Does education adds more health in the elderly? ABUEL study results

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Abstract

Aim: To evaluate the prevalence of somatic complaints and its relation with education among elder in Europe.

Methods: Data collection was performed from January to July 2009. The respondents (n=4451) were randomly selected persons aged 60-84 from seven European cities: Ancona (Italy), Athens (Greece), Granada (Spain), Kaunas (Lithuania), Ludwigsburg (Germany), Porto (Portugal) and Stockholm (Sweden). Somatic complaints were measured with the 24-item version of the Giessen Complaint List (GBB-24).

Results: Participants from Portugal, Lithuania and Spain reported a higher level of somatic complaints as measured by the GBB-24 than those from Sweden. Germany, Italy and Greece. The most prevalent complaints were pain in joints and limbs (29.6%), backache (24.1%), heaviness or tiredness in the legs (19.1%) and general tiredness (15.7%). Participants who had lower education (primary or less) tended to score high on somatic symptoms. Additionally, there was a difference in the prevalence of complaints between education groups. That is, high education decreased the risk of having any of the somatic complaints (OR differed from 0.53 to 0.84) and was the factor that decreased the persistence of high level of GBB-24 and sub-scales scores.

Conclusions: The results indicate that somatic complains are associated with education level in elderly. To address this public health challenge, collective actions should be facilitated.

Keywords: somatic complaints, education, GBB-24, elder
Introduction

Demographic trends and increase of welfare in Europe has led to the significant grow of elder persons in the society (Eurostat 2010). It is commonly agreed that the rapid increase of the old generations will subsequently change the socio-demographic structure of society and pose challenges to the use of health care services (Kanopiene 2006). According to the World Health Organization major threats for this group are dementia, depression, suicide and various somatic disorders (e.g. cancer). The persistence of these health problems leads to that the elder persons consume a disproportionately large proportion of all prescribed drugs and health care services (WHO, 1999). Therefore, the continuing assessment of health status and somatic complains of this group is of growing importance.

It is established that self-rated health (SRH) is not only a valid and reliable indicator of the general health of the population, but also a good predictor of mortality and morbidity (Alexopoulos 2009; Damian 1999; Idler 1997; Molarious 2000; Mossey 1982; Segovia 1989). However, SRH serves as measure for general health, but cannot identify the specific health problems. In our days is growing interest in investigation of subjective health complains, which can be early manifestations of organic, pathological diseases (Eriksen 2002). A growing number of studies emphasize the thigh correlations between socio-economic factors and subjective health complains in older persons (Beutel 2004; Borglin 2005; Gunzelmann 2006; Tibblin 1990). However, these studies are presenting data from national samples and using different methodologies. This limits possibilities for international comparisons. There is a lack international, multi-centre studies on this issue.

Thus, the aim of the present study was to evaluate the prevalence of somatic complaints and its relation with education among elder in Europe.
Methods

Population and design

Data for this study was collected during the European project “Abuse of the elderly in the European region” (ABUEL). The target population for ABUEL was persons aged 60 – 84 years living in communities in Stuttgart (Germany), Athens (Greece), Ancona (Italy), Kaunas (Lithuania), Porto (Portugal), Granada (Spain) and Stockholm (Sweden). Recruitment of eligible participants and data collection was performed from January 2009 to July 2009. The sample size of the study population was calculated based on expected ranges of prevalence of violence observed in previous surveys. Assuming a prevalence of abuse of 13% (Cooper 2008) with a precision of 2.6%, a sample size of 633 individuals in each country was required. The sample size was customized for each country according to the population of individuals aged 60-84 years, with a maximum of 642 individuals in each of the participating countries because of the infinite population assumption. The sample was calculated proportional to age-gender groups in the population in each country. Three sampling approaches were used in ABUEL: 1) registry based sampling (Germany, Spain, Italy, Lithuania, Sweden); 2) cluster route (Greece); 3) and cluster sampling (Portugal). Sampling and administration procedures were performed according to the national requirements for this type of studies. Written information about the ABUEL study was sent to the eligible individuals’ homes. Trained interviewers telephoned the eligible persons (excepting Lithuania) providing information about ABUEL. Informed consent from participants was obtained before interviewing. Two administration modes were used: face-to-face interviews (Spain, Italy Greece, Lithuania, Portugal, Sweden); and mixed methods: face-to-face interviews and mailed questionnaires (Germany, Spain). The total number of participants amounted to 4451. Response rates in the sampling base varied between countries from 18.9%-87.4%, with a mean of 45.2% across countries. However, there were no major differences (age and gender) between refusals and
non-refusals nor did they differ from the general population. The final sample consisted of 4467 persons (2,559 women, 57.29%). Ethical permission was sought and received in each participating state.

Measures

The participants completed a standardized questionnaire with various scales and questions (e.g. somatic complaints). This study focuses on somatic complaints and education.

Somatic complaints were measured with the short version of the Giessen Complaint List (GBB-24, Brahler & Scheer, 1995), which consists of 24 items (graded 0-4) about various somatic complaints (e.g. physical weakness). The total score amounts to 86 and the items can be divided into 4 sub-scales (exhaustion, gastrointestinal, cardiovascular, musculoskeletal). High scores correspond to high levels of somatic complaints. Cronbach’s Alpha 0.920.

Authors of GBB-24 scale did not instruct how to define high or low level of somatic complaints. In this study, high level of GBB was considered as high when it was higher than the median of all sample (Me=12). Such methodology is often used in other studies with similar scales (e.g. Sense of coherence) (e.g. Stankunas 2009).

Statistical analyses

The bivariate relation between somatic complaints and categorical variables (e.g. education level) was analyzed with Kruskall-Wallis tests and Bonferroni corrections following a Shapiro-Wilks test showing that scores in somatic complaints were not normally distributed. Continuous variables were presented as a mean along with its standard deviation (M±SD). The correlation between two categorical variables was assessed using the Chi-square test ($\chi^2$). Significance level ($P$) less than 0.05 was considered as statistically significant. One-way ANOVA was used to test the difference between two or between more than two independent
groups. $F$ criterion was used for evaluation of these differences. For evaluation of the impact of explanatory variables on analyzed event (binary dependent variable), enter model of logistic regression was used. The dependent variable was high level of somatic complaints. Sex, age-group, education and marital status were used as independent variables. Risk was measured using the odds ratio (OR) with the 95% confidence interval (CI). Data were analyzed using the Statistical Package for the Social Sciences for Windows, version 13.0 (SPSS for Windows 13).

**Results**

**Demographics/Socio-economics**

As shown in Table 1, of the 4451 respondents, 1908 (42.5%) were males and 2559 (57.5%) females. The distribution of respondents by age level was: 60-64 years (25.2%), 65-69 years (24.4%), 70-74 years (21.1%), 75–79 years (16.1%) and 80–84 years (12.2%); by education: cannot read/write (3.1%), without any degree (4.2%), less than primary school (7.5%), primary school/similar (24.4%), secondary school/similar (40.0%), university/similar (19.2%), and other (1.6%). Further in analysis we used four education groups: “less than primary” (included groups “cannot read/write”, “without any degree”, “less than primary school”), “primary”, “secondary” and “university”. The group “other” was not included in analysis.

**Somatic complaints**

As shown in table 2, participants from Portugal, Lithuania and Spain (22.5, 21.4 and 19.3) reported higher scores in somatic complaints than those from Sweden, Germany, Italy and Greece (9.4, 12.3, 12.7 and 16.6). Further, The oldest age groups reported more somatic complaints (75-79 years, 19.6±16.25; 80-84 years, 19.0±14.58) than the youngest age group
(60-64 years, 13.5±13.23). Females and widow/er participants complained more of somatic symptoms than counterparts.

Participants who had lower education (primary or less) tended to score higher on somatic symptoms than counterparts, particularly in the exhaustion and musculoskeletal sub scales.

The most prevalent complaints were: paint in joints and limbs (29.6%), backache (24.1%), heaviness or tiredness in the legs (19.1%) and general tiredness (15.7%) (Table 3). In addition, it was observed significant difference in the prevalence of complaints between education groups. Based on these findings, it can be emphasized that less educated people express more somatic symptoms, comparing with the more educated.

Factors associated with somatic complaints

For the evaluation of the impact of education to high level of somatic complaints (binary dependent variable), logistic regression was used (Table 4). Marital status, age and sex were included in the analysis as well. Results indicated, that the higher education decreased the risk of having any of somatic complaints (OR differed from 0.53 to 0.84). In most cases being male was associated with a decreased risk of having a particular somatic complaint, but not all of them were statistically significant. Meanwhile, older age and being single/divorced/windowed increased risk of somatic symptoms. In addition, higher education was the factor, which significantly decreased the risk of having high GBB-24 and subscales scores. Meanwhile, older age, being single/divorced/window, and female gender increased risk of expiring more somatic symptoms.
Discussion

Somatic complaints are very common in the population. For example, a Nordic country study (Eriksen 1998) reported that more than 75% of respondents had one or more subjective health complaints in the past 30 days. More than 50% reported tiredness, 42% headache, 37% worries, 35% low back pain and 33% pain in their arms and shoulders. Studies with GBB-24 scale (Beutel 2004; Kirkcaldy 2005) indicate that somatic complaints are very common in general population and the levels vary from 17.7 (for all age groups) to 21.3 (61-70 years) and 25.9 (>70 years). A growing number of studies report an increase in complains with age, i.e. older people express more health complaints than younger (e.g. Bressler et al. 1999; Gunzelman 2006; Molarius 2000). On the other hand, this association may reflect for instance health inequalities due to a background of differences in occupational status, with people of lower occupational status reporting more complaints (Marmot et al., 1991). However, the relation between older age and increased levels of somatic complaints is not consistent across all studies. Some researchers (Damian 1999; Zhao et al. 2010) have found that older persons evaluate their health status positively, even sometimes better than younger ones. An explanation could be that older persons compared to younger have a long experience in dealing with live events and thus are able to cope better with diseases (Jang et al. 2004; Martin et al. 2001). Further, older persons have different values and expectations concerning health because of higher prevalence rates of health problems in age peers. To older persons, disease may be more a normative age-related change than a health problem (Jang et al. 2004).

In spite of existence of controversies in results from referred studies, there is common agreement, that aging will raise the challenges to sensitive public sectors like social support and health care (WHO, 1999). Among many opportunities to reduce, the pressure to health care is to stay active and healthy in aging. In 2001, the European Parliament concluded, that demand and supply of health care are heavily dependent on the standard of living and the
level of education. At present, patients are better educated and able to adopt healthier lifestyles and a prevention-based attitude, which in the long-term makes it possible to avoid the use of intensive and costly care (European Parliament 2001). This suggests, that the investment to can help to avoid sharp increase of health care costs in the future.

The ABUEL study confirms this predication and emphasizes that education is a positive factor for less somatic complaints in the elderly. These findings confirm the classical associations reported in many studies that a level of education is related with a better health (e.g. Kunst 1993; Smith 1992;). Educational inequalities in health can be explained, emphasizing cultural, economic, material and psychosocial factors (Kunst 2002; Wilkinson 1996). According to Graham (2000), three major factors can mediate the effect of education on health status: 1) Health-related behaviours such as alcohol use, smoking and diet; 2) Access to, use of, and quality of health care services; and 3) Material living standards, including working and housing conditions. On the other hand, educational inequalities may affect health through individual perceptions of one’s place in social hierarchy producing negative emotions such as stress and distrust that are translated into poorer health. In general, a lower level of education is linked with lower levels of health and life satisfaction because of a close association between education, higher incomes and better jobs (Avendano, 2009). Perceptions of relative position and negative emotions are translated into antisocial behaviours such as homicides, traffic accidents, reduced civic participation, which results in less social capital and social cohesion within the community (Wilkinson 1996). Hoff (2006) argues that all research evidence indicate the outstanding importance of education – the higher the level of education and, thus, the socio-economic status – of any individual (young or old), the less likely is she/he to be affected by poverty and social exclusion. These are the strongest determinants of health and quality of life in old age (Drever et al. 1996; Marmot 1999). The possible role of psychosocial factors has been extensively discussed in literature (Elstad
2000). It is not surprising that health behaviours and health outcomes are strongly related to social conditions. Structurally determined life-styles as opposed to freely chosen life-styles amongst lower educated and less privileged groups deserve particular attention. Such evidence reinforces the need for combining structural changes with health education efforts, when trying to influence life-style factors (Kalediene, 2008).

The findings of this study and the results of the referenced studies lead to hope that education will ensure better health in the coming elders. These changes will most probably help countries to save resources for health care in elderly. However, there are some threats as well. Better-educated elders will expect better quality and efficiency from health care systems. The spread of the new information technologies offers greater opportunities for seeking medical information; make comparisons with procedures in other countries; active participation in decision-making (European Parliament 2001). All mentioned factors would raise the expectations of elders and subsequently the costs. This indicates that the efforts should be targeted not only for literacy increase, but also to health promotion and disease prevention measures.

Some possible study limitations should be mentioned. First, the results are possibly limited in part by the type of respondents selected for this study. The samples (women/men) were recruited from urban centers and seven European countries, and may not be representative for samples from non-urban areas and other countries in Europe or elsewhere (e.g. USA). Moreover, non respondents were not investigated. It could be that, refusals would have more somatic complaints, than respondents do. Secondly, the accuracy of the data was solely dependent on the participants’ subjective assessment of their situation. No objective assessment strategies were incorporated to corroborate their responses, e.g. hospital records. Finally, some countries (Portugal and Greece) has used different methodology for sampling and data collection. Thus, it can be predicted that different methodologies could have
influence to the results. In spite of these limitations, the study design and methodology allows us to have reliable data and to make valid conclusions.

Conclusions

This study adds to the growing evidence of associations between education and ill health. The results indicate that somatic complaints are more common among ABUELI study participants from lower education groups comparing with participants with university degree. This indicates that social policy should be aimed at reducing inequalities in education by guarantee of equal opportunities for education and promotional efforts directed at young people to complete their education. Constructive actions should be developed to address the health problems of the least privileged groups in terms of education. For improvement of health status of the present elders, collective actions should be facilitated. Among the many approaches to solve this problem, we would like to emphasize investment in human capital, creation of effective social support systems, increase accessibility to health care and psychological help for elderly. Only multisectoral collaboration and common efforts will be able to accept this public health challenge.

Acknowledgements

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References


Table 1. Mean scores of somatic complaints by country and demographic variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Somatic complaints(^a)</th>
<th>(P)-values (^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n  m  SD</td>
<td>(&lt;0.0001)</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>648 12.3 12.30</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>643 16.6 15.46</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>628 12.7 10.84</td>
<td></td>
</tr>
<tr>
<td>Lithuania</td>
<td>630 21.4 14.40</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>656 22.5 16.61</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>636 19.3 17.30</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>626 9.4 10.08</td>
<td></td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td></td>
<td>(&lt;0.0001)</td>
</tr>
<tr>
<td>60-64 yr.</td>
<td>1124 13.5 13.23</td>
<td></td>
</tr>
<tr>
<td>65-69 yr.</td>
<td>1088 14.5 14.20</td>
<td></td>
</tr>
<tr>
<td>70-74 yr.</td>
<td>961 17.5 15.30</td>
<td></td>
</tr>
<tr>
<td>75-79 yr.</td>
<td>749 19.6 16.25</td>
<td></td>
</tr>
<tr>
<td>80-84 yr.</td>
<td>545 19.0 14.58</td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td>(&lt;0.0001)</td>
</tr>
<tr>
<td>Female</td>
<td>2559 19.0 15.79</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1908 12.1 12.01</td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td>(&lt;0.0001)</td>
</tr>
<tr>
<td>Single</td>
<td>270 15.1 13.49</td>
<td></td>
</tr>
<tr>
<td>Married/Cohabitig</td>
<td>2903 14.4 13.23</td>
<td></td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>343 17.8 17.37</td>
<td></td>
</tr>
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</table>
Table 2. Comparison of mean scores of somatic complaints in different education groups of elders

<table>
<thead>
<tr>
<th></th>
<th>m±SD</th>
<th>F, p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total N=4390</td>
<td>Less than primary n=1092</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>4.9±5.3</td>
<td>7.1±6.2</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>2.1±3.3</td>
<td>2.9±4.2</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>2.7±3.8</td>
<td>3.9±4.8</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>6.6±5.5</td>
<td>9.8±6.6</td>
</tr>
<tr>
<td>Total GBB-24</td>
<td>16.3±14.9</td>
<td>23.7±18.4</td>
</tr>
</tbody>
</table>

m±SD – mean and its standard deviation; n – number of observed persons; F – criterion of analysis of variance; P – significance level; df – degree of freedom
<table>
<thead>
<tr>
<th>Condition</th>
<th>Total (%)</th>
<th>Less than primary (%)</th>
<th>Primary (%)</th>
<th>Secondary (%)</th>
<th>University (%)</th>
<th>χ², p (df=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical weakness</td>
<td>14.3</td>
<td>27.8</td>
<td>18.0</td>
<td>10.3</td>
<td>7.6</td>
<td>165.945</td>
</tr>
<tr>
<td>Heavy, rapid or irregular heart-throbbing</td>
<td>10.1</td>
<td>14.7</td>
<td>12.6</td>
<td>9.0</td>
<td>5.5</td>
<td>45.191</td>
</tr>
<tr>
<td>Pressure or heaviness in the stomach</td>
<td>5.5</td>
<td>10.4</td>
<td>6.1</td>
<td>5.0</td>
<td>2.1</td>
<td>51.381</td>
</tr>
<tr>
<td>Excessive need for sleep</td>
<td>6.7</td>
<td>8.9</td>
<td>8.0</td>
<td>5.8</td>
<td>5.1</td>
<td>13.478</td>
</tr>
<tr>
<td>Pains in joints or limbs</td>
<td>29.6</td>
<td>51.1</td>
<td>32.7</td>
<td>25.6</td>
<td>17.4</td>
<td>226.125</td>
</tr>
<tr>
<td>Dizziness</td>
<td>7.9</td>
<td>14.8</td>
<td>9.6</td>
<td>6.1</td>
<td>4.0</td>
<td>74.029</td>
</tr>
<tr>
<td>Backache</td>
<td>24.1</td>
<td>44.0</td>
<td>25.5</td>
<td>21.0</td>
<td>13.5</td>
<td>207.001</td>
</tr>
<tr>
<td>Pains in neck or shoulders</td>
<td>21.5</td>
<td>43.3</td>
<td>24.1</td>
<td>16.6</td>
<td>11.5</td>
<td>267.124</td>
</tr>
<tr>
<td>Vomiting</td>
<td>1.6</td>
<td>3.0</td>
<td>2.9</td>
<td>0.8</td>
<td>0.5</td>
<td>33.910</td>
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<td>Nausea</td>
<td>2.0</td>
<td>4.7</td>
<td>2.7</td>
<td>1.2</td>
<td>0.6</td>
<td>42.485</td>
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<tr>
<td>Sensation of tightness, choking or lumpiness in</td>
<td>4.0</td>
<td>9.5</td>
<td>4.4</td>
<td>2.9</td>
<td>1.4</td>
<td>73.788</td>
</tr>
<tr>
<td>Condition</td>
<td>Score</td>
<td>Median</td>
<td>Mean</td>
<td>Lower</td>
<td>Upper</td>
<td>P-value</td>
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<tr>
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<td>-------</td>
<td>--------</td>
<td>------</td>
<td>-------</td>
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<tr>
<td>The throat</td>
<td>3.8</td>
<td>8.0</td>
<td>4.7</td>
<td>2.7</td>
<td>1.5</td>
<td>0.001</td>
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<tr>
<td>Belching</td>
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<td></td>
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<tr>
<td>Heartburn</td>
<td>5.4</td>
<td>9.1</td>
<td>5.9</td>
<td>5.2</td>
<td>2.3</td>
<td>0.001</td>
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<td>Headaches</td>
<td>9.0</td>
<td>20.7</td>
<td>10.8</td>
<td>5.4</td>
<td>4.8</td>
<td>0.001</td>
</tr>
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<td>Tendency to rapid exhaustion</td>
<td>14.2</td>
<td>28.0</td>
<td>17.4</td>
<td>10.4</td>
<td>7.5</td>
<td>0.001</td>
</tr>
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<td>Tiredness</td>
<td>15.7</td>
<td>32.5</td>
<td>17.8</td>
<td>11.3</td>
<td>9.1</td>
<td>0.001</td>
</tr>
<tr>
<td>Feeling numb or benumbed</td>
<td>9.3</td>
<td>18.0</td>
<td>10.6</td>
<td>7.5</td>
<td>4.7</td>
<td>0.001</td>
</tr>
<tr>
<td>Heaviness or tiredness in the legs</td>
<td>19.1</td>
<td>38.3</td>
<td>22.8</td>
<td>14.4</td>
<td>9.4</td>
<td>0.001</td>
</tr>
<tr>
<td>Weariness</td>
<td>10.2</td>
<td>20.3</td>
<td>13.3</td>
<td>7.2</td>
<td>4.8</td>
<td>0.001</td>
</tr>
<tr>
<td>Twinges, pains or aching in the chest</td>
<td>4.0</td>
<td>7.9</td>
<td>4.9</td>
<td>3.0</td>
<td>1.9</td>
<td>0.001</td>
</tr>
<tr>
<td>Stomach-aches</td>
<td>4.4</td>
<td>7.7</td>
<td>5.0</td>
<td>3.8</td>
<td>2.5</td>
<td>0.001</td>
</tr>
<tr>
<td>Attacks of breathlessness</td>
<td>3.8</td>
<td>7.6</td>
<td>4.5</td>
<td>2.9</td>
<td>1.9</td>
<td>0.001</td>
</tr>
<tr>
<td>Head-pressure</td>
<td>5.5</td>
<td>11.6</td>
<td>7.2</td>
<td>3.6</td>
<td>2.2</td>
<td>0.001</td>
</tr>
<tr>
<td>Sudden bouts of heart-trouble</td>
<td>5.6</td>
<td>9.7</td>
<td>5.8</td>
<td>5.5</td>
<td>2.2</td>
<td>0.001</td>
</tr>
</tbody>
</table>
\( n \) – number of observed persons; \( \chi^2 \) – Chi-square, \( p \) – significance level, \( df \) – degree of freedom
Table 4. Risk of high level of somatic complaints among elders (logistic regression analysis)

<table>
<thead>
<tr>
<th>Somatic complaints</th>
<th>Variables (OR, 95% CI)</th>
<th>Higher education</th>
<th>Being male</th>
<th>Older age</th>
<th>Being single / divorced/ windowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical weakness</td>
<td></td>
<td>0.63</td>
<td>0.49</td>
<td>1.04</td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.58-0.69)</td>
<td>(0.40-0.60)</td>
<td>(1.03-1.05)</td>
<td>(1.25-1.81)</td>
</tr>
<tr>
<td>Heavy, rapid or irregular heart-throbbing</td>
<td></td>
<td>0.77</td>
<td>0.51</td>
<td>1.02</td>
<td>1.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.70-0.86)</td>
<td>(0.41-0.65)</td>
<td>(1.01-1.04)</td>
<td>(1.20-1.83)</td>
</tr>
<tr>
<td>Pressure or heaviness in the stomach</td>
<td></td>
<td>0.66</td>
<td>0.37</td>
<td>0.99</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.57-0.76)</td>
<td>(0.27-0.52)</td>
<td>(0.97-1.01)</td>
<td>(1.18-2.06)</td>
</tr>
<tr>
<td>Excessive need for sleep</td>
<td></td>
<td>0.84</td>
<td>0.54</td>
<td>1.01</td>
<td>1.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.74-0.95)</td>
<td>(0.41-0.71)</td>
<td>(0.99-1.02)</td>
<td>(0.83-1.39)</td>
</tr>
<tr>
<td>Pains in joints or limbs</td>
<td></td>
<td>0.66</td>
<td>0.42</td>
<td>1.04</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.61-0.71)</td>
<td>(0.36-0.49)</td>
<td>(1.03-1.05)</td>
<td>(0.98-1.31)</td>
</tr>
<tr>
<td>Dizziness</td>
<td></td>
<td>0.67</td>
<td>0.40</td>
<td>1.01</td>
<td>1.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.59-0.75)</td>
<td>(0.30-0.53)</td>
<td>(0.99-1.03)</td>
<td>(1.22-1.96)</td>
</tr>
<tr>
<td>Backache</td>
<td></td>
<td>0.65</td>
<td>0.45</td>
<td>1.03</td>
<td>1.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.60-0.70)</td>
<td>(0.39-0.53)</td>
<td>(1.02-1.04)</td>
<td>(0.97-1.33)</td>
</tr>
<tr>
<td>Pains in neck or shoulders</td>
<td></td>
<td>0.58</td>
<td>0.47</td>
<td>1.01</td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.54-0.63)</td>
<td>(0.39-0.55)</td>
<td>(1.00-1.03)</td>
<td>(1.02-1.41)</td>
</tr>
<tr>
<td>Vomiting</td>
<td></td>
<td>0.55</td>
<td>0.33</td>
<td>0.99</td>
<td>1.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.43-0.71)</td>
<td>(0.17-0.63)</td>
<td>(0.96-1.03)</td>
<td>(0.80-2.17)</td>
</tr>
<tr>
<td>Nausea</td>
<td></td>
<td>0.53</td>
<td>0.32</td>
<td>0.99</td>
<td>1.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.42-0.67)</td>
<td>(0.17-0.59)</td>
<td>(0.96-1.03)</td>
<td>(1.13-2.84)</td>
</tr>
<tr>
<td>Sensation of tightness, choking or lumpiness</td>
<td></td>
<td>0.54</td>
<td>0.71</td>
<td>0.99</td>
<td>1.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.42-0.67)</td>
<td>(0.17-0.59)</td>
<td>(0.96-1.03)</td>
<td>(1.13-2.84)</td>
</tr>
<tr>
<td>Condition</td>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>in the throat</td>
<td>0.46-0.64</td>
<td>0.50-1.01</td>
<td>0.97-1.01</td>
<td>1.30-2.49</td>
<td></td>
</tr>
<tr>
<td>Belching</td>
<td>0.59</td>
<td>0.66</td>
<td>0.99</td>
<td>1.94</td>
<td></td>
</tr>
<tr>
<td>Heartburn</td>
<td>0.50-0.70</td>
<td>0.46-0.95</td>
<td>0.97-1.02</td>
<td>1.39-2.71</td>
<td></td>
</tr>
<tr>
<td>Headburn</td>
<td>0.62-0.82</td>
<td>0.40-0.75</td>
<td>0.97-1.01</td>
<td>1.23-2.16</td>
<td></td>
</tr>
<tr>
<td>Headaches</td>
<td>0.54</td>
<td>0.38</td>
<td>0.97</td>
<td>1.52</td>
<td></td>
</tr>
<tr>
<td>Tendency to rapid exhaustion</td>
<td>0.63</td>
<td>0.53</td>
<td>1.04</td>
<td>1.26</td>
<td></td>
</tr>
<tr>
<td>Tiredness</td>
<td>0.57-0.69</td>
<td>0.44-0.65</td>
<td>1.02-1.05</td>
<td>1.04-1.52</td>
<td></td>
</tr>
<tr>
<td>Feeling numb or benumbed</td>
<td>0.57-0.68</td>
<td>0.41-0.61</td>
<td>1.03-1.05</td>
<td>1.14-1.64</td>
<td></td>
</tr>
<tr>
<td>Heaviness or tiredness in the legs</td>
<td>0.65</td>
<td>0.57</td>
<td>1.01</td>
<td>1.56</td>
<td></td>
</tr>
<tr>
<td>Weariness</td>
<td>0.59</td>
<td>0.46</td>
<td>1.04</td>
<td>1.30</td>
<td></td>
</tr>
<tr>
<td>Heaviness or tiredness</td>
<td>0.55-0.65</td>
<td>0.39-0.56</td>
<td>1.03-1.05</td>
<td>1.09-1.53</td>
<td></td>
</tr>
<tr>
<td>Twinges, pains or aching in the chest</td>
<td>0.61</td>
<td>0.53</td>
<td>1.03</td>
<td>1.34</td>
<td></td>
</tr>
<tr>
<td>Stomach-aches</td>
<td>0.63</td>
<td>0.75</td>
<td>1.01</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>Attacks of breathlessness</td>
<td>0.54-0.75</td>
<td>0.53-1.07</td>
<td>0.98-1.03</td>
<td>1.23-2.36</td>
<td></td>
</tr>
<tr>
<td>Head-pressure</td>
<td>0.61-0.83</td>
<td>0.44-0.85</td>
<td>0.98-1.02</td>
<td>1.11-2.06</td>
<td></td>
</tr>
<tr>
<td>Sudden bouts of heart-trouble</td>
<td>0.71</td>
<td>0.61</td>
<td>1.00</td>
<td>1.51</td>
<td></td>
</tr>
<tr>
<td>Sudden bouts of heart-trouble</td>
<td>0.65</td>
<td>0.75</td>
<td>1.02</td>
<td>1.27</td>
<td></td>
</tr>
<tr>
<td>Attacks of breathlessness</td>
<td>0.55-0.76</td>
<td>0.53-1.06</td>
<td>0.99-1.04</td>
<td>0.90-1.77</td>
<td></td>
</tr>
<tr>
<td>Head-pressure</td>
<td>0.65</td>
<td>0.58</td>
<td>1.03</td>
<td>1.55</td>
<td></td>
</tr>
<tr>
<td>Sudden bouts of heart-trouble</td>
<td>0.65-0.85</td>
<td>0.42-0.78</td>
<td>1.01-1.05</td>
<td>1.17-2.05</td>
<td></td>
</tr>
<tr>
<td>Sub-scale</td>
<td>OR</td>
<td>CI</td>
<td>OR</td>
<td>CI</td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----</td>
<td>----------</td>
<td>-----</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Exhaustion sub-scale (Me=3)</td>
<td>0.75</td>
<td>(0.70-0.80)</td>
<td>0.61</td>
<td>(0.53-0.69)</td>
<td>1.04</td>
</tr>
<tr>
<td>Gastrointestinal sub-scale (Me=1)</td>
<td>0.85</td>
<td>(0.79-0.90)</td>
<td>0.78</td>
<td>(0.68-0.89)</td>
<td>1.00</td>
</tr>
<tr>
<td>Cardiovascular sub-scale (Me=1)</td>
<td>0.80</td>
<td>(0.75-0.85)</td>
<td>0.58</td>
<td>(0.51-0.66)</td>
<td>1.03</td>
</tr>
<tr>
<td>Musculoskeletal sub-scale (Me=5)</td>
<td>0.68</td>
<td>(0.64-0.73)</td>
<td>0.40</td>
<td>(0.35-0.46)</td>
<td>1.03</td>
</tr>
<tr>
<td>Total GBB-24 scale (Me=12)</td>
<td>0.69</td>
<td>(0.64-0.74)</td>
<td>0.48</td>
<td>(0.42-0.55)</td>
<td>1.03</td>
</tr>
</tbody>
</table>

OR – odds ratio; CI – confidence interval; Me - median