

Short Communication

Associations of Sense of Coherence with Sickness Absence and Reported Symptoms of Illness in Japanese Civil Servants

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Antonovsky proposed a sense of coherence (SOC) as a construct that predicts effective coping measures in confronting stressful conditions^{1–4}. SOC has been defined as a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement.

On the other hand, sickness absence is a composite outcome, comprising health and social behavior. It is primarily a proxy measure of ill health implying reduced occupational functioning, a form of illness behavior, leading to withdrawal from work, which may be linked to a wide range of life stressors.

In this 1-year follow up study, qualitative and quantitative measures of health were obtained at baseline. This paper tries to address a primary question: are higher levels sense of coherence related prospectively to lower rates for symptoms of illness and sickness absence from the job?

Methods

We evaluated 2,100 civil servants working in departments related to the municipality of T city in Toyama prefecture, Japan, in the springs of 2001 and 2002. From the original population 1,682 (80.1%) subjects participated in the first phase of the study. In the second phase, a questionnaire was sent to all 2,100 subjects, of whom 1,718 (81.8%) responded. In the second phase almost 5% of the original population at

baseline retired and 2.5% new employees were recruited. Finally, data for 1,300 (61.9%) subjects with complete relevant information who participated in both the first and second phases of the study were analyzed. Since we lost almost 14% of the subjects in the second phase a test to check follow up bias showed no significant difference in the sex and age groups of non-respondents in the second phase.

We divided the civil servants into four groups based on the classification system used in the national census⁵: 1) Administrative, 2) Professional, 3) Clerical and 4) Protective, Transportation and Telecommunication service workers were put into the Office Support category. We also stratified the age of the participants into four groups: 29 or younger, 30–39, 40–49 and 50 yr or older.

Questionnaire

SOC

We used the Japanese version of SOC-13⁶ for the survey. The items were rated on a seven-point likert scale in which higher values indicate a stronger SOC. The scale consists of three dimensions: comprehensibility, manageability and meaningfulness, which are equally weighted and together make an overall score. Mean \pm SD of SOC for men was 54.7 ± 10.4 and for women was 53.1 ± 10.2 . Cronbach's alpha for the SOC scale was 0.83.

Sickness absence records

Subjects reported the number of days they were absent from their job due to sickness during the 12 months prior to the second phase survey. Sickness absence was divided into none or short spells (less than 3 d) and long spells (3 or more d). Those with hospitalization records were excluded (69 subjects) due to large difference in the mean number of days of long spells of absence for subjects with and without hospitalization. In addition, since the cause of hospitalization was not reported, those subjects who were admitted due to accidents or emergency conditions could not be affirmed.

Symptoms of illness

A self-administered questionnaire containing a 9-item symptoms checklist was used to detect whether the subjects suffered from health problems during the 12 months prior to the second phase survey.

The scale of SOC-13 was measured in the first phase and symptoms of illness and sickness absence were reported in the second phase of the study. Participation was voluntary, but employees were motivated to cooperate since the results of this investigation are distributed among the subjects.

Statistical analysis

To detect the differences in the proportion of short and

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Table 1. Number (%) of none or short (<3 d) and long (≥3 d) spells of sickness absence by sex and age groups of the subjects. (N=1300)

	<3 d	≥3 d	Total	P
Sex				
Male	441 (59.9)	295 (40.1)	736 (100)	
Female	402 (71.3)	162 (28.7)	564 (100)	<0.001
Age				
<29	70 (74.5)	24 (25.5)	94 (100)	
30–39	51 (67.1)	25 (32.9)	76 (100)	
40–49	396 (65.1)	212 (34.9)	608 (100)	
≥50	311 (59.6)	211 (40.4)	522 (100)	0.02

Table 2. Percentage change (95% confidence intervals) in sickness absence and symptoms of illness with one point increase in the sense of coherence mean during follow-up, adjusted for age and employment category of the subjects. (N=1300)

	Men		Women	
	N (%)	Percentage change (95% CI)	N (%)	Percentage change (95% CI)
1) Bronchitis	29 (3.9)	-3.0 (-6.5, 1.0)	54 (9.6)	-1.8 (-4.7, 1.2)
2) Arthritis and Rheumatism	29 (3.9)	-2.7 (-6.4, 1.0)	17 (3.1)	0.5 (-4.4, 5.7)
3) Sciatica	79 (10.7)	-4.0 (-6.4, -1.5)	70 (12.4)	-3.5 (-6.2, -0.8)
4) Persistent skin problems	91 (12.4)	-2.0 (-4.3, 0.3)	64 (11.4)	-0.7 (-3.5, 2.1)
5) Hay fever	165 (22.4)	0.6 (-1.2, 2.5)	118 (21.0)	-2.0 (-4.1, 0.3)
6) Recurring stomach problems and indigestion	133 (18.1)	-5.2 (-7.2, -3.1)	99 (17.5)	-5.2 (-7.6, -2.7)
7) Being constipated most of the time	29 (3.9)	-5.2 (-8.5, -1.6)	100 (17.7)	-2.6 (-5.0, -0.3)
8) Persistent foot trouble	23 (3.2)	-8.0 (-11.8, -4.1)	56 (9.9)	-5.7 (-8.7, -2.7)
9) Nervous trouble or depressive mood	13 (1.9)	-4.3 (-9.3, 0.9)	13 (2.3)	-11.7 (-17.6, -5.4)
10) Long spells sickness absence*	295 (40.1)	-2.2 (-3.7, -0.1)	162 (28.7)	-0.7 (-2.6, 1.0)

*None or short spells of less than three days versus three days or more.

long spells of sickness absence by gender and age groups of the subjects, Chi-squared test was performed. In addition multivariate logistic regression analysis was conducted to observe the percentage change $\{(\text{Odds ratio}-1) \times 100\}$ in the symptoms of illness and none or short and long spells of sickness absence by a one point increase in SOC mean, after adjusting for age and employment category. We speculated that SOC was almost stable in the short follow-up period³⁾ and therefore it might be less probable to alter this trait by one standard deviation, so that the odds ratios were calculated by considering a one point increase in the SOC mean. Goodness of fit was assessed with the Hosmer-Lemeshow test⁷⁾. All reported significance levels are $P < 0.05$ (two-tailed test). The data were analyzed with Dr. SPSS (version 8.0.1J).

Results

Table 1 shows proportions of sickness absence for none

or short and long spells by gender and age groups of the subjects. Men and women were significantly different in having none or short and long spells of absence from their job. As for long spells, 40.1% (N=295) of men and 28.7% (N=162) of women had long spells of sickness absence in the follow-up period. As expected older subjects experienced more long spells of sickness absence.

The percentage change in symptoms of illness and long spells of sickness absence and their association with SOC is shown in Table 2. A one point increase in the SOC mean resulted in having less recurring stomach problems in men (-5.2%, 95% confidence interval (CI): -7.2%, -3.1%) and in women (-5.2%; 95%CI: -7.6%, -2.7%). In addition, women showed a significant decrease in nervous troubles (-11.7%; 95%CI: -17.6%, -5.4%), and men were less likely to have long spells of sickness absence (-2.2%; 95% CI: -3.7%, -0.1%).

Discussion

If healthy functioning of people in stable jobs is somehow related to being healthy at work; then symptoms of illness or sickness absence indicate some lack of correct functioning, whether the causes are psychological, social or physical. In this study we have shown that SOC is a significant factor in predicting less long spells of sickness absence in men and less gastrointestinal and sciatica symptoms and foot trouble in both male and female civil servants.

Low SOC has been associated with mental and physical health problems, including coronary heart disease^{8–10}. Antonovsky's SOC ought to explain why some people manage stress and stay well while others break down. Our findings indicate that should civil servants believe they lack the ability to cope effectively with stressful events and future problems and therefore are unable to commit themselves to face them properly (lower SOC subjects), they will complain more of specific symptoms of illness and also have longer spells of sickness absence from their job.

Due to lack of medical information, findings must be interpreted with caution, but, while illness behavior and reporting bias probably contribute to this caution, they are unlikely to explain the association. Firstly, in other studies, self-reported health is a strong predictor of mortality¹¹, which is reflected a real pathology. Secondly, the symptoms checklist was specific enough in order not to be influenced by a general tendency to complain.

Rael¹² reported that increased levels of negative aspects of social support resulted in higher rates of sickness absence. In our study and in another model, adjusting for social support and the levels of strain at work did not change the association between higher SOC and shorter spells of sickness absence from the work place (results not shown). There is debate as to whether having minor psychiatric problems relates to more reporting of health problems or whether having a minor psychiatric problem predisposes people to develop illness. It has been stated that there is a strong positive association between physical and psychiatric disorders¹³.

A principal limitation of the present report is that we do not know the baseline status of physical symptoms in the subjects. In this regard it is possible to argue that those with more physical symptoms in the first phase reported a lower SOC and then continued to suffer from those symptoms throughout the follow-up period. Nevertheless, Suominen¹⁴ reported from a longitudinal study that the initial level of SOC was significantly associated with the subjective state of health four years later when adjustment was made for the initial subjective state of health. In addition our results were consistent with what Kivimaki¹⁵ reported i.e. that a weak SOC was

associated with an increased rate of certified sickness absence in Finnish civil servants.

In conclusion, our findings have indicated that a stronger sense of coherence is associated with fewer days of absence from work in male civil servants and is also related to fewer gastrointestinal and sciatica symptoms in both male and female Japanese civil servants.

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