

CHANGING LIVING CONDITIONS, LIFE STYLE AND HEALTH

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ABSTRACT

Human health is the result of the interaction of genetic, nutritional, socio-cultural, economic, physical infrastructure and ecosystem factors. All of the individual, social, cultural and socio-economic factors are influenced by the environment they are embedded in and by changes in this environment. The aim of the paper is to illustrate the influence of environmental change on living conditions and life style and some of the mechanisms through which such changes affect physical and mental health.

The interrelationship between environmental and societal change is illustrated by an example from a small community in Greenland, where changing environmental conditions have influenced fishing and employment opportunities to the extent that the size of the population has changed dramatically. The link between social change and health is shown with reference to studies on education, housing and occupation as well as life style changes. The paper further illustrates the relationship between the rapid socio-cultural and economic change and the health of the population. Psychosocial stress is reflected in problems such as alcohol abuse, violence and suicide, and these factors have been shown in studies on migration and transitions in health to be connected to changes in lifestyle and living conditions. (*Int J Circumpolar Health* 2005; 64(5): 442-450.)

Keywords: environmental change, living conditions, life style, Greenland

INTRODUCTION

Human health status is the result of the interaction of genetic, nutritional, socio-cultural, economic, physical infrastructure and ecosystem factors. Figure 1 represents one view of this complex interrelationship. At the centre of the model is the individual with his or her genetic endowment, physiologic adaptation, and personal life experience. Everyday life, e.g. work and life style, determine to what extent individuals are exposed to factors in their immediate surroundings that directly affect health. These may include such things as tobacco, alcohol, diet, contaminants, micro-organisms, and psychological factors. Everyday life is in turn determined by social, economic, and cultural factors in the larger

society. All of the individual, social, cultural and socio-economic factors are influenced by the environment they are embedded in and by possible changes in this environment.

This paper illustrates the influence of changes in living conditions and life style on health and shows how these relate to societal and environmental changes in the Arctic. Through a description of changes in settlements in Greenland, the paper illustrates the interrelationship between societal and environmental change. Next the paper exemplifies the association between socio-cultural conditions and change and health and by viewing acculturation in the light of socio-cultural change, the paper further elaborates the association between change and psychosocial health.

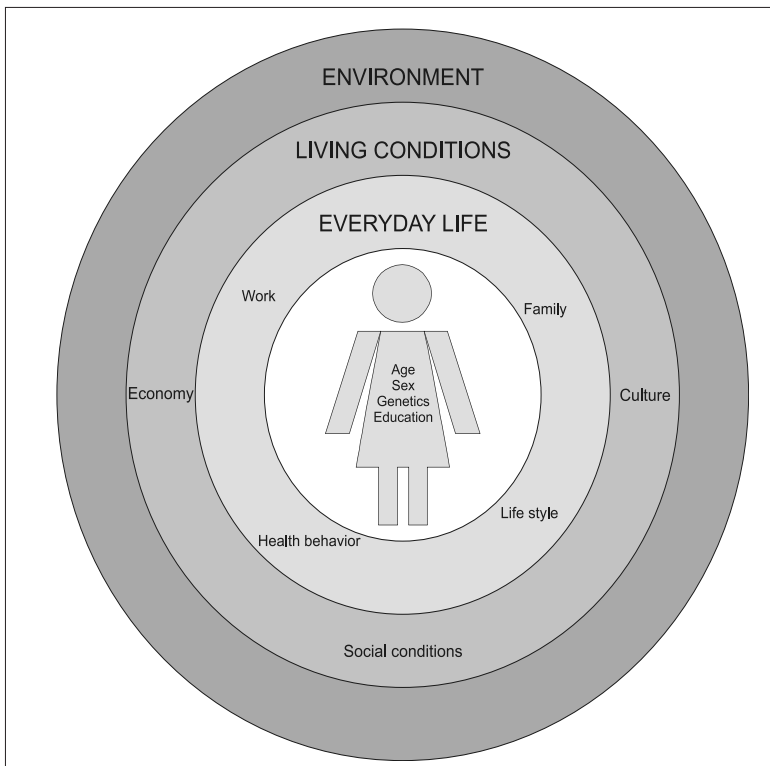


Figure 1. A model of factors influencing health.

Societal transition and climate change

The following description of social change in Greenland (1) is similar to that in many other circumpolar regions. In Greenland, the shift from a traditional Inuit community to a modern society started in the beginning of the 20th century. Due to climate warming cod appeared in great shoals off the West Coast and the traditional society based on hunting of seals and whales began to make way for a modern fishing society and cash economy where the population concentrated in fewer and larger towns and the number of villages decreased.

In the 1960s, however, climate cooling along with over fishing resulted in the disappearance of the cod from the West Coast of Greenland (2) but then at the same time, large numbers of shrimp were detected in the Disko Bay. The change from cod to shrimp fishing further impacted the Greenlandic society as may be illustrated by the example of the village of Qasigiannnguit. With the detection of the shrimps, the village which in 1955 had a population of only 343 was developed into a lively town centred around the shrimp factory. In 1982 when the population was at its maximum it numbered 1800 inhabitants but when during the 1990s, the shrimp disappeared from the coastal waters and the factory closed, people started moving from the town and in 2004 the population of Qasigiannnguit was only 1341 and the unemployment rate was among the highest in Greenland: 14.4% compared with 7.1% in the towns in general.

The example illustrates how climate change through the disappearance of important species has affected the socio-economic development of a local community. It is however important to realise that climate change is only one of the many factors influencing societal change

in Greenland and that for instance the population movement from a large number of small villages to larger - although still small by many standards - population centres was as much the result of conscious political forces encouraging the population to move to towns with schools, health care, shops etc. This inter-relationship between factors influencing societal change is of course not limited for Greenland but true also for communities elsewhere.

During the last half of the 20th century Greenland has transformed into a very modern society thoroughly integrated in global political and economic systems. Fishing and jobs in the associated processing industry are the basis of the economy today however at a very advanced level with ocean going fishing vessels existing alongside smaller crafts and some fishing from the ice. Subsistence hunting and fishing is still widespread but it is increasingly becoming a leisure activity. Daily connections by air to Denmark now exist, and even small villages have telephone service and internet access. In the supermarkets of the towns fresh mangos and papayas can be bought along with a range of European meats, dairy, and vegetable products, and frozen Greenlandic fish and seal meat.

The influences on physical health and everyday life of the above mentioned societal changes are obvious; positive changes include vastly improved housing conditions, a stable supply of food and increased access to western goods, and decreased mortality and morbidity from infectious diseases including tuberculosis. On the negative side of these changes, societal change and modernization has brought with it a number of social and mental health problems as well as increasing prevalence of chronic diseases such as cardiovascular disease and diabetes (3).

Socio-cultural transition and health

The association between social, cultural and economic factors and health has been reported extensively. A gradient across different socio-economic classes, regardless of how they are defined, has been consistently demonstrated for various measures of mortality and morbidity, for individual diseases and all causes combined (4). This gradient exists in many countries around the world, and has persisted despite major improvements in the overall health and wealth of populations. Also, numerous studies have shown correlations between unemployment and both morbidity and mortality (5, 6). The disparity in health status between Inuit and the larger national populations to which they belong (Canada, Denmark, Russia and United States) has often been attributed to their relatively poorer socio-economic status. Further, the association between socio-economic conditions and health has been demonstrated within Arctic populations. In a study of 49 Inuit and Dene communities in the NWT, based on community-level data from the 1992 NWT Housing Survey and routinely reported health and social service agency data, Young and Mollins found a correlation between most indicators for housing and socio-economic status with the rate of health centre visits, used as a proxy measurement of morbidity (7). Among Canadian Inuit the proportion of respondents reporting excellent/very good health increases with the level of formal education (3, 8). Those in the highest income category are also more likely to report excellent health than others in lower income categories. The association of education with positive self-reported health was

also found in the 1993-94 Greenland Health Interview Survey (controlled for age and sex) (3). Among those with the most formal schooling, self-rated health was better in all age groups and fewer reported longstanding illness.

The change in occupational patterns from hunting and small-scale fishing to an increase in wage earning employment is seen all across the Arctic. In the villages, wage earning has been introduced along with institutions and service deliveries such as schools, the shop, the sanitation infrastructure etc. In towns, there are factories and enterprises, banks, shops, administration services etc. The changes in occupational patterns are associated with decreased physical activity and a change from a traditional, marine diet to a more western diet in many coastal Indigenous groups in the circumpolar north and this is of significant importance in relation to cardiovascular diseases (3). In many studies, cardiovascular risk increases with modernization and urbanization, but although the mortality from ischemic heart disease is slightly lower among the Inuit than in the general population of Denmark, Canada and the US, it has decreased during recent years while marine food has been increasingly replaced by store bought food. In contrast, the mortality from other heart diseases and stroke is considerably higher among Inuit and shows an uncertain time trend (9). Type 2 diabetes has shown a considerable increase over the last 40 years among the Inuit in parallel with processes of modernization (10-12). In Greenland, it is now more prevalent than in Denmark (9.8% and 7.9% among the 40-64 year old) (13), which leads to specula-

tions about an increased genetic sensitivity to an environmental pressure among the Inuit.

The change in dietary patterns from traditional food to a more western diet of higher consumption of store bought foods is not only important because of the connection with obesity and other cardiovascular risk factors but also the loss of the socio-cultural values related to eating and sharing the traditional food and their significance on health. The amount of traditional food and the specific species consumed vary considerably among regions and among population groups (3, 14, 15). Older people and people in villages who go fishing and hunting themselves eat more traditional food, whereas the young wage earners consume more store bought foods more often related to their convenience. Regardless of levels of consumption though, traditional foods are highly valued by all population groups. They are considered to be filling and healthy and provide strength, warmth and energy in ways that store bought food do not (16-18). It is also reported to be a significant contributor to cultural identity, tradition, and social cohesion in Inuit communities. To eat and like traditional food is perceived as a marker of identity the same way as speaking the Inuit language (19; 20).

Changes in settlement structure, whether induced by climate change, politically or otherwise, will affect the social environment of the community and hereby the health of community members. Recent research using an ecological approach has shown effects of the social environment of the community on population health (21). Studies have focused on the extent to which social relations, social capital, and social vitality of communities

influence individual health status (22-24). The relationship between the social environment of the community and the health of the individuals is still not clear, but studies have shown associations between, for example, social isolation and mortality (25) and social capital and poor self-rated health (26). In both cases the association was present even after adjusting for individual risk factors. Even though the health advantages are not definitively understood, research has shown that a healthy community can be characterised as a safe environment that provides opportunities for social integration, and is neither conflictual, abusive nor violent (27). Further, health promotion research has shown that community members involvement in the social life and their shared pursuit of broader social goals through psycho-social processes can positively affect health (28, 29). There may be important potentials in focusing on the community level rather than merely the prevention of disease among individuals for future health promotion in Arctic communities undergoing rapid change.

Acculturation and psychosocial health

As illustrated above, changes in living conditions and lifestyle following the ongoing societal transition in the Arctic affect health in numerous ways. The following examples illustrate the relationship between the rapid socio-cultural and economic change that the Arctic has witnessed within the past 20-50 years and the psychosocial health of the populations living there.

The concept of acculturation has most often been related to the psychological effects of continuous contact between people

belonging to different cultural or ethnic groups but the concept has also shown to be useful for understanding the psychological implications for people experiencing socio-cultural change following rapid modernization (30). The concept of acculturative stress refers to stress in which the stressors are identified as being rooted in the process of cultural change or acculturation. For Arctic peoples these stressors can be loss of traditional food resources and habits, unemployment, loss of cultural practices, migration etc. Acculturative stress may be associated with psychological changes such as psychosomatic symptoms, feelings of alienation and marginality, and identity confusion (31). If the acculturation experience overwhelms the individual with a feeling of loss of control, psychopathology may occur such as depression and anxiety, substance abuse, suicide etc.

Individuals will adopt different acculturation strategies and from the point of view of mental health, integration seems to be the most successful strategy and marginalization the most problematic (32, 33). This relationship between marginalization and depression/anxiety was found in a study among Sami males living in remote areas (34). The study among the Sami is however one of a few studies empirically verifying Berry's theory of acculturation. A study among Greenlanders living in Denmark found that mental health was associated with socio-demographic and socio-economic factors rather than acculturation (35). Similarly, a study among Greenlanders in Greenland found that growing up in a town and being fully bilingual, as compared to growing up in a small village and only speaking Greenlandic, was associated with better mental health status (1). This disagrees

with the assumptions previously held that the social and psychological outcomes of acculturation are inevitably negative (36). It appears that successful integration seems to depend on having and utilizing the opportunities necessary to meet changing conditions.

The rapid changes that have taken place within Arctic communities and the migration from villages to towns has led to psychosocial stress among populations that within little more than one generation have had to adapt to significantly different ways of life and expectations. Those who move may experience a lack of social relations in towns, where still more people live in single-family households and social relations are chosen and individualised (37). Traditional values may appear irrelevant, as language skills and formal education become the means to succeed and avoid unemployment (1). Psychosocial stress is reflected in the incidence of social problems seen in many Arctic communities today. Whereas alcohol abuse in western societies is usually characterized by an increasing daily consumption over many years, it is the occasional, sometimes regular, drinking spree or binge drinking which creates many problems in Arctic communities (3). The most important health implications of these events are accidents and violence resulting in intentional and non-intentional traumas (cuts, bruises, fractures, head injuries, etc.).

Drowning, falls, frostbite, burns, and pneumonia are other results of intoxication and a direct association between alcohol use and incidence of suicides has been shown by some researchers. Alcohol consumption is also associated with economic problems and job loss due to instability at work and to domestic abuse problems.

Studies have shown a high occurrence of violence and sexual abuse among some Arctic populations (3). A population survey from Greenland shows that women and men have equally often been victims of violence (47% among women and 48% among men) but that women had more often been sexually abused (25% and 6%) (39). Having been the victim of violence or sexual abuse was significantly associated with a number of health problems: chronic disease, recent illness, poor self-rated health, and mental health problems. The associations between having been the victim of violence or sexual abuse and current health status was stronger for women than for men (38).

Similarly, suicide has played a significant role in many Arctic communities and individuals' lives. A population survey of adults in Greenland shows significant associations between suicidal thoughts and a number of social and cultural factors, the most important determinants being the occurrence of alcohol problems in the parental home and the experience of sexual violence during childhood (39). As shown in table I, among Greenlanders who had neither experienced alcohol problems nor sexual violence in their childhood, 10% report suicidal thoughts, while in those who had experienced both, 82% report suicidal thoughts.

It has been argued, based on the much higher suicide rate among men than women, that women in the Arctic have been more successful than men in adapting to social change. While women have been able to continue their traditional roles as care-givers, both in the family and in the labour market, the transition from hunter and sole breadwinner to wage-earner in a subordinate position or even unemployed has been a difficult transition for many Arctic males. On the other hand, studies have shown that women more often than men have suicidal thoughts and mental health problems (1). The finding that men suffer more from socio-cultural change related stress than women may be in part based on the more visible and more commonly reported manifestations of this stress or frustration common among men (more likely to become violent or commit suicide).

A study of alcohol consumption among Greenland Inuit living in small communities, large communities, and Inuit migrants to Denmark showed that the estimated average volume consumed increased with urbanization and, among the migrants, increased with the length of time spent in Denmark. Also the drinking pattern changed with fewer binge drinkers among the Inuit migrants (40). In the same population, age and gender adjusted blood pressures were 117/72 mmHg among

Table I. Prevalence of serious suicidal thoughts in Inuit of Greenland according to childhood conditions regarding alcohol misuse and sexual violence. 1993-94 Greenland Health Interview Survey.

Alcohol problems in parental home	No sexual violence (n=1150)	Sexual violence (n=65)
	%	%
Never (n=760)	10.3	21.7
Occasionally (n=355)	18.2	48.0
Often (n=100)	39.8	82.4

the Inuit in Greenland and 127/81 mmHg among Inuit migrants in Denmark ($p < 0.001$). Blood pressure was lower among the Inuit in Greenland than among the Inuit migrants in Denmark but the difference was much reduced among the better educated (41). The results suggest that social and biological factors are interlinked and that both may be affected by the changing way of life.

Conclusions

Health is a multi-factorial concept, influenced by a variety of determinants, including climate change as one of many environmental factors. The rapid social, cultural and economic transition that Arctic communities have witnessed over the past 50 years has influenced health through changes in living conditions and lifestyles. These changes will most likely be affected and even accentuated by climate change in the future and the capacity of individuals and communities to adapt or change with these climate and environmentally influenced shifts may have significant bearing on the health and well-being of individuals and communities in the Arctic.

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