A sense of coherence and health. Salutogenesis in a societal context: Åland, a special case?

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Background: Antonovsky's salutogenic concept of a sense of coherence (SOC) has proved most influential in the way that health is now perceived.
Aim: To (1) describe the distribution of SOC among 40–70-year-old Ålanders; (2) examine the distribution of depression in Åland, Finland, and its relationship with SOC; and (3) discuss the findings within a salutogenic framework in a societal context.
Design: A cross-sectional study design was adopted. Antonovsky's SOC Questionnaire (13 items) and the Beck Depression Inventory (13 items) were used. In addition, in a separate questionnaire, sociodemographic information about each participant was sought, together with a question specific to this study and designed to measure self-rated health.
Setting: Åland, an autonomous island province of Finland.
Results: The proportion of respondents reporting good health was high (64%). The overall mean (SD) SOC was 70.7 (11.7) points, whereas for farmers and fishermen it was 73.88 (8.8) and 74.33 (9.2) points, respectively. SOC was significantly and strongly related to the self-rated health score. The higher the SOC, the better was the health of the respondents. Furthermore, the study provided clear evidence of the potential of the SOC concept as a positive mental health indicator.
Conclusion: The SOC seems to be a health-promoting resource that supports the development of a positive subjective state of health.

The medical sociologist Aaron Antonovsky raised the question of why some people, regardless of major stressful situations and severe hardships, stay healthy and others do not. In responding, he introduced the salutogenic concept of a ''sense of coherence'' (SOC) as a specific way of viewing life as comprehensible, manageable and meaningful. He claimed that the way people relate to their life has an influence on their health.[1–3] Three dimensions are essential in the salutogenic concept: (1) comprehensibility, which refers to the extent to which one perceives the stimuli that confront one as consistent, structured and clear; (2) manageability, which is the extent to which one perceives that the resources at one's disposal are adequate to meet the life's demands; and (3) meaningfulness, which refers to the extent to which one feels that life makes sense emotionally.[3 4] Antonovsky formulated the movement towards good health in terms of SOC and general resistance resources (GRRs). The SOC is a resource that enables people to manage tension, to identify and mobilise the GRRs to promote effective coping by finding specific solutions to specific problems. Included within the concept of GRRs are ego identity, knowledge, intelligence, social support, cultural stability and preventive health orientation.[2] Life experiences shape the SOC whereas the GRRs provide the individual with sets of meaningful and coherent life prerequisites.[5]

Initially, Antonovsky [3] considered the SOC concept to be applicable only on an individual level. But, later, he proposed that the SOC could also work on a societal level, with groups and social units such as neighbourhoods, cities, regions and countries.[6] He emphasised the responsibility of society to create conditions that allow people to maintain and develop good health.

In 1997, a study of pharmaceutical consumption in Åland revealed a pattern different from the rest of Finland.[7] Health statistics also indicated that the level of most chronic diseases, including depression, in the Åland Islands was lower than the average in the rest of Finland.[8–10] These findings raised the question of whether there was any evidence of a link between health and SOC in Åland. Further, could any specific buffers against ill health be found in an investigation of this area? Could it be possible that there exist factors on a societal level that enable Ålanders to cope more successfully with hardships and distress and, thus, promote good health?

The aim of this study was to: (1) investigate and describe the distribution of the SOC among 40–70-year olds in Åland; (2) describe the distribution of depression in Åland and its relation with SOC; and (3) discuss the findings within a salutogenic framework in a societal context.

METHODS

This study was carried out in Åland, an autonomous province of Finland. Åland functions in many ways similar to an independent state with its own legislation and administration. Its health statistics are good. The average life expectancy is 2–3 years higher than in the rest of Finland. For women it is the highest in the Nordic countries (table 1).[10 11] The unemployment rate is low at about 2% (2003) compared with rates for the rest of Finland (9%), Sweden (5.6%) and Denmark (5.6%). In 2003, the gross domestic product per person was €34 193 (£22 556, US$44 423), the highest in the Nordic countries (Finland €23 500, £15 500, $30 500; Sweden €24 600, £16 250, $32 000). Furthermore, there is considerable municipal autonomy. The prerequisites for good subjective health development seem to be present in Åland.

Data

The study is based on a random sample of 1500 Ålanders living in Mariehamn, Finström and Föglö. The sampling was

Abbreviations: BDI, Beck Depression Inventory; GRRs, general resistance resources; SOC, sense of coherence

Table 1 Average life expectancy (years) in Finland, Denmark and Sweden, 1996–2003[10]

Country	Men	Women
Denmark	74.9	79.5
Bornholm[12]	78.5	82.7
Finland	75.1	81.8
Åland	77.4	83.1
Sweden	77.9	82.4
Gotland[11]	76.0	81.2

NOMESCO *Health statistics in the Nordic countries 2003.*[10]
1993–2002 source: Hyyppä and Liikanen.[11]
1996–2000 source: Broennum–Hansen *et al*[12]

performed by the Statistical Office of Finland to ensure that the group was representative of 40–70-year olds. Since there was concern about a possible geographical and demographic variation in the perceived health of the group, three municipalities of different sizes were chosen: the city of Mariehamn, the rural municipality of Finström and the archipelago municipality of Föglö. A cross-sectional descriptive study design was used. Data were collected in the autumn of 1996 via a mailed self-reported questionnaire. The inclusion criteria for the study were the selected age cohort and registration in the above-mentioned municipalities on 31 December 1995. People living in institutions were excluded. This age group was selected because a high level of depression was anticipated. In many countries, including Sweden, the prevalence of depression seems to be higher in younger people than in elderly people. In Finland the situation would seem to be the opposite. Younger people seem not to be afflicted by depression as frequently as older folk. Usually, women are more affected by depression than men.[13 14] In the Mini Finland Health Survey of adult Finns (n = 8000), the association between the prevalence of depression and age was clearly more significant in women than in men. In women, this association increased sharply in the age group 40–49 years.[15]

A sample of 1500 people aged 40–70 years was selected who met the study criteria. It must be noted that, whereas in Mariehamn and Finström cooperation was sought from only some of those in the 40–70-year age group, everyone in this age bracket resident in Föglö was contacted because of the relatively few 40–70-year olds in this municipality. Initial non-respondents were sent two reminders. In the end, 1033 people agreed to participate in the study, an overall response rate of 69%. However, because of difficulties in interpreting replies from 20 respondents, the answers from this group had to be excluded from all analyses. The final figure of those participating in the study, therefore, was 1013 (Mariehamn n = 523, Finström n = 363 and Föglö n = 127).

Variables

Sociodemographic characteristics

This questionnaire sought data about sociodemographic characteristics such as age, gender, marital status, education, employment and occupation.

Depression

The short form (13 items) of the Beck Depression Inventory (BDI) was used to measure self-reported depression. Each item has four statements ranging in severity from 0 to 3, to which the respondent must indicate agreement or disagreement. The estimated degree of depression according to the BDI was scored accordingly: 0–4 points, none or minimal; 5–7, mild; 8–15, moderate; and 16+, severe.[16] The BDI scale is used extensively in research and has proved to be reliable and valid.[17–19] The internal consistency measured by Cronbach's α in this study was 0.85.

Table 2 Distribution of the sense of coherence in different subgroups among 40–70–years-old Ålanders

Variable	n	%	SOC mean (SD)
Gender	842*		
Men	387	46.0	71.27 (11.2)
Women	455	54.0	70.35 (12.1)
Age (years)	842*		
40–44	188	22.3	69.45 (12.4)
45–49	201	23.9	70.14 (10.4)
50–54	169	20.1	71.38 (12.9)
55–59	119	14.1	71.71 (10.6)
60–64	88	10.5	71.32 (10.8)
65–70	77	9.1	71.43 (13.2)
Marital status	845*		
Married/cohabiting	691	81.8	71.34 (11.0)
Non-married	72	8.5	68.83 (13.0)
Divorced	64	7.6	67.50 (14.3)
Widowed	18	2.1	66.72 (17.9)
Place of living	832*		
Mariehamn	448	53.9	70.12 (11.9)
Finström	284	34.1	71.95 (11.0)
Föglö	100	12.0	70.60 (12.0)
Education	837*		
Primary school	298	35.6	70.24 (12.4)
Secondary school	201	24.0	70.88 (12.0)
Polytechnic school	217	25.9	71.43 (10.5)
University degree	121	14.5	70.41 (11.6)
Employment	840*		
Employee	513	61.1	70.51 (11.2)
Private enterprise	138	16.4	73.19 (10.6)
Unemployed	26	3.1	65.81 (12.8)
Home work	16	1.9	72.19 (13.0)
Disability pensioner	59	7.0	68.83 (13.1)
Old-age pensioner	88	10.5	71.81 (11.9)
Occupation	836*		
Tourism	33	3.9	68.85 (11.7)
Trade	115	13.8	71.98 (12.1)
Shipping	117	14.0	68.74 (12.0)
Healthcare	118	14.1	70.99 (11.4)
Education	70	8.4	70.19 (11.2)
Industry	54	6.5	70.30 (12.0)
Agriculture	56	6.7	73.88 (8.8)
Fishing	15	1.8	74.33 (9.2)
Other	258	30.8	70.88 (11.8)
SRH	848*		
Good	543	64.0	73.77 (9.4)
Moderate	253	29.9	66.73 (12.4)
Poor	52	6.1	58.29 (15.2)
BDI	798*		
None or minimal (0–4)	622	77.9	72.45 (8.9)
Mild (5–7)	100	12.5	63.33 (9.9)
Moderate (8–15)	66	8.3	52.95 (9.2)
Severe (16+)	10	1.3	36.44 (5.0)

BDI, Beck Depression Inventory; SOC, sense of coherence; SRH, self-rated health.
*Missing values are excluded.

Self-rated health was measured by a single question ''How do you perceive your health at present? '', the response offering five statements from 1 to 5 indicating very good, fairly good, satisfactory, fairly poor through to very poor health. In analysing the responses, the statements ''very good'' and ''good'' were interpreted as indicating good health, satisfactory as moderate, whereas ''poor'' and ''very poor'' were computed as poor health. This single question about health had also previously been shown to be a reliable and valid measurement of health.[20–23]

Sense of coherence

The 13-item form of the Orientation to Life Questionnaire was used to assess a global life orientation reflecting a person's ability to perceive life as comprehensible, manageable and

meaningful.[2 3] Five questions measured comprehensibility, four manageability and four meaningfulness. The short form of the SOC Scale has been used successfully in previous studies in Sweden.[24 25] A total score was then calculated, the range being between 13 and 91 points. The SOC sum index was here divided into quartiles. A score of 13–63 points corresponded to a low SOC, 64–79 points to a moderate SOC and 80–91 points to a high SOC. A higher number suggests a stronger SOC. The SOC scale and these subdivisions have been shown to be psychometrically sound. The internal consistency, the criterion validity as well as the test–retest and the responsiveness reliability are all considered to be good.[5 26] Cronbach's α coefficient in this study was 0.85.

Statistical analysis

The data were analysed using SPSS V.14. Descriptive statistics were applied to obtain means (SD). The reliability was tested using Cronbach's α reliability coefficient.[27] Pearson's χ^2 and Spearman's rank correlation coefficient were used to compute differences in the frequencies of the demographic variables. In order to find out which item contributed most to the total SOC, the mean score per item and the explained variance were calculated. Pearson's product moment correlation coefficient was used for the analysis of correlation. The effect sizes of the correlation applied in this study follows Cohen's recommendation for behavioural sciences: $r = 0.10$ small; $r = 0.3$, medium; and $r = 0.5$, large.[28] SOC was analysed as both a dependent and an independent variable. A stepwise multiple linear regression analysis was performed with BDI as the dependent variable. SOC, self-rated health and sociodemographic variables were entered in the regression as independent variables. SOC was entered as the dependent variable in a stepwise multiple linear regression, where those variables that correlated most strongly with the SOC were entered as independent variables. The SPSS standard values for inclusion of new independent variables and stopping the stepwise process were applied. A p value <0.05 was considered to be significant in both bivariate and multivariate analyses.

Ethical considerations

The study design was approved by the ethical committee at Ålands Hälso-och Sjukvård. The respondents were guaranteed confidentiality, although their replies were not anonymous.

RESULTS

Description of the sample

The mean (SD) age of the final sample was 52.8 (8.4) years. The distribution of the study population corresponded to the distribution within the population of the province as a whole by age but not by gender. Women were slightly overrepresented in the study (55.2% compared with 49.3% in Åland). SOC and BDI were adjusted for gender when related to health data.

Distribution of SOC

The total mean (SD) score on the SOC was 70.7 (11.7), ranging from 26 to 87 points (possible range 13–91). Farmers and fishermen reported the highest mean scores. SOC increased with age. Older age groups scored higher on SOC than younger groups, although the differences were small. Gender, marital status, place of living, education, employment status and occupation were not statistically related to SOC in this sample. The distribution of the SOC in different subgroups of Ålanders is shown in table 2.

A stepwise multiple regression analysis was performed. SOC was entered as the dependent variable. The independent variables used in the regression were those eight that showed the highest bivariate correlation with the SOC. The most important factor was the lack of depression (BDI), which alone accounted for 40% of the variation in SOC. Other factors were work comfort, childhood conditions, mentally heavy work and social support.

SOC and health

More than 60% of people reported that they were in good health but 7% said that their health was poor. SOC was significantly and negatively related to self-rated health ($r = -0.41$, $p \leqslant 0.01$, $n = 848$) and to depression (BDI; $r = -0.66$, $p \leqslant 0.01$, $n = 798$). The stronger the SOC, the better the individual's health. The mean score of depression (BDI) was independent of gender by 2.8 points (SD 3.5, $n = 909$). In all, 9% of the respondents had a BDI score $\geqslant 8$ points—that is, a moderate level of depression. Age, marital status, employment status and diseases were all factors related to depression. Older people tended to score higher on the BDI than younger people. The percentage share of a BDI score $\geqslant 8$ was higher among unmarried, divorced and widowed persons. This was also the case with unemployed respondents.

A stepwise multiple regression analysis was performed (table 3). The independent variables included in the regression were self-rated health, SOC and sociodemographic variables. Together all these factors accounted for 51% of the overall explanation of depression (BDI). Meaningful daily activities made the greatest contribution to the explanation of depression, alone accounting for up to 29% of the variation in BDI.

DISCUSSION

The first aim of the study was to describe the distribution of SOC in Åland. The distribution of SOC in different subgroups was, in part, at variance with the results of previous studies. In an international comparison, the mean SOC in this survey was high[26] but was in line with SOC scores on Swedes (the MONICA study),[29 30] but higher than other findings regarding Swedes,[24 25 31] Finns,[32] Danes,[33] Canadians[34] and Swiss and Germans.[35] Furthermore, farmers in Åland scored higher on SOC than their counterparts in Sweden.[36]

The second aim was to describe the distribution of depression and its relation with SOC. These results were also, in part, inconsistent with those of previous studies. Two-thirds rated their health as good. These findings correspond to earlier findings about Finns[37] and Swedes.[38] Using Beck's classification, 8% had a moderate level of depression, which corresponds to the results found in the European Outcome of Depression International Network Study where the overall incidence of depression in Finland was 6%. However, taking into account urban–rural differences of depression among women, our findings are quite in line. In Turku (an urban area), the level was 8%.[39] The low mean score of depression (2.8 points) differs from other findings about Finns where the mean score was 8.7.[19] Lehtinen and Joukamaa[15] concluded from a summary of 10 population surveys that the level of symptoms of depression ranged between 18% and 34% for women and between 10% and 19% for men. The data for depression in this study varied from 2% to 5% for men and from 6% to 12% for women. However, there are difficulties in comparing findings from different studies because of different definitions of the disorder and different measures. One also has to remember that it is less appropriate to interpret the BDI mean value as a diagnosis of depression. The BDI Scale seems to overlap between anxiety and depression which means that people scoring high on anxiety also score high on the BDI.[17] Low SOC was one of the significant predictors of depression in the ODIN study. The high level of a strong SOC in this sample was an important explanatory factor in the low mean for BDI. Meaningful activities, one of the questions in the SOC scale, were the

Table 3 Independent predictors of depression on 40–70-year-old Ålanders according to linear regression analysis

Regression					
Model	R	R^2	Adjusted R^2	SE of the estimate	
1	0.712*	0.507	0.501	3.117	
ANOVA					
Model	Sum of squares	df	Mean square	F	Sig
1 Regression	7529.023	8	941.128	96.867	0
Residual	7335.337	755	9.716		
Total	14864.360	763			
Coefficients*†					
Model	Unstandardised coefficients		Standardised coefficients	T	Sig
	B	SE	β		
1 (Constant)	9.055	1.203		7.526	0
Marital status	−0.074	0.182	−0.011	−0.409	0.683
Place of living	0.178	0.170	0.027	1.046	0.296
Education	−0.001	0.062	0	−0.013	0.989
Employment	0.016	0.053	0.010	0.297	0.767
Occupation	−0.013	0.033	−0.010	−0.385	0.700
Self-rated health	1.259	0.126	0.285	10.010	0
Age	0.044	0.016	0.099	2.860	0.004
SOC	−0.163	0.009	−0.536	−18.878	0

ANOVA, analysis of variance; df, degree of freedom; Sig, significance; SOC, sense of coherence.
*Dependent variable: depression (Beck Depression Inventory).
†Weighted least-squares regression: weighted by gender.

strongest explanatory factors for the absence of depression. This is in accordance with the salutogenic theory. Despite above-mentioned methodological problems, we still consider the findings from this study to be reliable and valid.

The third aim of the study was to relate and discuss the findings within a salutogenic framework in a societal context. The results of this study, that both a low level of depression and a high level of a strong SOC were evident, should be related to the context of the survey. SOC was strongly and negatively related to depression. The low level of depression could have influenced the SOC. Is it a high SOC that accounts for good health (lack of depression) or is it a low level of depression that explains a strong SOC? The distribution of the GRRs by age, gender and socioeconomic status was not sufficiently explored in Åland. Any discussion along the lines of the third aim can only contain assumptions. Nevertheless, it is important and valuable to try to look at salutogenesis at a societal level. Such an approach is rarely seen today.

Antonovsky[6] published a paper where he discussed the potential of the salutogenic concept on a societal level. After that, nobody has, to our knowledge, picked up that theme again. It would now be appropriate to do so with the evidence of recent salutogenic research to hand. Health is a resource for the individual. Good public health is an objective of all societies. Health promotion is a way of achieving both objectives. Thus, the salutogenic concept can play an important role in the development of all societies.

Limitations

Some limitations of this study must be acknowledged. Measuring depression in the general population is difficult. A major difficulty is that people who feel depressed or think that they have symptoms of anxiety and depression tend to refrain from answering questionnaires like the ones in this study. This can lead to selection bias.[40] The dropouts in such a study can affect the results by decreasing the mean value of depression and increasing the mean SOC. Another limitation lies in the cross-sectional study design. Conclusions about causality cannot be drawn from the findings in this study.

Implications for health policy and further research

Research evidence from community health psychologists shows that the organisation and structure of a society can influence people's health.[41] This is important and relevant enough to be borne in mind and emphasised in this particular study context. Further research is needed to establish the distribution of the determinants of good health. Health statistics also need to be related to health resources such as the SOC. Furthermore, the distribution of health by socioeconomic status, gender and age needs to be clarified. More than 25 years of front-line research that began with the Whitehall Studies has shown there is a clear social gradient in health.[42] Research on the determinants of the health of populations goes a step beyond and claims societal or collective self-esteem (habitus) can emerge.[43 44] This is obvious in Åland. We are aware that there are other concepts contributing to a positive health development—for example, resilience,[45 46] empowerment[47] and quality of life.[48] There are similarities and differences between the concepts, but their examination and comparison require a separate paper.

The possible contribution of the salutogenic theory and model to the development of health promotion has been highly underestimated.[49] There is a great concern among professionals and scientists over the declining mental health status in contemporary society. Further, science is struggling to find good indicators for mental health. It has been suggested that SOC is such an indicator. To examine that contention more extensive research along the lines of this study needs to be conducted.

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