

A Cross-sectional Study on Association of Work Environment, Coping Style, and Other Risk Factors with Depression among Caregivers in Group Homes in Japan

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Abstract: A cross-sectional study was conducted to explore the potential association between work environment and/or stress coping ability, and depressive status among caregivers working for “group homes (GHs)” in Japan. In January 2010, 438 out of 700 caregivers working at GHs in Sapporo City returned completed questionnaires to us. The questionnaires consisted of the Center of Epidemiological Scales-Depression, items about worker’s attributions, Ozeki’s coping scale, and so on. An analysis using a logistic regression model was used to find the associations adjusting for gender and age. Subjects who were 45 yr or older, had a spouse, had job training, a standard workload and scored high in emotion-oriented coping were significantly associated with a decreased risk of depression. Subjects who were less proud of their job, less willing to continue care for the frail elderly and had fewer acceptances by their supervisors or colleagues for consultation were significantly associated with an increased risk of depression. This study supports our hypothesis that there can be possible variables among individual factors, work environment and/or coping style for stress which may modulate a risk on the depressive status of caregivers.

Key words: Caregivers, Group home, Work environment, Depression, CES-D

Introduction

Above all the developed countries, population aging in Japan is most rapidly progressing, which causes the crucial nursing problems in late-stage elderly with dementia¹⁾ and what we call “Group Homes” (hereafter abbreviated

as GHs) have recently been increasing all over in Japan. A GH is defined by Japanese ministry of health, welfare and labor as a small community-based care service facility where daily life care in communal living is provided for elderly with dementia²⁾. Generally, care-giving environments have often been pointed out to be hard, dirty and dangerous, often called “3 K”, which is a negative abbreviation in Japanese.

Above all, caregivers for elderly with dementia are much more likely to have overload work, which can be

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hazardous for their health conditions in spite of working at home³⁾ or at a facility^{4, 5)}. The demented elderly can easily be deteriorated by environmental changes, especially by different conditions from those in their home. Regarding the qualities of GHs in Japan, the accommodations are small with up to nine elderly per unit and the familiar relations between the elderly and their caregivers make the living conditions safer and more relieving. On the other hand, caregivers in GHs have to make more efforts to create familiar care and make the atmosphere seem as if the elderly are at home and they must adapt themselves to the diversity of their life style⁶⁾. The closer the elderly residents and their families are to the caregivers, the more stressful the caregivers may sometimes feel. For example, a caregiver has to be engaged in night work alone with anxiety. Whereas two or more caregivers can afford to cooperatively take good cares even for emergent events at Facilities for the Elderly Requiring Long-term Care (WFERLCs)²⁾ or Health Care Facilities for the Elderly Requiring Long-term Care (HCFERLCs)²⁾.

Therefore, the unique work environment problems arising only in GHs are characteristically different from those found in WFERLCs or HCFERLCs. While facing these difficult situations, the arising stressed and lonely feelings among caregivers can have influences on their depressive state, which may cause hazard on their job satisfaction^{7, 8)} and subsequently they may lose their willingness to continue their job^{9, 10)}.

Provision of supportive consultations from other people were reported effective for reducing occupational stress^{11–13)}. Also for better job satisfaction of the people with depression, cognitive or coping style is important¹⁴⁾. Lazarus advocated that a stress coping style of a person arose from his own evaluation or re-evaluation of his environment changing, and the accumulative tiny stresses amounted to his total stress¹⁵⁾. Although coping ability for stress reduction in WFERLCs may generally depend on individual and/or environmental factors¹⁶⁾, there has not reports on the coping ability of GHs caregivers.

With these backgrounds, we have generated the hypothesis if there may be possible variables among individual factors, work environment and/or coping style for stress which may modulate a risk on the depressive status of caregivers in GHs. We therefore have started with the cross-sectional study to get the whole picture, and furthermore discussed the possible approach for improvement of depressive problems currently occurring in Japanese caregivers in GHs with some references.

Subjects and Methods

To obtain the data for the cross-section study, we requested the cooperation of 238 GHs in Sapporo City for this study in January, 2010. The reason why Sapporo City was selected for the research site was partly because of the feasibility and of a sufficient number of subjects from GHs located in the large city, which would avoid statistical sample errors. Cooperation from 51 out of the 238 GHs in Sapporo City was obtained. The 700 caregivers working for the facilities received questionnaires including an agreement confirmation and the survey form. Then they were requested to fill in the answers for the form and mail the sealed envelopes confidentially back to us. The agreement form enclosed on the questionnaire requested the subjects to fill their identification such as name, address and office in order to identify them.

As the preliminary investigation, we have requested each GH to provide the following information: 1) who is the manager, 2) when was the GH founded, 3) number of units, 4) average care level [grade 1 (light burden for caregivers) to grade 5 (very severe burden for them)], 5) degree of independence in daily life among elderly with disabilities [J (mostly independent), A (mildly dependent), B (fairly dependent), C (severely dependent or bedridden)], 6) degree of independence in daily life among elderly with dementia [I (mild dementia) to IV (severe dementia) and M (in need for psychiatric medical service)], 7) total number of residents (male, female), 8) number of caregivers, 9) average age of caregivers (total, male, female), 10) average years in current job (total, male, female), 11) job position (full-time, part-time, dispatched).

With these basic facilities' attributes, we have used individual items as independent variables to analyze the association between the caregivers' various conditions including work environment and their mental health condition, using independent variables with reference to the precedent study¹⁴⁾ as for the following: 1) sex, 2) age (tertile for a trend test), 3) spouse including one without marital style, 4) current smoking [1–4] (tertile for a trend test) for Table 1], 5) primary or midcourse educational training, 6) willing to work for welfare, 7) working at night sometimes in addition to daytime duty, 8) average time of the night work per month (tertile for a trend test), 9) presence of overtime work 10) overworked hours per week (tertile for a trend test), 11) pride in the job (three answers for a trend test), 12) volume of work (three answers for a trend test), 13) willingness to continue care job (three answers for a trend test), [5–13] for Table 2], 14) provision of the

Table 1. Association of basic characteristics with CES-D in group home workers for elderly with dementia

Item	Content	CES-D≥16		CES-D<16		OR	95%CI	p
		Number	(%)	Number	(%)			
Sex	Male	25	13.4	41	16.3	1		
	Female	161	86.6	210	83.7	1.26	0.73–2.15	0.404
	Total	186	100.0	251	100.0			
Age	<35 yr	69	37.1	60	23.9	1		
	35–44 yr	38	20.4	52	20.7	0.64	0.37–1.09	0.102
	≥45 yr	79	42.5	139	55.4	0.49	0.32–0.77	0.002
	Total	186	100.0	251	100.0		<i>p</i> for trend	<0.001
Spouse	Absent	125	67.2	117	46.6	1		
	Present	61	32.8	134	53.4	0.52	0.34–0.78	0.002
	Total	186	100.0	251	100.0			
Smoking	No	165	65.7	108	58.1	1		
	Yes	86	34.3	78	41.9	0.82	0.55–1.23	0.332
	Total	186	100.0	251	100.0			

OR=Odds ratio, 95%CI=95% confidence interval.

supportive consultations from their supervisors, colleagues or families/friends (quartile for a trend test) [14] for Table 3]. The coping scale was calculated according to Ozeki’s transferring methods for the events¹⁷⁾, as for the following category: 15) problem-focused type (tertile for a trend test), 16) emotion-focused type (tertile for a trend test) and 17) avoidance type (tertile for a trend test) [15–17] for Table 4].

The Center for Epidemiologic Studies Depression Scale (CES-D) was used as the dependent variable in order to evaluate caregiver’s mental health condition in this study, and the depressive status was defined as CES-D with more than or equal to 16, adjusting for gender and age^{14, 18, 19)}.

We divided all subjects into two groups at this cut-off line and used the ratio as the dependent variable for logistic regression analysis with adjustments to sex and age. Then, Odds Ratio (OR) and its 95% Confidence Interval (CI) were also calculated in addition to trend the test with 5% of the significance level. The SPSS16.0 for the Japanese version was used to complete these analyses. The current study has been approved by the Sapporo Medical College Ethical Committee.

Results

Out of the 700 caregivers, 438 returned a completed questionnaire to us, and the total response rate for the participation in the first cross-sectional study was 62.8%. The subjects’ basic identifications at enrollment were as follows; 1) The managers whose GHs were enrolled in this study consisted of social welfare corporation (6%),

medical care corporation (10%), enterprise (65%), non-profit organization (4%) and others excluding the public corporation (15%). 2) The average span of the administration since their foundation was 6.4 yr. 3) The average number of the units was 1.8 (1 unit: 33%, 2 units: 54%, 3 units: 13%). 4) The average care grade was 2.8 (grade 1: 4.0%, grade 2: 44%, grade 3: 42%, grade 4:4%,grade 5: 0%, NA 6%). 5) The average degree of independent level of bedridden elderly with disabilities was A2 (J1: 0%, J2: 2%, A1 32%, A2: 27%, B1: 15%, B2: 8%, C1: 2%, C2: 0%, No Answer [NA] 15%). 6) The average degree of independent level of demented elderly was IIb (I: 0%, IIa: 4%, IIb: 29%, IIIa: 35%, IIIb: 13%, IV 8%, M: 0%, NA 11%). The average number of residents was 15.6 (male: 2.8, female 12.7). 7) The average number of caregivers in categorized GHs was 15.3 (1–9 people: 27%, 10–19: 50%, and 20–30: 23%) and 84% of the staff in this study were female. 8) The average age of the caregivers was 42.7 yr old in males and 38.7 yr old in females. The average span of the current job was 3.3 yr (1.0–1.9: 9.4%, 2.0–2.9: 33%, 3.0–3.9: 28%, 4.0–4.9: 9%, >5.0: 8%, NA 8%) and 3.1 yr in males and 3.4 in females. 9) The positions of the caregivers in this study differed from 78% of full-time workers (19% in males, 81% in females), 21% of part-time ones (3% in males, 97% in females) and the 1% of dispatched ones (14% in males, 86% in females).

With these basic identifications of all the subjects described above, the subjects were assessed for the association between the basic characteristics and scores of CES-D (Table 1). Among the three groups stratified by their age, the group of caregivers at 45 yr old or more than 45 yr old

Table 2. Association of working status with CES-D in group home workers for elderly with dementia

Item	Content	CES-D \geq 16		CES-D<16		OR	95%CI	<i>p</i>
		Number	(%)	Number	(%)			
Primary education	Present	91	48.9	153	61.2	1		
	Absent	95	51.1	97	38.8	1.70	1.15–2.52	0.008
	Total	186	100.0	250	100.0			
Midcourse education	Present	142	76.8	213	84.9	1		
	Absent	43	23.2	38	15.1	1.94	1.17–3.22	0.010
	Total	185	100.0	251	100.0			
Willing to work for welfare	No	120	64.5	142	56.6	1		
	Yes	66	35.5	109	43.4	0.68	0.45–1.03	0.069
	Total	186	100.0	251	100.0			
Night work	Present	157	84.4	190	75.5	1		
	Absent	29	15.6	61	24.3	0.62	0.37–1.02	0.060
	Total	186	100.0	251	100.0			
Average time of nightwork per month	<2	161	89.0	207	83.8	1		
	2–3	13	7.2	32	13	0.994	0.43–2.32	0.989
	\geq 4	7	3.9	8	3.2	0.66	0.40–1.07	0.092
	Total	181	100.0	247	100.0		<i>p</i> for trend	0.733
Overtime work	Present	112	60.2	116	46.2	1		
	Absent	74	39.8	135	53.8	0.66	0.44–0.98	0.040
	Total	186	100.0	251	100.0			
Average hours of overtime work per week	<1	74	39.8	135	53.8	1		
	1–2	63	33.9	61	24.3	1.74	1.08–2.83	0.024
	\geq 3	49	26.3	55	21.9	1.46	0.90–2.36	0.122
	Total	173	100.0	235	100.0		<i>p</i> for trend	0.674
Being proud of the job	Yes	125	67.2	216	86.1	1		
	Scarcely	52	28.0	33	13.1	2.44	1.48–4.04	0.001
	No	9	4.8	2	0.8	7.80	1.65–36.96	0.010
	Total	186	100.0	251	100.0		<i>p</i> for trend	<0.001
Volume of work	Too much	88	47.3	96	38.2	1.61	1.08–2.42	0.021
	Proper	94	50.5	149	59.4	1		
	Too little	3	1.6	6	2.4	0.78	0.18–3.31	0.740
	Total	185	100.0	251	100.0		<i>p</i> for trend	0.181
Willing to continue care work	Yes	44	23.7	98	39.0	1		
	Hopehully	93	50.0	131	52.2	1.58	1.00–2.50	0.048
	Scarcely	39	21.0	20	8.0	3.90	2.02–7.56	<0.001
	No	8	8.0	2	8.0	9.06	1.82–45.10	0.007
	Total	184	100.0	251	100.0		<i>p</i> for trend	<0.001

OR=Odds ratio, 95%CI=95% confidence interval.

showed a significantly less ratio of CES-D point of more than or equal to 16 (OR=0.49, CI [0.32, 0.77], $p=0.002$). In other words, caregivers who were 45 yr or above were at a lower risk for depression. Caregivers who had a spouse were also at a lower risk for depression (OR=0.52, CI [0.34, 0.78], $p=0.002$). There was no significant association between CES-D and sex or smoking ($p=0.404$ and $p=0.332$).

The association between work status and CES-D was assessed (Table 2). Subjects without primary educational

training programs were associated with an increased risk of depression (OR=1.70, CI [1.15, 2.52], $p=0.008$) as well as subjects without midcourse ones (OR=1.94, CI [1.17, 3.22], $p=0.010$). Subjects who were not over their workload were associated with a decreased risk of depression (OR=0.66, CI [0.44, 0.98], $p=0.040$). Subjects with less pride in their jobs were associated with an increased risk of depression (OR=2.44, CI [1.48, 4.04], $p=0.001$), as well as without any pride at all (OR=7.80, CI [1.65, 36.96], $p=0.010$). Subjects with higher workloads were

Table 3. Association of support from others with CES-D in group home workers for elderly with dementia

Item	Content	CES-D \geq 16		CES-D<16		OR	95%CI	<i>p</i>
		Number	(%)	Number	(%)			
Support from superiors	Yes	63	33.9	142	56.8	1		
	So-so	71	38.2	79	31.6	2.05	1.31–3.21	0.002
	Little	31	19.4	21	8.4	4.21	2.23–7.91	<0.001
	No	16	8.6	8	3.2	5.35	2.13–13.47	<0.001
	Total	186	100.0	250	100.0		<i>p</i> for trend	<0.001
Support from coworkers	Yes	94	50.5	162	64.8	1		
	So-so	82	44.1	77	30.8	1.93	1.28–2.93	0.002
	Little	8	4.3	5	2.0	4.19	1.28–13.65	0.018
	No	2	1.1	6	2.4	0.68	0.13–3.62	0.652
	Total	186	100.0	250	100.0		<i>p</i> for trend	0.007
Support from family or friends	Yes	101	54.3	165	65.7	1		
	So-so	69	37.1	71	28.3	1.73	1.13–2.65	0.012
	Little	14	7.5	11	4.4	2.40	1.03–5.62	0.043
	No	2	1.1	4	1.6	0.82	0.14–4.70	0.823
	Total	186	100.0	251	100.0		<i>p</i> for trend	0.160

OR=Odds ratio, 95%CI=95% confidence interval.

Table 4. Association of coping styles with CES-D in group home workers for elderly with dementia

Item	Content	CES-D \geq 16		CES-D<16		OR	95%CI	<i>p</i>
		Number	(%)	Number	(%)			
Problem-focused coping	0–4	36	19.4	56	23.0	1.00		
	5–7	75	40.3	74	30.5	1.52	0.89–2.60	0.124
	8–15	75	40.3	113	46.5	1.05	0.62–1.76	0.868
	Total	186	100.0	251	100.0		<i>p</i> for trend	0.446
Emotional-focused coping	0–3	68	36.6	72	29.5	1.00		
	4–6	84	45.2	115	47.1	0.71	0.43–1.19	0.197
	7–9	34	18.3	57	23.4	0.51	0.29–0.89	0.018
	Total	186	100.0	244	100.0		<i>p</i> for trend	0.060
Avoidance coping	0–6	51	27.4	62	25.5	1.00		
	7–12	102	54.8	148	60.9	0.84	0.53–1.33	0.461
	13–18	33	17.7	33	13.6	1.41	0.75–2.65	0.291
	Total	186	100.0	243	100.0		<i>p</i> for trend	0.893

OR=Odds ratio, 95%CI=95% confidence interval.

associated with an increased risk of depression (OR=1.61, CI [1.08, 2.42], *p*=0.021). The more positively the subjects were willing to work, the less likely they were for risk of depression (*p*<0.001). Above all, subjects, who did not want to continue their job at all, were associated with a mostly increased risk for depression (OR=9.06, CI [1.82, 45.10], *p*=0.007). The other explanatory variables, such as willingness to work in welfare, night work, days per month engaging in night work etc., had no significant involvement with depressive trends.

As for the association between counseling for the subjects and CES-D scores as shown Table 3, the roles of counseling from senior staff were very important for the

subjects' prevention of depression (*p*<0.001). The subjects with counseling from their coworkers were also associated with an increased risk of depression (*p*=0.007). However the subjects with counseling from their families and/or friends were not significantly associated with a decreased risk of depression (*p*=0.160).

As for the association between coping ability and CES-D scores, the subjects with the higher points in emotion-focused coping style were associated with a decreased risk of depression (OR=0.51, CI [0.29, 0.89], *p*=0.018), and there seemed to be no significant involvement between problem-focused or avoidance coping style and CES-D scores (*p*=0.446 and *p*=0.893, Table 4).

Discussions

Several interesting associations such as between job satisfaction and the resignation were reported^{5, 6}, and there was also a strong association between job satisfaction and depressive state¹⁴. The strong inverse association between job continuation and depressive trend in this study may suggest the essential improvement for job satisfaction from the view of depressive states among caregivers.

To reduce these stresses caused by the characters of GHs, a person supporting a caregiver in need may be very important. In our study, the reason why subjects with a spouse were less at risk for depression, may derive from supportive communication with an intimate family member, subsequently reducing stress and empowering their feeling toward their job. Although nurse is a different occupational character from a caregiver in a GH, Hamaideh also reported that the most effective social support was from a spouse/partner¹¹.

On the other hand, good psychological effects on mental health can similarly be obtained from educational training with supportive consultations from senior staff or coworkers in the same work place. In this study, the significant inverse associations between training and depression were compatible with the results of several precedent studies^{12, 13}. Mergallo-lana has accentuated training and/or social support on the job satisfaction despite having a small wage and low career²⁰. With these supportive results, we would like to recommend the beneficial security of the subjects repeating educational trainings on their jobs.

In this study, an emotion-focused coping among three styles was the most effectively defensive against depressive exacerbation. An emotion focused-coping style is generally different from a problem-focused one in that its focusing object is not problem solving but emotional modulation through series of responses caused by stressors, and also different from an avoidance one in that its focusing manner is not just to escape from stressors or a negative interpretation of them¹⁵. It is interesting how an emotion-focused coping is the most effectively defensive for caregivers in the current GHs' environments. Moreover, it would be useful to adapt these specific items in the questionnaire to screen which type of coping a caregiver in a GH belongs and to gain an adequate consultation for preventable depression.

There may be several limits in the cross-sectional study. Firstly, the research site was confined to Sapporo City because of the research feasibility where we can follow up with the study subjects and also prepare in the case of an unexpected procedure requested from them. However,

there may be potential selection biases because of some different socioeconomic backgrounds shifted from standard statistical figures in Sapporo City. Secondly, there may still be other potential section biases because of a possible shift to the subjects in relatively larger GHs with more consciousness for the occupational health problems or in more considerate work environments. Actually, we only chose the subjects from the 21% of all GHs whom accepted to cooperate in our study procedure, despite obtaining approximately over 60% of subjects. Thirdly, beforehand, the precise statistical power had not been calculated and beta type error was less taken into consideration due to the study feasibility. We estimated the sufficient sample size as 370, which may not be meaningful, because it was obtained only from the point of confidence interval on highly CES-D prevalence using the formula by Kirkwood²¹, with the presumption that the population prevalence of the subjects with highly CES-D score was approximately 0.4¹⁴ and that the acceptable confidence interval error of the sampling subjects was within 0.1. Fourthly, the questionnaires were directly filled by the subjects and sent back to us in a basic manner, however they may have received these from their office or supervisors, which may give some influence to their psychological response and consequently lead to potential measuring bias effects.

Nonetheless, for several possible biases or errors, these statistically significant associations described above conclusively suggest that some basic characters, work environmental factors and coping style for stress may have an influence on the depressive status of a caregiver working at GH. Furthermore, the prospective study ongoing is still in need to verify the dynamic causal effect or chronological turnover change whose speculation was insufficient to discuss due to the limitation of our current cross-sectional study.

Population aging is the crucial problem not only in Japan but in many other developed countries, and it is actually important to discuss potential mental health risks of caregivers working for relatively smaller sized, economic, accessible and widely-spreading community-based facilities for elderly with dementia.

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