods are not well explained. It is a major limitation to categorize the service as integrated or not integrated only by a single question to the health or social care provider. Integration is a complex matter, a continuum, not a yes or not situation. This relevant concept for the paper conclusions is subjective, and is not defined in the paper and not clarified to the surveyed professionals.

The absence of the social and economic variables in the analysis of the factors related to health and social services utilisation is an important limitation of the study. Results and conclusions might vary if such variables were considered in the analysis.

Our response: We thank the reviewer for the comments.

We agree that integration is a multidimensional phenomenon and our variable has major limitations. Also the translation of the question needs correction. We are referring to administrative integration only. This means joint budgeting and management. There is evidence that administrative and financial integration can help to achieve several policy objectives.

In Methods, we now write as follows:

Heading: Administrative integration of the health and social care sectors at municipal level

At municipal level, we investigated if municipalities had integrated administrations of their health care and social services (joint budgets and management). We asked the municipal social and health care officials: “Is your local health and social care administration integrated or not?” (yes/no).

Comments to the authors

- Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

Introduction

1.- In the introduction authors must mention other papers with same or similar objectives

2.- The purpose of the study must be better presented. Authors must mention the subjects of the study (elderly patients with chronic conditions and dependent / frail elderly persons)

Our response to 1 and 2: We have added in the manuscript methodological background for the study and stated the purpose of the study more clearly. We have made following additions to the text:

The elderly are disproportionate users of the health and social care system and
this provides a major challenge to the planning of services for older people.

When developing elderly care policies we need to know why people are using health and social care, and which factors are related to equitable access to care. Andersen’s behavioural model of health service use (4, 5) provides a useful theoretical framework for assessing the multiple dimensions of access to care. The model contains three sets of predictive factors: predisposing, enabling and need factors for explaining health services utilization. The model has been found useful in gerontological research as it can be adapted according to the research question (6) (7) (8) (9). In our study we applied behavioural model to a sample of frail elderly persons to assess their use of services.

The purpose of our study was to identify patient-level characteristics and municipality-level service patterns that may be associated with the use and costs of health and social services for frail elderly people.

Methods

3.- The inclusion criteria must be clarified in the method section, despite these criteria have been published in the previous paper (randomised controlled trial concerning a geriatric rehabilitation programme designed for frail elderly)

4.- Authors must clarify witch definition of “fry elderly patient” are using (provide reference). Different definitions of this concept exist in the literature.

Our response to 3 and 4: We have added the inclusion criteria and the definition of frailty to the text:

The inclusion criteria were age of 65+ years, progressively decreasing functional ability, and risk of institutionalization within 2 years. The definition of frailty is based on the Pensioners’ Care Allowance benefit granted by the Finnish Social Insurance Institution (SII). This definition covers biological, physiological, social, and environmental changes.

5.- A brief explanation of the social and health care services in Finland is also needed for international readers

Our response: In the background we have added the national target for services for elderly to the text:

In Finland, social and health services are largely financed with public funds, and the principal goal is that services are equitably accessible to everyone (2). The stated national targets for services for over 75 years old people are: 92 % are living at home independently or using appropriate health and welfare services, 14 % are receiving regular home care, 5-6 % are receiving informal care-support, and 8-9 % are living in sheltered housing with 24-hour assistance or in long-term care in health centre hospitals (3).

6.- Please, provide some important information such is:

- When the study was performed?
Our response: In the Methods, we write:

The individual-level data were obtained from randomised controlled trial concerning a geriatric rehabilitation programme designed for frail elderly persons (15)(16), which was conducted during 2002-2007 (The Age-Study).

- Reference of the questionnaires (service utilisation) used and notice if they are validated in your country.

- How this data are codified

Our response: We used national registry data on the use of health and social care services, whenever possible. Because of the lack of registry data on the use of public sector outpatient health care services, a questionnaire was used to collect information. Also, due to the lack of registry data, the data on the utilization of social care services were obtained from the municipal social and health care officials, using a questionnaire. The officials collected data on social services use from their clients’ individual care and service plans. For this information we did not use validated questionnaires and that is why there are not references.

- Provide reference of the cost per service scheme

Our response: We have now added the reference:

For the monetary valuation of health and social care services, we used Finnish standard costs information: Hujanen T. Terveydenhuollon yksikkökustannukset Suomessa vuonna 2001. (Unit cost of health care service in Finland 2001). 2003, THL.

- Validation of the self-reported questionnaire the availability and extent of informal care

- the availability and extent of informal care

Our response: As far as the validation issue is concerned, please, refer to our answer to the comment on the questionnaires above. As to the availability and extent of care, we have added the following text (in point 5):

In Finland, social and health services are largely financed with public funds, and the principal goal is that services are equitably accessible to everyone (2). The stated national targets for services for over 75 years old people are: 92 % are living at home independently or using appropriate health and welfare services, 14 % are receiving regular home care, 5-6 % are receiving informal care-support, and 8-9 % are living in sheltered housing with 24-hour assistance or in long-term care in health centre hospitals (3).

- Description of the rehabilitation programme

Our response: For the purposes of the Age Study, the subjects were randomly assigned to either an in-patient rehabilitation programme or standard social and health care. We have included in the manuscript a reference to the earlier published paper, which describes the rehabilitation programme in more detail. In
this study, we standardized the effect of the rehabilitation programme and included rehabilitation as an explanatory variable in all our models.

7.- Why didn’t you assess the formal help with the number of hours per week? Are all of the similar?

Our response: There is previous research on opportunity cost of informal care, which is based on valuing the caregivers time input (care hours provided). Time inputs do not tell us what the informal care contains. We have included the functional assessments in our models. These measures are better related to the caregiver’s burden and work load.

Results

8.- A statistical test must be used to show the statistical differences between the population under and over 75.

Our response: We have added these tests in the manuscript (Table 1).

9.- Provide figures for your the statements:
- “Independent living and better functional ability (FIM) decreased health care utilization (not tabulated).”

Our response: In health care service utilization the health-related quality of life measure is a powerful indicator and it captures all variation. We wanted to provide the readers with additional information what would have happened if HRQoL was not included in the model. Which variables would then be statistically significant? This additional information could be removed, but we think that it is not appropriate to add this speculation in Table 1.

- “Every five year increment in age and living alone increased the probability of social services utilization. Availability of informal care reduced the probability”.

Our response: These figures are given in Table 2, (MODEL 2).

- “The integrated social and health care sector was not significantly related to costs in the multivariate setting (not tabulated)”

Our response: We write in Methods: “The independent variables were included in the multivariate model using the entrance value of P<0.05 in the univariate analysis.”

And we write in Results: “The entrance value to multivariate analysis was P<0.05, but we conducted the analysis also with the integrated social and health care sector variable included. The integrated social and health care sector was not significantly related to costs in the multivariate setting (not tabulated).”

Again, we want to provide the additional information about the integrated care. In a univariate setting, integrated care is not statistically significant and that is why it is not included in the multivariate analysis. This could be removed, but we think that it is not appropriate to add this speculation in Table 2.
Discussion

10.- Is the sample representative of the Finish Elderly population? If not state as a limitation of the study.

Our response: Our sample is representative of frail old population.

In Methodological considerations, we write:

While frail aged people with deteriorated health must be provided care as soon as any need occurs, the results of this study cannot necessarily be generalized to apply to the aged population as a whole.

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

11.- You also may conclude that your social services are reactive, because services are targeted to the population with worse health

12.- You can explain why there is a variability in the social services and not in the health services if both are based at the municipal level in Finland?

Our response to 11 and 12: We thank the reviewer for these comments which we found very useful. We have now added the following text:

Since informal care could be substituting for formal social care services, it is possible that differences in the municipalities’ policies to support informal care explain, to some extent, the variability in social service use.

- Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

13.- In table 2 authors must mention that the unit are €

Our response: We have made this change.

Reviewer: MARIA LUCIA L LEBRAO

Reviewer’s report:

1. Is the question posed by the authors well defined? YES
2. Are the methods appropriate and well described? YES
3. Are the data sound?
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? YES
5. Are the discussion and conclusions well balanced and adequately supported by the data? YES
6. Are limitations of the work clearly stated? YES
7. Do the authors clearly acknowledge any work upon which they are building,
both published and unpublished? APPARENTLY YES
8. Do the title and abstract accurately convey what has been found? YES
9. Is the writing acceptable? YES

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)
  It would be interesting, thinking in global comparisons, to know the average incomes on Finland for the cost analysis, in order to compare with other countries.

- Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
  I have not found any reference in the manuscript on the effect of sampling design on analysis and their weightings. It is interesting to add.

- Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)
  Nothing to add.

Our response: We thank the reviewer for the comments.

We have added information about the frail subject group, and the generalizability of our findings, and a brief explanation of the provision of social and health care services in Finland to help international readers to compare our results with other countries.