Theresa A. Guino-o
College of Nursing, Silliman University

Identifying Factors Related to the Sense of Coherence of Adult Asthmatics In Dumaguete City

This study examines the relationship between the Sense of Coherence (SOC) and selected variables in 159 asthmatics, aged 20-40 years old. A two-part self-administered questionnaire was used to collect both the demographic data and the SOC levels of respondents using the "Orientation of Life Questionnaire" (OLQ). The data revealed that a majority of adult asthmatics have a high sense of coherence. No significant relationship was seen between SOC and age, gender, marital status, and educational attainment. Moreover, no significant relationship was observed between SOC and the nature and perceived helpfulness of societal support, level of major stressful events, and the self-reported health status levels of respondents. However, a significant relationship was observed between SOC levels of adult asthmatics and their perceived societal cohesion and structure as well as their levels of health maintaining behaviors. These findings strengthen the validity of the concepts of salutogenesis and the knowledge that SOC influences the maintenance of a person's health. Thereby, SOC may be tapped as a health management resource for people with asthma or other health related conditions.

Introduction

Innovations in health care approaches through research and evidence-based practice aim to develop strategies to ensure the highest quality of health with the least cost. Among the innovations is the understanding of health as a cultural phenomenon, which has significantly advanced client-centered care. Because client participation and independence are highly valued in health care, questions and answers about their individual caring potentials have been sought. Antonovsky (1979) proposed the use of the Salutogenic Theoretical Model that focuses on health promoting factors to direct a person toward the healthy end of the health continuum. Salutogenesis explains how health is created and maintained by an individual. It highlights the individual's

coping mechanisms as important factors that buffer stressors that are ubiquitous in human existence.

The core construct of salutogenesis—the Sense of Coherence (SOC)—is understood as a global orientation that determines the extent to which one has a pervasive, enduring, and dynamic feeling of confidence in which the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; the resources available to meet the demands posed by these stimuli; and whether such demands are challenges, worthy of investment and engagement. These three components are called comprehensibility, manageability, and meaningfulness (Antonovsky, 1993). SOC is a universal concept that is applicable to all genders, social classes, regions, and cultures. It does not refer to a specific type of coping strategy, but to factors that, in all cultures, always are the bases for successful coping with stressors.

The individual is an open system, interacting in totality and recursively with an environmental field in social, cultural, and historical contexts. This lifelong, dynamic interchange of energy or essences allows the creation and reevaluation of meanings for the thinking individual, environmental adjustment and health maintenance as well as the management of threats to well-being through internal resistance resources that form the SOC. Considered as internal resistance resources against stressors are physical factors, intelligence, coping strategies, social support, financial power, and perceptions of cultural and societal stability. Successful adaptability patterns are dependent on the strength of an individual's SOC, so it follows that when SOC is weak, stressors are poorly managed.

Given this background, the present study aimed to understand the characteristics of adult asthmatics and their interactions with the environment in the Philippine context. Specifically, it describes the demographic profile of adult asthmatics in Dumaguete City; the nature and perceived helpfulness of their social support, societal cohesion and structure; the occurrence and nature of major stressful events in the past six months; their self reported health status; and health maintaining behaviors. It also explores the validity and usefulness of the Salutogenic Model for effective health management in adult asthmatics. Finally, it measures the SOC levels of the adult asthmatics and sought to discover whether or not there are significant relationships between the SOC levels and related variables.

Review of Related Literature

Asthma, as a world-wide phenomenon, has posed threats to over-all health and productivity of individuals, with immense costs to society. According to World Health Organization (WHO), 125 million people suffer from asthma and the number is increasing rapidly (Tacio, 2003). Worldwide deaths from asthma have reached over 180,000 annually. In the Philippines, asthma affects eight million children with a prevalence rate of 12–15. Out of

56 countries, the Philippines ranks 32nd in self-reported asthma. It is observed that in coastal communities, 20% of the population has asthma. These highly populated and progressive areas expose residents to health risks where stress and physical ailments are related to the congestion, pollution, and fast-paced life.

The 2003 U.S. statistics show that asthma accounted for 12.7 million physicians' office visits and 1.9 million emergency department visits in 2002, and approximately 5000 deaths annually. The cost of direct and indirect health care for asthma reached $16.1 billion annually, with prescription drugs representing the largest single direct medical expenditure. Only 10 million of these cases are attributed to allergic reactions so the other causes of asthma like respiratory infections and stress may be implicated in its occurrence (Sketchikova, 2003). Previous asthma prevalence studies have established contrasting patterns of gender and age characteristics. Asthma was seen most commonly among boys than among girls but seemed to affect females more than males in adult population. In another study, however, no pattern was established with age increases or gender differences (Besagaña et al., n.d.; Asthma,1999; Prevalence of Asthma, 2003). The prevalence also did not seem to be affected by marital status, but was influenced by educational levels and socioeconomic status (Atun, 2000 and Tuazon, 2000).

The potential of recovery and lengthening quality life for persons with lifestyle diseases like diabetes mellitus, hypertension, coronary artery diseases, and obesity are positively influenced by advancement in medicine, science and technology. However, even to individuals who cannot avail themselves of these advancements for one reason or another, health is still a right and is not a far fetched possibility. Studies show that quality of life and health are dependent on the important factor of individual coping and positive outlook on life (Cederblad, Ruksachatkunakorn, Boripunkal, Intraprasert, & Hook, 2003). Since the inception of salutogenesis, numerous studies have been done to test the applicability of the construct. They revealed that the SOC has an influence on illness-prevention and seems to mediate in and reduce the risk of all-cause mortality (Bengel, Strittmatter, & Willmann, 1999; Surtees, Wainwright, Luben, Khaw, & Day, 2003; Sanden-Eriksson, 2000).

Moreover, studies showed that SOC scores coincided with presumably less health-promoting dietary preferences (Lindmark, Stegmeyr, Nilsson, Lindahl, & Johansson, 2005) and that SOC buffers the impact of recent stressful life events on self-reported health status (Richardson & Ratner, 2005). For example, Eriksson and Lindstrom (2006) point to a better-perceived health in general if SOC is strong, regardless of age, sex, ethnicity, and naturality. Another study has shown that a strong SOC is associated with a reduced risk of all-cause mortality independent of sex and social class, cigarette smoking, body mass index, blood pressure, cholesterol levels, and personality traits like hostility and neuroticism (Surtees et al., 2003).

Good oral condition in the Oral Health Impact Profile (OHIP) was also attributed to high SOC (Savolainen, Souminen-Taipale, Hausen, Harju, Uutela,

Martelin, & Knuuttila, 2005). Studies have seen relationships between high SOC scores and positive attitudes toward menopause and sex, and its inverse relation to emotional exhaustion, depersonalization and personal accomplishment. A higher SOC correlated with high natural killer cell activity or NKCA (Nakamura, Ogawa, Nagase, Nakajima, Kodama, Ogino, & Oshita, 2001), considered an advantage in overcoming infections and other related diseases. Incidentally, there have been many studies on the SOC levels of individuals and populations, its correlation with health realities, the predictors of its occurrence, as well as its validity and reliability (Antonovsky,1993; Flensborg-Madsen, Ventegodt, & Merrick, 2006; Volanen, Lahelma, Silventoinen, & Suominen, 2003; Cederblad et.al, 2003) but there has been no record of a study about SOC and asthmatic patients.

Methodology

This study used a descriptive correlational approach to determine the relationship between the selected variables and the SOC among adult asthmatic individuals in Dumaguete City, Philippines. One hundred fifty-nine adult asthmatics participated in the study. The specific age group of 20-40 year olds was chosen because SOC levels are considered to be relatively stable in adulthood (Gruszczynska, 1999), and to eliminate the possible interaction of extraneous variables of lifestyle diseases that usually accompany late adulthood. Demographic profiles of the research participants were patterned to fit with the salutogenic model. Asthma and its relationships with SOC were specifically investigated and described for possible health management implications relevant to the nursing profession.

Participants were purposively selected by snowball sampling, and data were gathered with these ethical considerations in mind: informed consent, participant confidentiality, an explanation that the participants could withdraw from the study at any time without fear of coercion, and that withdrawal from the study would never negatively influence the quality of their future health care.

A survey form was used to gather demographic data and Antonovsky's (1979) SOC-29 point Questionnaire or 'Orientation to Life Questionnaire' (OLQ) was used to determine the SOC of the participants. The OLQ as a tool operationalizes salutogenesis and sense of coherence. It consists of 29 items with 11 items for comprehensibility, 10 for manageability, and 8 for meaningfulness. Considering the facet-theoretical design of the measure, the scale can be best understood as having one core factor and thereby is a uni-dimensional instrument to measure SOC. Thirteen of the items are formulated negatively and have to be reversed in scoring so that a high score always expresses a strong SOC. Cronbach's alpha measure of internal consistency ranged from 0.82-0.95 in 26 studies of SOC-29 (Antonovsky, 1993).

Participants selected a response on a seven-point semantic differential scale. Demographic data were described through frequencies and percentages.

As necessary, data were combined to fully describe variables such as level of social support, societal cohesion and structure, and self-health report. Values in these categories were computed and grouped according to low/poor level (1-4) and high/very good level (5-7). Data with multiple responses were clustered into categories to facilitate statistical analysis. To illustrate, scores 0-1, 2-3, and 4 and above, mean low, moderate or high stress levels, respectively; 1, 2-3, and 4-7 mean low, moderate or high health maintaining behaviors. The means of the SOC scores were also classified as low (1-4) and high (5-7). This procedure allowed the determination of the relationships between variables. The Statistical Package for Social Sciences (SPSS-Version 13) software was used to analyze the data.

The Chi-square test was used to determine relationships between categorical variables such as demographics and the SOC mean scores at 0.05 levels of significance. In cases where a 2 by 2 table was used, the Yates' Correction for continuity value (which compensates for the overestimate of the Chi-square value in a 2 by 2 table) was used to determine significance of relationships. In a case where the minimum expected cell frequency, which should be 5 or more, was not met, the Fisher's Exact Probability Test was used to determine significance. Finally, the reliability of the OLQ tool in a Philippine context was tested using the Cronbach's alpha coefficient of internal consistency. This test assumes that a normal range of values of coefficient alpha is between 0.00 and +1.00, and values of 0.7 and above reflect a higher internal consistency (Polit & Beck, 2004 and Pallant, 2001).

Results and Discussion

Results show that there are more asthmatic adults aged 20-24 years in this sample than the other age groups. A majority of the respondents had attended college and graduate school. The data have some implications to the strength of SOC which is partially attributed to the internal resistance resource of intelligence. It also shows the importance that respondents and their significant others place on education and formal learning, and includes the associated benefit of increased financial capacity. In addition, there were more female adults compared to males in this sample who were asthmatic, the majority of whom were not married. This finding may be because individuals in the young adult age categories have more exposure to stress, allergens or asthma triggering substances or situations. On the other hand, this also suggests that adults aged 25-40 have more effective coping and management against asthma triggers or episodes and accordingly were not included in the sample of this study. The results also suggest that males have better coping and management against asthma triggers and episodes than females. On the other hand, it may also be noted that in this study, as in other studies in

the Philippine context, fewer males were recruited into the sample. This may have also resulted from their avoidance of identification with the illness in order to maintain a strong male image, which is valued in the culture (Panopio & Rolda, 2000).

Likewise, congruent with the Filipino characteristics of valuing close family ties and smooth interpersonal relationships, majority (66.04%) of the respondents claim that informal social support was available to them most of the time (Table 1). Furthermore, respondents claim that formal social support was only available to them sometimes (55.97%). The difference is also evident regarding which type of social support system is important to them. Seventy-two percent said the informal social support system is more important to them while only 13% are in favor of the formal social support system. The rest of the study participants considered both support systems as important.

Table 1.
Availability of the Two Types of Social Support to Adult Asthmatics (N=159).

Rate of Availability of Informal Support	*f*	%	Rate of Availability of Formal Support	*f*	%
No	2	1.26	No	23	14.47
Sometimes	51	32.08	Sometimes	89	55.97
Most of the time	105	66.04	Most of the time	47	29.56
No Response	1	0.62			
Total	159	100.00	Total	159	100.00

Meanwhile, societal cohesion and structure are operationally defined as access to finances and safety which establishes predictability and protects individuals against excessive stressors. The results of the study show that majority of adult asthmatics perceive that their finances are adequate and more than adequate (Table 2). This observation appears to corroborate findings that the majority of the respondents have attained college or graduate school educational levels.

In a developing country like the Philippines, low economic levels demand that basic needs are given priority over education or intellectual advancement. However, it is common in the culture that financial difficulties are masked or denied in an effort to project personal capability and to maintain social activities and relationships, as well as to avoid the shame of being in need (Panopio & Rolda, 2000).

Table 2.

Perceived Adequacy of Monthly Income or Finances of Adult Asthmatics (N=159).

Degree of Adequacy	*f* of responses	%
Less than adequate	23	14.47
Adequate	111	69.81
More than adequate	17	10.69
No response	8	5.03
Total	159	100.00

Income has also been identified as having positive correlations with SOC (Leino-Loison, Gien, Katajisto, & Valimaki, 2004 and Fok, Chair & Lopez, 2005). This finding, however, contradicts the view of Victor Frankl (cited in Rawlins & Beck, 1993) that difficulties from inadequacy of finances may contribute to positive results to SOC and coping.

Majority of the respondents perceive their society as safe and comfortable sometimes (Table 3), while 38% perceive it as safe and comfortable most of the time. This shows that the participants have considerable feelings of discomfort and perceived danger in society. Perhaps, the respondents' SOC levels are not very high because danger and discomfort are contradictory to SOC's three components of comprehensibility, manageability and meaningfulness (Antonovsky, 1979).

Table 3.

Perceived Safety and Comfort in Society of Adult Asthmatics (N=159).

Degree of Comfort	Frequency of Responses	Percent
Not safe or comfortable	6	3.77
Sometimes safe or comfortable	91	57.23
Most of the time safe or comfortable	61	38.37
No response	1	0.63
Total	159	100.00

The data further showed that the majority of the respondents (more females than males) have experienced major stresses in the past six months. It is noteworthy that the highest ratings of stress were caused by illness, followed by the emotional and physical environment (in the second and third places) for both male and female respondents (Table 4).

Table 4.
Specific Types of Stress of Adult Asthmatics (N=159).

Type of Stress	Male n=62	Female N=97	Total N=159	%	Rank
Illness	28	60	88	55.34	1
Emotional	26	42	68	42.77	2
Physical environment	15	31	46	28.93	3
Economic	13	19	32	20.13	4.5
Others (mental stress, physical stress and loss of significant others)	12	20	32	20.13	4.5
Psychological	8	17	25	15.72	6
Spiritual	6	7	13	8.18	7
Cultural	1	1	2	1.26	8

About 69%of adult asthmatics rate their health as good (Table 5) while 24% rated it as very good. The self-rating of health may have been influenced by asthma episodes that 63% claimed to have only occurred 1-3 times in the past six months. Aside from environmental changes, going on vacation, increased activity stress, intense emotions, crying or laughing, has been thought to cause asthma (Schetchikova, 2003). In the context of this study, the six-month period of the study (September-February) included periods where respondents may have been exposed to a lot of social activities (fiestas, All Saints and All Soul's days, Christmas, New Year, and Valentines), travel (for school breaks and long holidays), and environmental changes (cold weather and environmental air pollution from holiday fireworks and travel).

Table 5.
Self-ratings of Health by Adult Asthmatics (N=159).

Rating	n	%
Poor	9	5.66
Good	109	68.55
Very Good	39	24.53
Excellent	2	1.26
Total	159	100.00

The Filipino male mentality may also have influenced the lowered responses because in this culture men tend to project a strong image (Panopio & Rolda, 2000). The respondents' individual previous experiences may have influenced their acquired meanings of stress and stressors. Furthermore, their learned behaviors and coping can also be reasons for variations in the responses on types of stress experienced, and self rating of health or frequency of asthma episodes.

With regard to the management of asthma episodes (Table 6), majority of respondents took medications (prescribed or not prescribed) as well as had medical consultation. Prescription drugs was noted as the highest contributor to asthma costs. Respondents may have chosen these modes of management with reference to financial adequacy, the influence of tri-media, and the availability of health managed organizations and health insurance. It is also noteworthy that a few have managed their condition without the help of pharmacology. The 'no action' responses can be attributed to good internal coping of the respondents. A few were admitted to the hospital while others engaged in techniques that included the following: rest, coffee intake, diversion and exercise, water therapy, avoiding allergens, high fowler's position, and reduction of activities. Some of these management techniques are similar to those identified by Schetchikova (2003).

Table 6.
Types of Management of Asthma Episodes by Adult Asthmatics (N=159).

Types of Management of Asthma Episodes	Male (n=62)	Female (n=97)	Total (N=159)	%	Rank
Took medication (prescribed)	37	68	105	66.04	1
Sought Consultation	10	29	39	24.53	2
Took medication (not prescribed)	16	14	30	18.87	3
No action	9	8	17	10.69	4
Admission to the hospital	5	5	10	6.29	5
Others (rest, coffee, diversion and exercise, water therapy, avoiding allergens, high fowler's position)	1	8	9	5.66	6

Majority of respondents practice health maintaining behaviors such as eating nutritious food daily, engaging in relaxation and leisure, sharing problems with significant others, exercising regularly, taking maintenance drugs as prescribed, and having regular check-ups (Table 7). Other practices included reading the Bible, sleep and rest, body massage, avoiding food and allergens, and avoiding heavy work. Only a few (11.3%) engaged in regular medical checkups.

Table 7.
Health Maintaining Behaviors of Adult Asthmatics (N=159).

Health Maintaining Behavior	Male (n=62)	Female (n=97)	Total (N=159)	%	Rank
Eat nutritious food daily	39	47	86	54.09	1
Engage in relaxation and leisure	33	52	85	53.46	2
Share problems with significant others	17	48	65	40.88	3
Exercise regularly	31	33	64	40.25	4
Take maintenance drugs as prescribed	19	44	63	39.62	5
Have regular medical check-ups	8	10	18	11.32	6
Others (sleep and rest, vitamins, read the Bible, body massage, avoid food and allergens, avoid heavy work)	6	10	16	10.06	7

Sixty percent of respondents have high SOC levels while about 38% have low SOC levels. The latter group in effect may lack coping resources to adapt to the environment. With reference to the previous data presented, the levels of SOC in the respondents is influenced by the internal resistance resources that include education, social support, adequacy of finances, safety and comfort in society, physical health, stress as well as coping strategies and health maintaining behaviors. These variables have to be correlated with the SOC levels of the respondents to finally determine which are significantly related to the latter.

Chi-square test results (Table 8) show varying significance between SOC levels and other variables of adult asthmatics. No significant relationships were observed between SOC and age, gender, marital status, and educational attainment with p-values of 0.346, 0.480, 0.747, and 0.334, respectively. Furthermore, the statistical test revealed no significant relationship between SOC and social support levels, levels of stress, and self reported health status with p-values of 0.087, 0.087, and 0.209, respectively.

Table 8.
Chi-square Test Results Between Sense of Coherence Levels and Other Variables

Variables	Computed Values (X^2)	p-Value	Interpretation
Age	3.309	0.346	Not significant
Gender	0.498	0.480	Not significant
Marital status	0.104	0.747	Not significant
Educational attainment	1.421	0.334	Not significant
Cohesion and structure	11.218	0.001	Significant
Support levels	2.931	0.087	Not significant
Levels of stress	4.875	0.087	Not significant
Health maintaining activities	7.715	0.021	Significant
Self-reported health status	1.581	0.209	Not significant

In this study, the non-significance of the relationship between age and SOC may be plausibly understood since all respondents already belong to the age range of adulthood. There are no respondents in the sample representing a younger and a much older population, therefore, variability of SOC may not be observed. However, some SOC studies have shown its applicability to children 12 years and older, and its stability in middle to late adolescence (Buddeberg-Fischer, Klaghofer, & Schnyder, 2001; Honkinen, Suominen, Rautava, Hakanen, & Kalimo, 2006). This supports the argument for the validity of Antonovsky's (1979) Orientation to Life Questionnaire and is also the basis for non-significance, based on conflicting adult range categories. This data support previous findings that the SOC scale is largely sex neutral (Volanen et al., 2003). It also negates previous studies showing stronger SOC

levels in males than in females (Buddeberg-Fischer et al., 2001; Volanen et al., 2003).

In Philippine culture where the male positive image is supported, higher male SOC levels would have been a logical observation. It is possible that non-significant results arose because of the inequality of sample sizes in both genders where there were more female than male respondents. The same inequality of sample sizes representing marital status may also explain the non-significance in relation to SOC levels. Education has implications in achieving a sense of coherence because understanding and knowledge contributes to comprehensibility, manageability, and meaningfulness. As one study pointed out, SOC strongly predicts psychological health associated with mentality (Flensborg-Madsen et al., 2006). The insignificant relationship between SOC and educational attainment may point out, however, that inasmuch as intelligence is considered as an internal coping resource for a higher SOC, educational attainment is not synonymous with, nor is an assurance of, intelligence.

The Chi-square test revealed that SOC has a significant relationship with perceived societal cohesion and structure with a p-value of 0.001. These results support findings of previous studies that wealth, cultural stability, and person-environment fit has associations with a high SOC (Antonovsky, 1993; Ying, Lee, & Tsai, 2000). According to Davis and Cohen (n.d.), interventions to address individual needs in society (e.g. insufficient finances, poor social supports, poor diets, adverse environmental exposures, community factors and characteristics, and many other health risks) do little to alter the broader social and economic forces that influence these risks. Respondents experienced high stress levels and identified negative stressors from the physical environment, economic, spiritual, and cultural dimensions. All of these stressors contribute much to a decreased perception of comfort and safety in a community, thereby translating into low societal cohesion and structure and low levels of SOC in some respondents.

SOC also revealed a significant relationship with health maintaining behaviors with a p-value of 0.02. Patients with a strong sense of coherence are likely to take an active role in shaping their own health outcomes (Fok et al., 2005). Because the interactions of the individual in the environment are recursive, good health maintaining behaviors also contribute to a stronger SOC.

Conclusions and Recommendations

No significant relationships were found between SOC and demographic variables, nature and perceived helpfulness of social support, level of major stressful events in the past six months, and self reported health status levels. These results may have been influenced by unequal representation of respondents that were recruited into the sample, inhibiting maximal extrapolation of these findings to the broader population. However, SOC levels

were significantly related to the nature and perceived societal cohesion of the adult asthmatics. This suggests that safety and comfort are significant contributors to good internal coping and a stronger SOC of an asthmatic individual. A helpful perception of societal cohesion and structure can be started and maintained by the basic family unit, a supportive educational system, and a well regulated society.

SOC levels were also significantly related to health maintaining behaviors. In this perspective, an asthmatic individual may be individually empowered to maintain health and quality of life without immense cost by tapping his or her sense of coherence. This study strengthens the validity of the concepts of salutogenesis and the claim that SOC is a factor that influences the maintenance of a person's health, and thereby may be tapped as a health management resource for asthma or other health related conditions.

With reference to the study results and its limitations, it is recommended that a similar study be conducted in a larger population with sample representatives across the lifespan. This will allow exploration of the other demographic variables and its relationship with SOC and may also lead to innovative possibilities of preventing adult asthma episodes from an as yet uninvestigated younger asthmatic population. Having found societal cohesion and structure as significantly related to SOC, innovative and interdisciplinary strategies for the improvement and maintenance of these salutogenic factors in the family, school, and society in general would contribute to the assurance of a high quality of life for asthmatic individuals. Reinforcement of health-maintaining behaviors by the individual, community, and health sectors should be done as they are also significantly related to SOC. More exploration on the applicability of SOC for the prevention of lifestyle diseases and cost cutting interventions, are likewise recommended.

Acknowledgments

The data used in this paper comes from the Master's Thesis of the author. In this regard, the author would like to thank the Silliman University Faculty Development Committee (FADECO) for facilitating the provision of financial assistance for the study; Dr. John Drury and Dr. David Gordon Arthur, for their inspiration to explore the concept of salutogenesis and help in accessing the 'Orientation to Life Questionnaire'; and Asst. Prof. Tita Dumalag, for her guidance as thesis adviser.

References

Antonovsky, A. (1979). *Health, stress and coping.* San Francisco: Jossey-Bass.

Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science Medicine, 36,* 725-733.

Asthma (1999). http://www.childtrendsdatabank.org/pdf/43-PDF.pdf.

Atun, A. (2000). Asthma self care package: Increased cognitive level and reduction of attack. *University of the Philippines College of Nursing Research Bulletin, 4,* 23.

Bengel, J., Strittmatter, R., & Willmann, H. (1999). *Research and practice of health promotion. Vol. 4.* Cologne: Federal Center for Health Education.

Besagaña, X., Sunyer, J., Kogerinas, M., Zock, J.P., Tualeria, E., Jarvis, D., Burney, P., & Anto, J. (n.d.). Asthma incidence in adult populations. *American Journal of Epidemiology, 160,* 178-188.

Buddeberg-Fischer, B., Klaghofer, R., & Schnyder, U. (2001). Sense of coherence in adolescents. *Social and Preventive Medicine, 46,* 404-410.

Cederblad, M., Ruksachatkunakorn, P., Boripunkal, T., Intraprasert, S., & Hook, B. (2003). Sense of coherence in a Thai sample. *Transcultural Psychiatry, 40,* 585-600.

Davis, R., & Cohen, I. (n.d.). Strengthening communities: A prevention framework for eliminating health disparities. Retrieved February 2007 from http://www.preventioninstitute.org/strength_draft.html

Eriksson, M., & Lindstrom, B. (2006). Antonovsky's sense of coherence scale and the relation with health: A systematic review. *Journal of Epidemiology and Community Health, 60,* 376-381.

Flensborg-Madsen, T., Ventegodt, S., & Merrick, J. (2006). Sense of coherence and physical health. *TSW Holistic Health and Medicine, 1,* 183-193.

Fok, S., Chair, S., & Lopez, V. (2005). Sense of coherence, coping and quality of life following a critical illness. *Journal of Advanced Nursing, 49,* 179-181.

Gruszczynska, E (1999). Sense of coherence and process of coping with examination stress. http://www.iaapsy.org/25icap/common/OP652.htm. Paper presentation at the XXV International Congress of Applied Psychology.

Honkinen , P., Suominen, S., Rautava, P., Hakanen, J.,& Kalimo, R. (2006). The adult sense of coherence scale is applicable to 12-year-old schoolchildren—an additional tool in health promotion. *Acta Pediatrica, 95,* 952-955.

Leino-Loison, K., Gien, L., Katajisto, J., & Valimaki, M. (2004). Sense of coherence among unemployed nurses. *Journal of Advanced Nursing, 48,* 413-422.

Lindmark, U., Stegmeyr, B., Nilsson, B., Lindahl, B., & Johansson, I. (2005). Food selection associated with sense of coherence in adults. *Nutrition Journal, 4,* 2891-2899.

Nakamura, H., Ogawa, Y., Nagase, H., Nakajima, M., Kodama, N., Ogino, K., & Oshita, Y. (2001). Natural killer cell activity and its related psychological factor, sense of coherence in male smokers. *Journal of Occupational Health, 43,* 191-198.

Pallant, J., (2001). *SPSS survival manual: A step- by-step guide to data analysis using SPSS for windows* (Version 10). Buckingham: Open University Press.

Panopio, I. S., & Rolda, R. (2000). *Society and culture: Introduction to sociology and anthropology.* Quezon City, Philippines: JMC.

Polit, D., & Beck, C. (2004). *Nursing research: Principles and methods* (7th ed.). Philadelphia: Lippincot Williams & Wilkins.

Prevalence of Asthma. (2003). http://www.sate.sd.us/doh/stats/2003BRFSS/asthma.pdf.

Rawlins, R., Williams, S., & Beck, C. (1993). *Mental health-psychiatric nursing: A holistic life-cycle approach* (3rd ed.). St. Louis, Missouri: Mosby-Year Book.

Richardson, C., & Ratner, P. (2005). Sense of coherence as a moderator of the effects of stressful life events on health. *Journal of Epidemiology and Community Health, 59* 979-984.

Savolainen, J., Souminen-Taipale, A., Hausen, H., Harju, P., Uutela, A., Martelin, T., & Knuuttila, M. (2005). Sense of coherence as a determinant of the oral health related quality of life: A national study in Finnish adults. *European Journal of Oral Sciences, 113,* 121-127.

Sanden-Eriksson, B. (2000). Coping with type 2 diabetes: The role of sense of coherence compared with active management. *Journal of Advanced Nursing, 31,* 1393-1397.

Schetchikova, N. (2003, July). Asthma. *Journal of American Chiropractic Association,* 30-37.

Surtees, P., Wainwright, N., Luben, R., Khaw, K., & Day, N. (2003). Sense of coherence and mortality in men and women: The epic Norfalk-United Kingdom prospective cohort study. *American Journal of Epidemiology, 158,* 1202-1209.

Tacio,H. (2003, February). Asthma attacks. http://www.sunstar.com.ph/static/dav/2003/02/06/ feat/ asthma.attacks.html

Tuazon, J. (2000). Comparative study of two adult asthma education programs in enhancing self-care behavior and symptom control. *University of the Philippines College of Nursing Research Bulletin, 4,* 18.

Volanen, S., Lahelma, E., Silventoinen, K., & Suominen, S. (2003). Factors contributing to sense of coherence among men and women. *Scandinavian Journal of Caring Sciences, 15,* 190.

Ying, Y., Lee, P., & Tsai, J. (2000). Cultural orientation and racial discrimination: Predictors of coherence in Chinese -American young adults. *Journal of Community Psychology, 28,* 427-442.