Influences of income and employment on psychological distress and depression treatment in Japanese adults

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Key words

Psychological distress, mental health, socioeconomic status (SES), depression, work

Abstract

Objectives: Psychological distress is a health issue of critical importance, especially in people of working age in developed countries including Japan. This study examined the relationships of income and employment arrangement with psychological distress and depression treatment in a national sample of Japanese adults.

Methods: Data, for 10,959 men and 11,655 women 25 to 59 years of age, obtained from the Comprehensive Survey of the Living Conditions of People on Health and Welfare in 2007 were examined. Health outcomes were psychological distress measured by K6 and subjective complaints, and medical treatment of depression. Explanatory variables included marital status, employment arrangement and household income. The relationships between health outcomes and explanatory variables were examined using multiple logistic regression analyses.

Results: Lower income and unemployment were associated with a higher prevalence of psychological distress and depression treatment. The association between psychological distress and income showed a threshold: the lowest income quintile had an especially high prevalence, while other quintiles had similar prevalences. The prevalence of depression treatment in those with psychological distress was significantly lower among the highest income and employed respondents.

Conclusions: This study showed clear relationships of lower income and unemployment with psychological distress and depression treatment. It has been suggested that people with higher socioeconomic status and full-time work may be reluctant to consult professionals and receive medical treatment, despite their psychological distress. Comprehensive mental health interventions are required to prevent psychological distress in all socioeconomic strata of the population.

Introduction

Mental health and psychological disorders are among the most important health issues in developed countries including Japan. Depression is the fourth leading cause of disease burden, accounting for 4.4% of total DALY (disability-adjusted life years) worldwide in 2000 [1]. In Japan, suicide is the seventh leading cause of death, accounting annually for over 30,000 deaths [2], and depression, in addition to social and environmental factors, plays a critical role in the etiology of suicide [3, 4]. Although the results are not as yet conclusive, the influences of the recent economic recession and overwork on general and mental health are issues of concern [5, 6].

Social epidemiology is the branch of epidemiology that studies the social distribution and social determinants of states of health [7]. One major aspect of social epidemiology is work and health, focusing on health inequalities resulting from specific occupations and the health effects of working conditions and job loss [8]. Previous studies examined work stress and health using theoretical frameworks such as the demand-control model and the effort-reward imbalance model [8, 9]. Other studies demonstrated that socioeconomic status (SES) measured by income and educational level affects health as a factor modifying associations between work stress and health [10, 11].

Most previous studies showed that people with lower SES, measured by parameters such as educational and income level, had a higher prevalence of psychological distress [12-14], and similar relationships were found in studies on the Japanese population [15, 16]. However, at the same time, these findings suggested that the SES-psychological distress relationship may be complex. For example, men with higher SES are more vulnerable to interpersonal conflict at work, with the associated development of depression, than men in lower SES [15]. Despite the importance of this issue, there is little evidence of the impacts of work and SES on psychological distress or on medical treatment for such distress in the general population in Japan.

This study examined the relationships of income and employment arrangement with psychological distress and depression treatment in a national sample of Japanese adults.

Materials and Methods

Data and study population

Data from the 2007 Comprehensive Survey of the Living Conditions of People on Health and Welfare conducted by the Ministry of Health, Labour and Welfare [17] were analyzed. This survey commenced in 1986, and an extensive survey is conducted every three years (demographic, health, long-term care, income and savings). In the 2007 survey, 5440 Enumeration Districts (EDs) from among approximately one million EDs were randomly selected for questionnaires on demography and health. Interviewers visited all households in the selected areas using lists of households and approached all household members. The questionnaires consisted of household and individual basic information on demographics, health, illness profiles, lifestyle and other items. Moreover, 2000 unit areas were randomly selected from among 5400 EDs, and all households and household members were approached to answer questionnaires on income and savings.

The health-related questionnaires included the Japanese version of the K6, subjective complaints and treatment. The K6 consists of six questions that assess depressive mood and anxiety over the preceding one month using 5-scale answers from “none” to “very much” [18, 19]. The questionnaire on subjective complaints involved first asking “Do you have any types of physical complaints?”, and, if the subject answered “yes”, selecting the complaints from among 41 items. The questionnaire on treatment started by asking “Do you receive any type of outpatient treatment?”, and, if the subject answered “yes”, selecting the diseases and physical conditions from among 39 items. Treatment facilities included not only traditional medical facilities (hospitals and clinics) but also those providing acupuncture and osteopathy.

The total number of households sampled for basic information was 287,807, of which 36,285 were interviewed with regard to income and savings. The response rates were 80.1% (N = 230,596) for the basic information survey and 67.7% (N = 24,578) for the income survey. Numbers of household members ranged 1 to 13, with a mean (SD) of 2.7 (2.2). We used the data for 10,959 men and 11,655 women 25 to 59 years of age, for whom basic and income data were surveyed and contained no missing data for

variables analyzed in this study.

Micro-data files from this survey were used with permission from the Ministry of Health, Labour and Welfare.

Outcome variables

Psychological distress and depression treatment were used as health outcome variables. Psychological distress was measured using the Japanese version of the K6 and psychological complaints. The K6 was scaled using six questions on a 5-point scale (none = 0 to very much = 4) [18, 19]. The sum of six item scores (ranging from 0 to 24) was used to indicate the degree of depression and anxiety. In this study, two cut-off scores were used, 5 and 13, in accordance with prior studies [16, 19], and a higher score meant more severe distress. Psychological complaints were defined as the subjects having at least one complaint of “general fatigue”, “sleeplessness” or “irritation”. Finally, treatment for depression and other mental disorders served as the “depression treatment” variable.

Explanatory variables

Age, marital status, employment arrangement, and household income were used as possible explanatory variables for psychological distress and depression treatment. Marital status was divided into three categories: married, never married, and separated or divorced. Employment arrangement was divided into five categories: employed (mainly working), housework with employment, housework without employment, unemployed, and others including student and unknown status. Information on annual household income before taxes, including benefits and inheritance, was used as the income measure, and the study subjects were divided into quintiles according to household income. The 1st through 5th quintiles corresponded to the lowest through highest incomes.

Statistical analysis

The prevalences of psychological distress and depression treatment were computed employing possible explanatory variables. The prevalence of depression treatment in respondents with psychological distress and the prevalence of psychological distress in those receiving depression treatment were also calculated. Finally, multiple logistic regression analysis was used to calculate an adjusted odds ratio (aOR) with 95% confidence interval (95%CI). The outcome variables were K6 5+, K6 13+, psychological complaints, depression treatment, depression treatment in respondents with psychological distress, and psychological distress in respondents receiving depression treatment. The explanatory variables were age, sex, marital status (reference = married), employment arrangement (reference = employed), and household income (reference = 5th quintile). The statistical package PASW Statistics 18 (SPSS Inc.) was used for all analyses.

Results

Table 1 summarizes the basic characteristics and the prevalences of psychological distress and depression treatment. The number of women was slightly larger than that of men, and majorities were married (72.4%) and employed (70.9%). The prevalences of 5+ in K6, 13+ in K6, having a psychological complaint, and depression treatment were 30.6%, 4.2%, 9.5% and 1.7%, respectively. Mean household annual incomes by quintiles are shown in Table 1. The cut-offs for the quintiles were 10.3, 7.5, 5.5 and 3.6 million yen.

Cross-tables for psychological outcomes and explanatory variables are shown in Table 2. The lowest prevalence was commonly found in married and employed respondents for all four psychological outcomes. As to household income, the lowest quintile showed the highest prevalence, but there was no clear gradient from the 5th (highest) to the 2nd (2nd lowest) quintile. Because of the large sample size, most of the relationships showed statistical significance ($p<0.05$) by the chi-squared test.

Table 3 shows the results of the multiple logistic regression, i.e. aORs and their 95%CI for psychological outcomes. Three outcomes (5+ in K6, 13+ in K6 and psychological

complaint) showed similar results: aORs were significantly higher for women than men, never married and separated/divorced versus married, unemployed versus employed, and the lowest income quintile versus the highest income quintile. In depression treatment, aORs tended to be larger than those for other outcomes. As to household income for 5+ in K6, 13+ in K6, and psychological complaints, several aORs did not show significant differences as compared with the 5th (highest) quintile. However, in depression treatment, all categories had a significantly higher aOR when compared with the 5th (highest) quintile, although there was no clear gradient in this relationship.

Table 4 shows cross-tables for depression treatment and explanatory variables in subjects with psychological distress. There were no significant differences in prevalence between men and women. As to marital status, the highest prevalence was found in separated/divorced and, as regards work, in the unemployed, for all three measures. As to household income, the highest quintile had the lowest prevalence and the lowest quintile had the highest prevalence; however, there was no clear gradient from the 2nd through 4th quintiles.

The results of multiple logistic regression for depression treatment are shown in Table 5. All three measurements of psychological distress showed similar tendencies. Never married and separated/divorced showed significantly higher aORs than the married respondents. There was no difference between employment and housework with employment, but significantly higher aORs were observed for other employment categories. As to household income, aORs in the 4th, 3rd and 1st (lowest) quintiles were significantly higher than in the 5th (highest) quintile.

Table 6 shows the prevalences of psychological distress among those who received depression treatment. In psychological distress measured by K6, the highest income quintile showed the lowest prevalence. For the 1st (lowest) through 4th income quintiles, aORs ranged from 1.33 to 2.14 compared to the 5th (highest) quintile but did not reach statistical significance.

Discussion

This study, using a national sample, examined the relationship of psychological distress with SES, mainly household income and employment arrangement. The main findings were that (1) lower income and unemployment are associated with a higher prevalence of psychological distress and depression treatment, (2) the association of income with psychological distress and depression treatment was not a dose-response but rather of the threshold form, and (3) higher income and employment were related to a lower prevalence of medical treatment in respondents with psychological distress.

The finding in this study that lower income was associated with a higher prevalence of psychological distress is in line with previous studies in which the association was generally dose-responsive [12-14, 20]. In this study, however, the association appeared to show a threshold. All but the lowest quintile had similar prevalences of psychological distress. The cut-off of the lowest quintile was 3.6 million yen, which was almost half of the mean household income of entire study subject population (7.4 million yen). This could mean that the lowest quintile of the population lives in relative poverty and is thus particularly vulnerable to psychological distress.

Concerning employment arrangement, this study showed unemployment to be associated with a higher prevalence of psychological distress, especially severe distress (K16 13+), and depression treatment. In the national data, unemployment is associated with higher mortality from suicide than any particular type of occupation [21]. It is suggested that unemployed people have specific needs for prevention of psychological distress and suicide. The associations between psychological outcomes, income and employment arrangement are probably interactive: lower income and unemployment result in psychological distress, and in turn psychological distress results in unemployment and decreased income. For this vulnerable population with lower incomes and unemployment, specific interventions aimed at both medical treatment of psychological distress and social support for income and employment are needed.

Lower income was related to a higher rate of depression treatment. This relationship resulted from not only a higher prevalence of psychological distress in the lower income population, but also the fact that the higher income population had a lower prevalence of depression treatment even if they had psychological distress.

Interestingly, the relationship was not dose-responsive; the three middle income quintiles had similar prevalences of depression treatment while the lowest income quintile had a markedly higher and the highest quintile had a markedly lower prevalence of treatment.

In most studies in other countries, lower income or lower educational attainment was associated with a lower prevalence of depression treatment, or there was no association [22-26]. In this study, however, the lowest income quintile showed the highest rate of depression treatment among respondents with psychological distress. Although there is generally a barrier to medical treatment for the lower income population, particularly in the United States which lacks nationalized health care [24, 25], in Japan this barrier appears to be relatively low due to the universal coverage of health insurance.

The finding that the highest income quintile had a markedly lower rate of depression treatment among respondents with psychological distress raises two contrasting possibilities. The optimistic speculation is that distress in higher income people with depression treatment is well controlled, and therefore their psychological distress is eased. Reports from other countries that people with higher SES are likely to receive more appropriate care are in line with this speculation [27, 28]. The lower, though not statistically significant, prevalence of psychological distress in the higher income population, as shown in Table 6, may support this hypothesis.

On the other hand, the more pessimistic speculation is that people with higher income or more demanding work may now simply endure psychological distress, being reluctant to consult professionals about their psychological problems. We speculate that high income individuals may also face barriers to receiving consultations, such as difficulty taking time off from work and social stigma of seeking mental healthcare in high pressure. In addition, it might be difficult to continue to work or to earn a high income while receiving psychological treatment. These situations may prevent early treatment of psychological distress and result in deterioration of mental conditions, absence from work, job loss, and, in extreme cases, suicide. To summarize our results and speculations, people with higher incomes are less likely to have psychological problems, but face more difficulty obtaining treatments when they do suffer these

afflictions. Since this study is cross-sectional, it cannot be concluded which possibility, the optimistic or the pessimistic, is predominant.

This study has several limitations. Since it was cross-sectional, the results must be carefully interpreted. As mentioned above, the higher prevalence of psychological distress in the lower income and unemployed populations might be the result of reverse causation, i.e. psychological distress causes lower income and unemployment. Reverse causation might also have an influence on the lower prevalence of depression treatment in the higher income population. Another limitation is self-reporting in the questionnaire, in which medical treatment might have been under-reported, and there might have been reporting bias according to SES characteristics. Finally, household income was not adjusted for household size. However, a previous study demonstrated that non-standardized income is as valid as standardized income for research purposes [29].

The results of this study have a few policy implications. First, the lower income population, especially the population living in relative poverty, may have particular needs for the prevention of psychological distress. Their possible needs include not only mental health support, but also social support for socioeconomic factors including income and job security. Second, populations other than the lowest income quintile have similar risks of psychological distress, and thus require mental health support to some degree regardless of income level in order to prevent psychological distress and consequent job loss and income decrease. Finally, our results suggest that the population with higher income and full-time work may need suitable social environment arrangements to reduce barriers to obtaining medical treatment and professional support. Working conditions in which sources of psychological distress are decreased and employees are able to work without unreasonable psychological distress are required. Various mental health interventions should be comprehensively implemented with consideration of specific needs arising from all socioeconomic strata of the population.

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Table 1. Summary of sociodemographic characteristics and psychological outcomes

		Mean±SD / N (%)	
Age (year)		43.6	±10.2
Sex			
	Male	10,959	(48.5%)
	Female	11,655	(51.5%)
Marital status			
	Married	16,368	(72.4%)
	Never married	4,787	(21.2%)
	Separated/Divorced	1,459	(6.5%)
Employment arrangement			
	Employed (mainly working)	16,041	(70.9%)
	Housework with employment	2,169	(9.6%)
	Housework without employment	3,127	(13.8%)
	Unemployed	933	(4.1%)
	Others	344	(1.5%)
Household income (annual, million yen)			
	5th quintile (highest) (N=4,524)	14.9	±6.3
	4th quintile (N=4,492)	8.8	±0.8
	3rd quintile (N=4,552)	6.5	±0.6
	2nd quintile (N=4,524)	4.5	±0.5
	1st quintile (lowest) (N=4,522)	2.3	±0.8
	Total (N=22,614)	7.4	±0.5
K6 score (cut-off = 5)			
	<5	15,685	(69.4%)
	5+	6,929	(30.6%)
K6 score (cut-off = 13)			
	<13	21,672	(95.8%)
	13+	942	(4.2%)
Psychological complaint (fatigue, sleeplessness, and/or irritation)			
	No	20,460	(90.5%)
	Yes	2,154	(9.5%)
Depression Treatment (medical treatment for depression and/or other mental disorders)			
	No	22,236	(98.3%)
	Yes	378	(1.7%)

Table 2. Prevalences of psychological distress and depression treatment by sociodemographic characteristics

Variable	(Total N)	K6 5+		K6 13+		Psychological complaints		Depression treatment	
Sex									
Male	(10,959)	29.6%	**	3.8%	**	8.3%	***	1.6%	
Female	(11,655)	31.6%		4.5%		10.6%		1.8%	
Marital status									
Married	(16,368)	29.2%	***	3.6%	***	9.0%	***	1.2%	***
Never married	(4,787)	33.3%		5.3%		10.1%		2.7%	
Separated/Divorced	(1,459)	38.6%		6.7%		13.1%		3.4%	
Employment arrangement									
Employed (mainly working)	(16,041)	29.6%	***	3.8%	***	8.7%	***	1.1%	***
Housework with employment	(2,169)	31.9%		3.8%		9.7%		1.2%	
Housework without employment	(3,127)	30.8%		4.5%		11.5%		2.2%	
Unemployed	(933)	43.3%		10.0%		14.8%		9.0%	
Others	(344)	36.0%		6.1%		12.5%		4.4%	
Household income									
5th quintile (highest)	(4,524)	27.8%	***	3.1%	***	7.9%	***	0.8%	***
4th quintile	(4,492)	29.1%		3.6%		9.3%		1.3%	
3rd quintile	(4,552)	29.4%		3.9%		8.9%		1.7%	
2nd quintile	(4,524)	30.3%		3.5%		9.6%		1.4%	
1st quintile (lowest)	(4,522)	36.6%		6.6%		11.9%		3.1%	

Psychological distress was measured by K6 (cut-off = 5 or 13) and psychological complaints (general fatigue, sleeplessness, and/or irritation).
** $p<0.01$, *** $p<0.001$ (chi-square test)

Table 3. Results of multiple logistic regression analysis for psychological distress and depression treatment

Variable	K6 5+		K6 13+		Psychological complaints		Depression treatment	
	aOR	(95%CI)	aOR	(95%CI)	aOR	(95%CI)	aOR	(95%CI)
Sex Female/Male	1.06	(0.99 - 1.14)	1.17	(1.00 - 1.36) *	1.24	(1.12 - 1.38) ***	1.00	(0.78 - 1.28)
Marital status								
Married	1.00	reference	1.00	reference	1.00	reference	1.00	reference
Never married	1.15	(1.06 - 1.25) ***	1.26	(1.05 - 1.51) *	1.11	(0.97 - 1.26)	1.65	(1.24 - 2.19) ***
Separated/Divorced	1.35	(1.20 - 1.52) ***	1.48	(1.17 - 1.88) **	1.33	(1.12 - 1.58) **	2.12	(1.50 - 3.01) ***
Employment arrangement								
Employed (mainly working)	1.00	reference	1.00	reference	1.00	reference	1.00	reference
Housework with employment	1.12	(1.01 - 1.25) *	1.01	(0.78 - 1.31)	1.02	(0.87 - 1.21)	1.18	(0.75 - 1.86)
Housework without employment	1.06	(0.96 - 1.16)	1.17	(0.95 - 1.46)	1.22	(1.06 - 1.41) **	2.27	(1.63 - 3.15) ***
Unemployed	1.57	(1.37 - 1.80) ***	2.17	(1.70 - 2.76) ***	1.59	(1.30 - 1.93) ***	5.85	(4.38 - 7.82) ***
Others	1.26	(1.01 - 1.58) *	1.45	(0.92 - 2.28)	1.37	(0.99 - 1.89)	3.41	(1.98 - 5.87) ***
Household income								
5th quintile (highest)	1.00	reference	1.00	reference	1.00	reference	1.00	reference
4th quintile	1.06	(0.97 - 1.17)	1.16	(0.93 - 1.47)	1.19	(1.02 - 1.38) *	1.63	(1.07 - 2.49) *
3rd quintile	1.07	(0.98 - 1.17)	1.23	(0.98 - 1.54)	1.13	(0.97 - 1.31)	2.00	(1.34 - 3.00) ***
2nd quintile	1.10	(1.00 - 1.21) *	1.07	(0.85 - 1.35)	1.21	(1.04 - 1.40) *	1.58	(1.04 - 2.39) *
1st quintile (lowest)	1.34	(1.22 - 1.47) ***	1.81	(1.46 - 2.24) ***	1.40	(1.21 - 1.63) ***	2.47	(1.68 - 3.65) ***

Outcome variables of multiple logistic regression were psychological distress and depression treatment. Psychological distress was measured by K6 (cut-off = 5 or 13) and psychological complaints (general fatigue, sleeplessness, and/or irritation).

aOR: Odds ratio adjusted for age and all other variables

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 4. Prevalence of depression treatment in subjects with psychological distress

Variable	K6 5+			K6 13+			Psychological complaint		
	Total	Treatment (%)		Total	Treatment (%)		Total	Treatment (%)	
Sex									
Male	3,247	132	(4.1%)	416	61	(14.7%)	913	81	(8.9%)
Female	3,682	169	(4.6%)	526	78	(14.8%)	1,241	112	(9.0%)
Marital status									
Married	4,773	157	(3.3%) ***	590	66	(11.2%) ***	1,478	102	(6.9%) ***
Never married	1,593	104	(6.5%)	254	49	(19.3%)	485	59	(12.2%)
Separated/Divorced	563	40	(7.1%)	98	24	(24.5%)	191	32	(16.8%)
Employment arrangement									
Employed (mainly working)	4,745	146	(3.1%) ***	604	66	(10.9%) ***	1,402	92	(6.6%) ***
Housework with employment	692	15	(2.2%)	83	7	(8.4%)	211	10	(4.7%)
Housework without employment	964	60	(6.2%)	141	27	(19.1%)	360	39	(10.8%)
Unemployed	404	68	(16.8%)	93	36	(38.7%)	138	42	(30.4%)
Others	124	12	(9.7%)	21	3	(14.3%)	43	10	(23.3%)
Household income									
5th quintile (highest)	1,257	26	(2.1%) ***	141	8	(5.7%) **	356	17	(4.8%) ***
4th quintile	1,308	47	(3.6%)	163	23	(14.1%)	416	35	(8.4%)
3rd quintile	1,339	59	(4.4%)	178	27	(15.2%)	407	30	(7.4%)
2nd quintile	1,372	51	(3.7%)	160	22	(13.8%)	436	35	(8.0%)
1st quintile (lowest)	1,653	118	(7.1%)	300	59	(19.7%)	539	76	(14.1%)

Treatment (%) is the percentage of those who received depression treatment in subjects with psychological distress. Psychological distress was measured by K6 (cut-off = 5 or 13) and psychological complaints (general fatigue, sleeplessness, and/or irritation).

** $p<0.01$, *** $p<0.001$ (chi-square test)

Table 5. Results of multiple logistic regression analysis for depression treatment in subjects with psychological distress

Variables	Treatment / K6 5+		Treatment / K6 13+		Treatment / Psychological complaints	
	aOR	(95%CI)	aOR	(95%CI)	aOR	(95%CI)
Sex Female/Male	1.09	(0.82 - 1.43)	0.94	(0.60 - 1.46)	0.95	(0.66 - 1.36)
Marital status						
Married	1.00	reference	1.00	reference	1.00	reference
Never married	1.54	(1.11 - 2.12) **	1.39	(0.82 - 2.34)	1.21	(0.79 - 1.84)
Separated/Divorced	1.62	(1.09 - 2.42) *	2.15	(1.18 - 3.94) *	1.90	(1.15 - 3.12) *
Employment arrangement						
Employed (mainly working)	1.00	reference	1.00	reference	1.00	reference
Housework with employment	0.76	(0.43 - 1.33)	0.85	(0.36 - 2.01)	0.79	(0.39 - 1.61)
Housework without employment	2.18	(1.51 - 3.12) ***	2.20	(1.24 - 3.90) **	1.95	(1.23 - 3.10) **
Unemployed	4.70	(3.37 - 6.55) ***	4.17	(2.46 - 7.08) ***	4.89	(3.10 - 7.72) ***
Others	2.92	(1.56 - 5.47) ***	1.16	(0.32 - 4.17)	3.91	(1.84 - 8.34) ***
Household income						
5th quintile (highest)	1.00	reference	1.00	reference	1.00	reference
4th quintile	1.69	(1.04 - 2.76) *	2.53	(1.08 - 5.94) *	1.86	(1.01 - 3.41) *
3rd quintile	1.95	(1.22 - 3.13) **	2.71	(1.17 - 6.25) *	1.43	(0.76 - 2.67)
2nd quintile	1.51	(0.93 - 2.45)	2.11	(0.89 - 5.00)	1.45	(0.79 - 2.67)
1st quintile (lowest)	2.19	(1.39 - 3.45) ***	2.40	(1.07 - 5.38) *	2.02	(1.13 - 3.60) *

The outcome variable of multiple logistic regression was depression treatment. The analysis subjects had psychological distress measured by K6 (cut-off = 5 or 13) and psychological complaints (general fatigue, sleeplessness, and/or irritation).

aOR: Odds ratio adjusted for age and all other variables

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 6. Psychological distress in subjects with depression treatment: prevalence and results of multiple logistic regression

Household income	(total N)	K6 5+ / treatment		K6 13+ / treatment		Psychological complaints / treatment	
		%	aOR (95%CI)	%	aOR (95%CI)	%	aOR (95%CI)
5th quintile (highest)	(35)	74.3%	1.00 reference	22.9%	reference	48.6%	reference
4th quintile	(59)	79.7%	1.52 (0.55 - 4.19)	39.0%	2.14 (0.82 - 5.60)	59.3%	1.84 (0.77 - 4.37)
3rd quintile	(77)	76.6%	1.33 (0.51 - 3.48)	35.1%	1.67 (0.65 - 4.27)	39.0%	0.72 (0.31 - 1.66)
2nd quintile	(65)	78.5%	1.38 (0.51 - 3.76)	33.8%	1.60 (0.61 - 4.22)	53.8%	1.44 (0.61 - 3.41)
1st quintile (lowest)	(142)	83.1%	1.96 (0.74 - 5.19)	41.5%	2.02 (0.81 - 5.07)	53.5%	1.34 (0.59 - 3.03)

Outcome variables of multiple logistic regression were psychological distress measured by K6 (cut-off = 5 or 13) and psychological complaints (general fatigue, sleeplessness, and/or irritation). The analysis subjects received depression treatment.

aOR: Odds ratio adjusted for age, sex, marital status and employment