

1 **Factors affecting employment status of home caregivers of elderly**  
2 **people**

3

4 Running Title: Employment status of home caregivers

5

6 Kiyoko Nishina<sup>1)2)</sup>, Kazuhito Yokoyama\*<sup>1)</sup>, Takehisa Matsukawa<sup>1)</sup>, Emiko Nishioka<sup>1)3)</sup>,  
7 Sachiko Iijima<sup>4)</sup>, Ayako Kudou<sup>2)</sup>, Fumihiko Kitamura<sup>1)</sup>

8

9 1) Department of Epidemiology and Environmental Health, Juntendo University

10 Faculty of Medicine, Tokyo, Japan

11 2) Department of Gerontological Nursing, Juntendo University Faculty of Health Care

12 Nursing, Chiba, Japan

13 3) Department of Midwifery and Women's Health, Kobe University Graduate School of

14 Health Sciences, Hyogo, Japan

15 4) Department of Nursing Administration, Juntendo University Faculty of Health Care

16 Nursing, Chiba, Japan

17

18 \*Corresponding author

19 Kazuhito Yokoyama, MD, DMSc

20 Department of Epidemiology and Environmental Health, Juntendo University Faculty

21 of Medicine, 2-1-1 Hongo, Bunkyo-ku, Tokyo 113-8421, Japan

22 Tel: +81-3-5802-1046

23 Fax: +81-3-3812-1026

24 E-mail: kyokoya@juntendo.ac.jp

25 **Abstract**

26 Objective: This study aimed to assess sociodemographic factors affecting the  
27 employment status of home caregivers of elderly people.

28 Participants: Subjects were 98 home caregivers (mean age,  $54.9 \pm 7.0$  years) who had  
29 been employed before they started providing care.

30 Methods: The employment status and sociodemographic characteristics of caregivers, as  
31 well as characteristics of elderly persons receiving care from the caregivers, were  
32 surveyed by self-administered questionnaires.

33 Results: Among 98 caregivers, 69 (70.4%) were employed and 29 (29.6%) were  
34 unemployed. Required care levels of elderly persons who received care were higher  
35 with unemployed caregivers than with employed caregivers ( $p < 0.05$ ). In unemployed  
36 caregivers, age was higher, the proportion of females was lower, care time was longer,  
37 and support from other family members was less compared with employed caregivers  
38 ( $p < 0.05$ ). Logistic regression analysis showed that care time (OR 0.99, 95% CI 0.98–  
39 1.00), age of caregivers (OR 0.80, 95% CI 0.71–0.91), and use of a home-visit nursing  
40 service (OR 0.19, 95% CI 0.05–0.75) were negatively related to employment, whereas  
41 support from family members was positively related to employment (OR 5.23, 95% CI  
42 1.41–9.34). Required care level was significantly correlated with care time ( $r = 0.37$ ,  
43  $p < 0.001$ ). Conclusions: A higher care level leads to a longer care time, resulting in  
44 unemployment. Leave from a job can be moderated by support from family members  
45 and a younger age of caregivers. Additionally, unemployment appears to increase the  
46 use of home-visit nursing services.

47 **Keywords**

48 Home caregiver, Employment, Care time, Family support, Home-visit nursing service

## 49 **Introduction**

50 In Japan, approximately 25% of people are 65 years old or older <sup>1)</sup>. According to  
51 the Employment Structure Basic Investigation in 2012 <sup>2)</sup>, 2,910,000 workers were  
52 coping with caregiving. Most of these caregivers were in the prime of their working life,  
53 and 65.3% of them were men. A heavy burden due to care has been observed in  
54 caregivers: Black et al. <sup>3)</sup> reported that caregivers of persons with Alzheimer's disease or  
55 related dementia face important social, psychological, and financial pressures. The  
56 perceived health status of female caregivers was reported to be negatively affected by  
57 the care-giving experience <sup>4)</sup>. However, a study in the USA <sup>5)</sup> indicated that caregivers  
58 rated their health better than non-caregivers and did not report more depressive  
59 symptoms of social isolation.

60 Many studies have shown that home care-giving affects the employment status of  
61 caregivers. Working hours are decreased in partner caregivers of patients with breast  
62 cancer <sup>6)</sup> and prostate cancer <sup>7)</sup>. Participation in the labour force is decreased among  
63 middle-aged females who provide care for an ill, frail, or disabled person <sup>8)</sup>. Among  
64 caregivers of persons with advanced cancer, greater loss of work productivity is  
65 associated with a greater number of care-giving hours, higher cancer stage, married, and  
66 greater anxiety, depression, and burden related to financial problems, disrupted  
67 schedules, and health <sup>9)</sup>. Loss of work productivity was also reported in caregivers of

68 chronically ill elderly patients <sup>10)</sup>. Among caregivers of patients with Parkinson's  
69 disease who were younger than 65 years, one-third had retired early or were on sick  
70 leave because of patient commitment, and in the other two-thirds, 40% worked  
71 part-time <sup>11)</sup>. In Japan, early retirement due to care-giving is reported in female  
72 caregivers <sup>12)</sup>. Caregivers of persons with severe dementia show a tendency to retire if  
73 they have no support from family members <sup>13)</sup>. A heavy burden of care, such as help  
74 with meals, changing clothes, bathing, and excretion, leads to changes in job status of  
75 female caregivers <sup>14)</sup>.

76       Recently, more preparedness was found to be associated with less role strain for  
77 family caregivers with less work/care-giving conflict in a study on the moderating  
78 effects of work-related conditions and interactive family care-giving variables in Taiwan  
79 <sup>15)</sup>. In the present study, we examined sociodemographic factors affecting the  
80 employment status of home caregivers in Japan.

81

82

### 83 **Methods**

#### 84 *Subjects and study procedure*

85       Subjects were home caregivers, aged 65 years or younger, who had been  
86 employed before they took up care-giving. A total of 174 nursing homes and 750

87 at-home care support providers were randomly selected from all institutions in Tokyo,  
88 Saitama, Kanagawa, and Chiba prefectures operated by the Welfare and Medical  
89 Service Network System, Independent Administrative Agency, Japan. These comprised  
90 10% of the total institutions in this area. One of the investigators (KN) phoned these  
91 924 institutions, asking for participation in the study, and 63 agreed to participate.  
92 Additionally, KN asked ARAJIN<sup>16)</sup>, a non-governmental organization, which provides  
93 support to home caregivers, for cooperation in the study. Self-administered  
94 questionnaires were distributed among 1108 users of 63 institutions and 140 home  
95 caregivers in connection with ARAJIN. These participants were asked to send back  
96 completed questionnaire by mail; 222 were returned to the investigators. Analysis was  
97 performed on 98 questionnaires with complete answers (recovery rate of 8.8%). The  
98 study was conducted from May to December, 2012, after approval of the Research  
99 Ethics Committee of the Faculty of Health Care Nursing, Juntendo University (No.  
100 24-12).

101

## 102 *Questionnaires*

103 Sociodemographic variables of persons receiving home care and caregivers are  
104 shown in Table 1. In Japan, a service by Long-term Care Insurance is provided  
105 corresponding to one's care levels as determined by the Long-term Care Approval

106 Board. The classification of care is by eight levels. These levels include those who  
107 qualify for independence, support required (1 to 2), and long-term care required (care  
108 levels 1 to 5) <sup>17)</sup>.

109

#### 110 *Statistical analysis*

111 Comparisons between employed and unemployed caregivers were performed by  
112 the Student's t-test or  $\chi^2$  test. Correlation coefficients between care time and required  
113 care level were calculated. The effects of required care levels, support from family  
114 members, care time, and other demographic variables on employment were evaluated  
115 by multiple logistic regression analysis with the stepwise method. Furthermore, required  
116 care levels were divided into two categories: "low", without needs of excretion care (i.e.,  
117 from independence to required care level 2); and "high", including required care levels  
118 3 (needs of excretion care), 4, and 5 (needs of all care) <sup>18)</sup>. The analyses were conducted  
119 using IBM SPSS Statistics version 20.0 for Windows (IBM Corporation, Japan).

120

121 **Results**

122           The age of the 98 persons receiving care ranged from 49 to 100 years, with a  
123 mean ( $\pm$  SD) age of  $82.1 \pm 9.8$  years. There were 74 females (74.5%). Those receiving  
124 care had dementia 42 (42.9%), cerebrovascular disease 15 (15.3%), heart disease 7  
125 (7.1%), Parkinson's disease 4 (4.1%), diabetes 3 (3.1%), respiratory disease 2 (2.0%),  
126 bone and joint diseases 2 (2.0%), and others 23 (23.5%). The mean age of the 98  
127 caregivers was  $54.9 \pm 7.0$  years. Forty-seven caregivers (48.0%) were daughters of the  
128 person receiving care, 15 (15.3%) were wives of a son, 13 (13.3%) were sons, 16  
129 (16.3%) were spouses, and seven (7.1%) were others. Among 98 caregivers, 69 were  
130 employed (70.4%): Twenty-nine (29.6%) were full-time workers and 24 (24.5%) were  
131 part-time. Seven (7.1%) were self-employed and eight (8.2%) answered "other status"  
132 such as care leave and helping family business. One did not answer (1.4%).  
133 Twenty-nine caregivers (29.6%) left jobs to provide care. Ninety-eight caregivers gave  
134 support for a mean of  $134.8 \pm 77.2$  hours/month for providing care. Required care level  
135 was significantly correlated with care time in 98 caregivers ( $r=0.37, p<0.001$ ) (Fig.).

136           Differences in sociodemographic characteristics between employed and  
137 unemployed caregivers are shown in Table 1. The required care level of elderly persons  
138 who received care was significantly higher in unemployed than in employed caregivers.

139 The age of caregivers was significantly higher in unemployed than in employed  
140 caregivers. The proportion of female caregivers was significantly higher in caregivers  
141 employed than in unemployed caregivers. Support from other family members and use  
142 of a home-visit nursing service was significantly less, and care time was significantly  
143 longer with unemployed caregivers than with employed caregivers.

144 The results of logistic regression analysis are shown Table 2. Support from family  
145 members was positively related to employment. On the other hand, care time, age of  
146 caregivers, and use of home-nursing services were negatively related to employment.

147

148

## 149 **Discussion**

150 The present study showed that, among caregivers who had to leave their job, care  
151 time was longer, they were older, home-nursing services were used more frequently, and  
152 support from family members was less than with caregivers who were employed. These  
153 four factors were also significantly affected by employment status in logistic regression  
154 analysis, suggesting that they are essential for the employment of caregivers in Japan.

155 Care time was positively correlated with the required care level, and care time  
156 was longer with unemployed caregivers than with employed caregivers. These



157 observations, together with the results of logistic regression analysis, suggest that a  
158 higher care level leads to longer care time, resulting in unemployment. Ikeda <sup>13)</sup>  
159 reported that caregivers of persons with severe dementia were unable to continue  
160 employment. Nishimoto <sup>14)</sup> observed that a heavy burden of care, such as helping with  
161 meals, changing clothes, bathing, and excretion, leads to changes in the job status of  
162 female caregivers. These previous reports essentially agree with our results. Considering  
163 an average home helper's hourly pay (1279 yen) in Japan <sup>19) 20)</sup>, a caregiver's care time  
164 in the present study corresponded to 2,697,009 and 1,818,182 yen per year, for those  
165 who were unemployed and employed, respectively. Although Akiyama et al. <sup>21)</sup> insisted  
166 that medical treatment at home is effective for reducing health care costs of elderly  
167 people, the present study suggested that informal care cost is significant, in addition to a  
168 loss of labour force by caregivers leaving jobs. Farfan-Portet et al. <sup>22)</sup> also mentioned  
169 the fact that providing more care increases the risk of poor health of caregivers and  
170 should be considered as an important social issue.

171 A younger age of caregivers was positively related to employment in the present  
172 study, although any caregiver was not older than 65 years and not eligible for old-age  
173 pension. Giovannetti et al. <sup>10)</sup> observed that employed caregivers of ill elderly people  
174 were younger than unemployed caregivers, reflecting the fact that the majority of the

175 employed caregivers are adult children of care-recipients, whereas the majority of  
176 nonemployed caregivers are spouses. However, such a distribution of caregiver's  
177 characteristics was not found in the present study. A younger age is probably important  
178 for maintaining employment of caregivers in Japan.

179 The use of a home-visit nursing service was negatively related to employment in  
180 the present study. By contrast, Ikeda <sup>13)</sup> showed that leaving a job can be prevented by  
181 the use of home care services. In addition, home-visit nursing is effective for supporting  
182 caregivers of elderly people <sup>23)</sup>. Because caregivers using a home-visit nursing service  
183 have reported that they felt difficulty in continuing their job <sup>24)</sup>, our observation on the  
184 use of a home-visit nursing service might have been the result of leaving jobs.  
185 Employed caregivers had more support from family members than unemployed  
186 caregivers. This finding is consistent with previous reports <sup>10)13)</sup>. However, social costs  
187 of such support have not been evaluated, and this requires further investigation.

188 The present study demonstrated key factors affecting employment status of home  
189 caregivers in Japan. However, a number of subjects and the recovery rate of  
190 questionnaires were relatively small. Additionally, the present study was performed in  
191 the metropolitan area with random sampling. As the study area was in the region with  
192 the highest employment rate in Japan<sup>2)</sup>, the study participants may not be representative

193 of the Japanese home caregivers as a whole. The employment environment depends largely  
194 on the regional industry and regional economics. Therefore, in discussing the employment status,  
195 it must be essential to take this factor into account. To confirm the findings of the present  
196 study, a further study on larger subjects will be necessary.

197

198

## 199 **Conclusions**

200 Social services for caregivers should focus on reducing care time, especially in  
201 caregivers who are older, to enable them to continue their employment. Social services,  
202 which can substitute for family members, are also necessary.

203 **Acknowledgements**

204 This study was supported by the Institute for Environmental and Gender Specific  
205 Medicine, Juntendo University. We would like to thank Ms. Fumiko Makino of the  
206 non-governmental organization ARAJIN, all home caregivers, and Ms. Tomoko Tanaka.

207

208 **Declaration of Conflicting Interests**

209 The author(s) declared no potential conflicts of interest with respect to the  
210 research, authorship, and/or publication of this article.

211

212 **Funding**

213 The author(s) declared the receipt of following financial support for the research,  
214 and/or publication of this article: The authors received support from the Grant-in-Aid  
215 for Scientific Research from the Japan Society for the Promotion of Science (C)  
216 (2012-2014, 40449062).

217

218

219

220 **References**

- 221 1) Cabinet Office Government of Japan: Annual report on the aging society. 2013;  
222 <http://www8.cao.go.jp/kourei/whitepaper/w-2013/zenbun/pdf/1s1s.pdf> [accessed  
223 11 June 2014].
- 224 2) Statistics Bureau of Japan: The 2012 employment status survey. 2012.
- 225 3) Black SE, Gauthier S, Dalziel W, et al: Canadian Alzheimer's disease caregiver  
226 survey: baby-boomer caregivers and burden of care. *Int J Geriatr Psychiatry*,  
227 2010; 25: 807-813.
- 228 4) Arnsberger P, Lynch U, Li F. The effects of caregiving on women's self-assessed  
229 health status: an international comparison. *Health Care Women Int*, 2012; 33:  
230 878-895.
- 231 5) Robison J, Fortinsky R, Kleppinger A, et al: A broader view of family  
232 caregiving: effects of caregiving and caregiver conditions on depressive  
233 symptoms, health, work, and social isolation. *J Gerontol B Psychol Sci Soc Sci*,  
234 2009; 64: 788-798.
- 235 6) Bradley CJ, Dahman B: Time away from work: employed husbands of women  
236 treated for breast cancer. *J Cancer Surviv*, 2013; 7: 227-236.

- 237 7) Li C, Zeliadt SB, Hall IJ, et al: Burden among partner caregivers of patients  
238 diagnosed with localized prostate cancer within 1 year after diagnosis: an  
239 economic perspective. *Support Care Cancer*, 2013; 21: 3461-3469.
- 240 8) Berecki-Gisolf J, Lucke J, Hockey R, et al: Transitions into informal caregiving  
241 and out of paid employment of women in their 50s. *Soc Sci Med*, 2008; 67:  
242 122-127.
- 243 9) Mazanec SR, Daly BJ, Douglas SL, et al: Work productivity and health of  
244 informal caregivers of persons with advanced cancer. *Res Nurs Health*, 2011; 34:  
245 483-495.
- 246 10) Giovannetti ER, Wolff JL, Frick KD, et al: Construct validity of the Work  
247 Productivity and Activity Impairment Questionnaire across informal caregivers  
248 of chronically ill older patients. *Value Health*, 2009; 12: 1011-1017.
- 249 11) Lökk J: Reduced life-space of non-professional caregivers to Parkinson's disease  
250 patients with increased disease duration. *Clin Neurol Neurosurg*, 2009; 111:  
251 583-587.
- 252 12) Iwamoto Y: Youkaigoshu no hassei ni tomonau kazoku no syuugyoujyoutai no  
253 henka [How does the provision of home care affect the labour force participation

- 254 of family members?] Quarterly of Social Security Research, 2000; 36: 321-227.  
255 (in Japanese)
- 256 13) Ikeda S: Quitting work for elderly care, and the need for family-care leave. The  
257 Japanese Journal of Labour Studies, 2010; 597: 88-103. (in Japanese)
- 258 14) Nishimoto M: Kaigo ga syugyoukeitai no sentaku ni ataeru eikyou [Effects of  
259 care-giving on the selection of work style] (translated by KN). Japanese Journal  
260 of Research on Household Economics, 2006; 70: 53-61. (in Japanese)
- 261 15) Wang YN, Shyu YI, Tsai WC, et al: Exploring conflict between caregiving and  
262 work for caregivers of elders with dementia: a cross-sectional, correlational  
263 study. J Adv Nurs, 2013; 69: 1051-1062.
- 264 16) ARAJIN, a non-governmental organization, which provides support to home  
265 caregivers of Japan: <http://www12.ocn.ne.jp/~arajin/> [accessed 11 December  
266 2014]
- 267 17) Ministry of Health Labour and Welfare of Japan: Text for the Long-term Care  
268 Approval Board. 2012; 72. [accessed 11 June 2014]
- 269 18) Iizaka S, Okuwa M, Sugama J, et al: The impact of malnutrition and  
270 nutrition-related factors on the development and severity of pressure ulcers in  
271 older patients receiving home care. Clin Nutr, 2010; 29: 47-53.

- 272 19) Juntendo University: Report on the estimate of the social costs of mental  
273 disorders, a FY2010 comprehensive welfare project for persons with disabilities.  
274 2011.
- 275 20) Statistics Bureau of Japan: Basic survey of wage structure.  
276 <http://www.e-stat.go.jp/SG1/estat/List.do?bid=000001028607>. 2010. [accessed  
277 11 June 2014]
- 278 21) Akiyama N, Fukuda T, Shiroya T, et al: Investigating factors that influence  
279 health care costs for disabled elderly in Japan. *Medical and Society*, 2011; 21:  
280 175-187.
- 281 22) Farfan-Portet MI, Popham F, Mitchell R, et al: Employment and health among  
282 adults of working age: evidence from Britain and Belgium. *Eur J Public Health*,  
283 2010; 20: 52-57.
- 284 23) Oyama Y, Tamiya N, Kashiwagi M, et al: Factors that allow elderly individuals  
285 to stay at home with their families using the Japanese long-term care insurance  
286 system. *Geriatr Gerontol Int*, 2013; 13: 764-773.
- 287 24) Nishimuki S, Hamshita, T, Kitamado C, et al: The actual status of interfere with  
288 the continuation of work by female caregivers and using care services. *Bulletin*



289 of Kobe University School of Medicine Faculty of Health Sciences, 2002; 18:  
290 27-41.

291 **Table 1.** Differences in characteristics between employed and unemployed home

292 caregivers

293 Values are means with standard deviations and ranges, or numbers with percentages in parentheses.

	Employed (n=69)	Unemployed (n=29)	<i>p</i> Value
Persons receiving home care :			
Age (y)	82.1 ( 9.78, 49-100)	82.0 (11.25, 52-96)	0.964 <sup>a</sup>
Sex			
Males	20 (29.0)	5 (17.2)	0.311 <sup>b</sup>
Females	49 (71.0)	24 (82.8)	
Required care level			
Low	41 (59.4)	5 (17.2)	0.000 <sup>**b</sup>
High	28 (40.6)	24 (82.8)	
Disease			
Dementia	27 (40.9)	15 (53.6)	0.271 <sup>b</sup>
Others	42 (60.9)	14 (48.3)	
Home caregivers :			
Age (y)	53.2 (7.07)	59.1 (4.78)	0.000 <sup>***a</sup>
Sex			
Males	7 (10.1)	11 (37.9)	0.003 <sup>*b</sup>
Females	62 (89.9)	18 (62.1)	
Care time (h/mo)	116.8 (71.18,36-65)	177.7 (75.10,47-66)	0.000 <sup>***a</sup>
Support from family members			
Yes	53 (76.8)	14 (44.4)	0.009 <sup>*b</sup>
No	16 (23.2)	15 (51.7)	
Home help service			
Yes	18(26.1)	11(37.9)	1.000 <sup>b</sup>
No	51(73.9)	81(62.1)	
Home-visit nursing service			
Yes	10(14.5)	15(51.7)	0.035 <sup>*b</sup>
No	59(85.5)	14(48.3)	
Welfare goods service			
Yes	33(47.8)	18(62.1)	0.291 <sup>b</sup>
No	36(52.2)	11(37.9)	
Bathing at home service			
Yes	7(10.1)	7(24.1)	0.103 <sup>b</sup>
No	62(89.9)	22(75.9)	
Regular visits to a nursing care facility service			
Yes	57(82.6)	19(65.5)	1.000 <sup>b</sup>
No	12(17.4)	10(34.5)	
Short stay in a residential-care service			
Yes	20(29.4)	9(32.1)	0.694 <sup>b</sup>
No	48(70.6)	19(67.9)	

294 <sup>a</sup>t-test, <sup>b</sup> $\chi^2$ -test, \*  $p < 0.05$ , \*\*  $p < 0.001$

295 **Table 2.** Logistic regression analysis with the stepwise method of variables significantly  
 296 affected by employment status of 98 home caregivers <sup>a</sup>

	Odds ratio (95% confidence interval)
Support from family members	5.23 (1.41- 19.34)
Care time (h/mo)	0.98 (0.98- 1.00)
Age of home caregivers (y)	0.80 (0.71- 0.91)
297 Use of a home-visit nursing service	0.19 (0.05- 0.75)

298 <sup>a</sup> The dependent variable was employment status (0=unemployed, 1=employed). Independent  
 299 variables examined for persons receiving home care were age, sex, required care level, and existence  
 300 of dementia,. Independent variables examined for caregivers were age, sex, support from family  
 301 members, care time, use of services of home help, home-visit nursing, welfare goods, bathing at  
 302 home, regular visits to a nursing care facility, and a short stay in residential care.

303 **Fig.** Correlation between necessary care level and care time in 98 home caregivers.

304

305

306

307

308

309

310

311

312

313

314

315

316

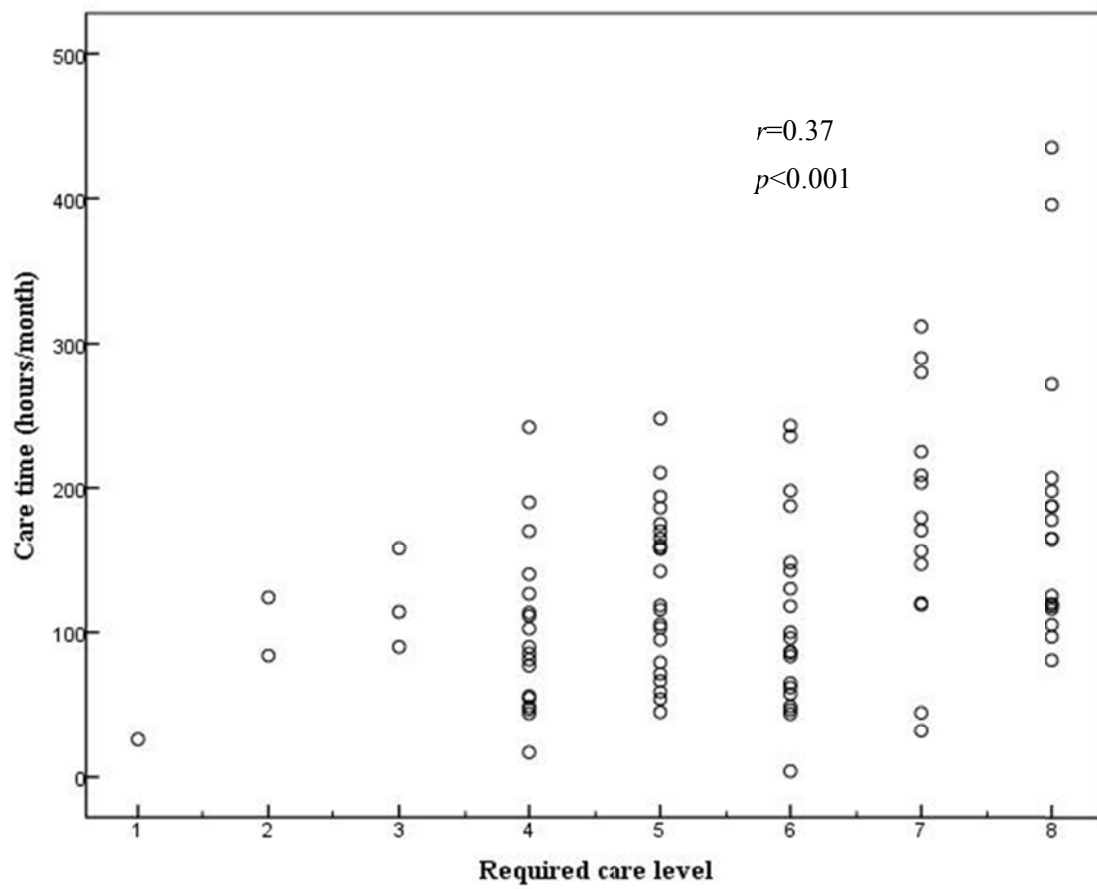
317

318

319

320

322 Fig.



323

324