

Climate change effects on human health in a gender perspective: some trends in Arctic research

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Background: Climate change and environmental pollution have become pressing concerns for the peoples in the Arctic region. Some researchers link climate change, transformations of living conditions and human health. A number of studies have also provided data on differentiating effects of climate change on women's and men's well-being and health.

Objective: To show how the issues of climate and environment change, human health and gender are addressed in current research in the Arctic. The main purpose of this article is not to give a full review but to draw attention to the gaps in knowledge and challenges in the Arctic research trends on climate change, human health and gender.

Methods: A broad literature search was undertaken using a variety of sources from natural, medical, social science and humanities. The focus was on the keywords.

Results: Despite the evidence provided by many researchers on differentiating effects of climate change on well-being and health of women and men, gender perspective remains of marginal interest in climate change, environmental and health studies. At the same time, social sciences and humanities, and gender studies in particular, show little interest towards climate change impacts on human health in the Arctic. As a result, we still observe the division of labour between disciplines, the disciplinary-bound pictures of human development in the Arctic and terminology confusion.

Conclusion: Efforts to bring in a gender perspective in the Arctic research will be successful only when different disciplines would work together. Multidisciplinary research is a way to challenge academic/disciplinary homogeneity and their boundaries, to take advantage of the diversity of approaches and methods in production of new integrated knowledge. Cooperation and dialogue across disciplines will help to develop adequate indicators for monitoring human health and elaborating efficient policies and strategies to the benefit of both women and men in the Arctic.

Keywords: *climate change effects; human health; gender; research in the Arctic*

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Recent changes in the lives of the Arctic communities have had different impacts on the lives of women and men; these include the rapid social changes caused by welfare state policies, economic policies and urbanisation. More recently, gender issues in the northern populations have been shaped by factors such as climate change and environmental pollution, which have become pressing concerns for the residents of the Arctic region. Several studies have shown that the societies living in the Arctic, along with 'traditional' gender inequality problems, are challenged with the new gender issues that are the result of contemporary

transformations in the life styles, living conditions and well-being in the Arctic (1, 2).

Despite the formal recognition of the importance of gender 'lenses' for understanding the Arctic human development (2), some researchers argue that gender perspectives in the Arctic research on climate change impacts on peoples' health are very seldom represented (3–7). This article shows how the issues of climate and environment change, human health and gender are addressed in current research in the Arctic. The main purpose of this article is not to give a full review but to draw attention to the gaps in knowledge and challenges in

the Arctic research trends on climate change, human health and gender.

Natural and medical sciences on climate change, human health and gender in the Arctic

In recent upsurge of interest for an adequate scientific knowledge about human development in the Arctic, an academic division of labour, the legacy of Cartesian dualism, has left the material body to the natural and medical sciences, with social sciences and humanities for the most part occupied with intersections of individual and collective, autonomy and agency, culture and the social (8). Relevant literature addressing climate impacts on human health is dominated by natural and medical sciences.

The studies of climate change impacts on human health, as a consequence of the division of labour, have often been split into a number of areas. There are those whose concern is to point out the possible direct and indirect consequences of climate and environment change for the health of population in the North, e.g. the impacts of various forms of contamination, thermal stress, ultraviolet radiation in the Arctic; the effects of environmental changes on wildlife and their impacts on the food chain, nutrition and dietary patterns; climate change effects on local environment and their subsequent impact on the traditional lifestyles and human health in the Arctic (9–17). This has become a very powerful trend, which tries to establish links between climate and environment change and human health in the Arctic. Others focus on health vulnerabilities of women and men to the effects of climate change. The physical condition of both women and men, especially of women, is connected to the health of their children and, consequently, to the health of their communities (7, 18). Some studies have proven links between climate change, changing living-conditions and negative health outcomes among Arctic population, especially indigenous peoples, also indicating differences between men and women (19–25). Climate change-driven transformations of living conditions and the disruption of traditional lifestyles contribute to mental and social stress associated with the loss of community and culture. Indirect effects of climate change include changes in the environment and potential changes in bacterial and viral diseases as well as access to quality water and food sources (15, 17). Some studies also show associations between mental and social stress, violence or sexual abuse and current health problems, which are more common in women and children (7, 9).

Evidence-based research provides data showing that (a) the effects of climate change are not gender neutral and (b) direct and indirect impacts of climate change and health risks vary for women and men (26). Globally, women and men face different vulnerabilities due to their different gender roles (26–28). Women form a

disproportionately large share of the poor all over the world and especially in developing countries. In southern countries, women are more dependent than men (e.g. in agriculture) on primary resources that are threatened by climate change because of their responsibility to secure water, food and energy for cooking and heating (27, 28). As a result, women more often come in contact with poor-quality water and are more vulnerable to water-related diseases; women also bear the main burden of caring for those who are ill (26). Women are vulnerable to extreme weather effects in particular ways before, during and after the extreme event: women's traditional roles (looking after children and elderly) and cultural restrictions may hamper their self-rescue efforts (28). Women's mortality, especially of elderly women, related to heat waves is higher than the mortality of men (27). Being male or female has an impact on individual health since the natural course of a disease may be different for women and men; individuals may respond differently to illness and society may react differently to sick women and men (26). Women may have less access to vital information on mitigation or adaptation strategies because of time constraints due to the caring and other domestic responsibilities. Still Preet et al find it as a general tendency that gender perspective is hardly represented in the research and policies on climate change and health (5).

Anyway, the point here is not to claim that gender perspectives remain of marginal interest within the climate change studies or in the Arctic research on climate change and human health. Rather, the point is to state that we still continue to observe a disciplinary division of labour. When present in studies, gender is often used as one of the variables in making the statistical data rich. Very often gender paragraph is simply added to the overall picture (see e.g. 22, 23). Of course, gender is but one, albeit important, perspective alongside with other perspectives that are important in climate change studies. Still gender is hardly ever a keyword introducing the articles' contents in the scientific journals, such as the *International Journal of Circumpolar Health*, even when there are paragraphs or sections on gender there. And the problem here is that medical and natural science papers often operate with the category of 'gender' implying 'women' and 'men' as sexes, in a purely demographic sense (see e.g. 29–31). Within social sciences, and gender studies in particular, the category of gender has connotations of power imbalances between and within men and women and consequent differences in their social roles and positions. Gender approach towards climate change impacts on human health would imply exploring, e.g. how gender power relations affect and are involved into bigger contexts of climate and environment changes impacts on human health; what dispositions are available to men and women; which adaptation, resilience strategies are at the disposal

of women and men; how health risks, health rights and health security are perceived by women and men and, in turn, how their awareness affects their situation and agency. In no way the message here is that qualitative studies that operate with gender/sex as a variable have little value and significance or that the discussions on power should be a part of each paper mentioning women and men. Different research projects have their own goals, research perspectives and tools. The criticism here is mainly addressed to the traditionalism of the approaches in knowledge production and the terminology confusion that arises from discipline segregation. Human development is complex (2, 32) and in order to grasp this complexity, the diversity of populations and their lifestyles, health risks and adaptation strategies we need to develop more sophisticated tools via multi/transdisciplinary research. Yet the blame cannot be entirely laid on climate change and health sciences, as I would further show, social sciences and humanities likewise show little interest in studying intersections of climate change impacts, human health and gender.

Arctic research, climate change and health in gender studies

Within social sciences and humanities it is acknowledged that climate change has an impact on well-being of people in local communities (1, 2, 32, 33). Indigenous people, elderly, women and children are considered particularly vulnerable groups in Arctic communities (4, 34). By focusing on cultural and social aspects of knowledge production in/on the Arctic, a number of researchers point to the fact that the Arctic has an image of a male world (6, 35, 36) or, what is more, of masculinity and whiteness (37, 38). Researchers explain this (re)presentation of the Arctic by two major reasons. First, Arctic exploration was predominantly male-driven: expeditions; search of natural resources; search for the Northwest passages; fur-trading, whaling, hunting, mining and military activities were all male-centred activities. Women quite recently entered this area as paid workers (2). Second, most literature written on peoples of the Arctic was written by men (mostly white) and mostly about men, transmitting male values (35). The scientific language employed in the Arctic research is marked by masculinism, nationalism and colonialism (37). Women's contribution to local communities' survival, the decision-making, hunting/fishing economy and spirituality of relations has been underestimated (39–41). In Russian Pomor traditional culture, in Canada and Greenland, we find evidence that women played a key role in household, family and local community life; women were the ones who distributed food, organised everyday routines, hold families together and raised strong leaders for their communities (1, 2). As some scholars have mentioned, among the indigenous popula-

tions, the Arctic was home for at least as many women as men. Dowsley et al. provide examples when Inuit women have dominant economic and governmental positions in their communities, territories and global political forums, and yet social sciences focus on observations by male Inuit hunters (6).

Some scholars suggest that climate change affects women harder in the south, while in the north it is men who experience the effects of climate and environment change more dramatically (42). The disruption of traditional roles for men has been identified in a number of studies as a reason for profound problems in male identity and loss of men's self-esteem which, in turn, leads to a lot of psycho-social disorders among men, including higher suicide rates and alcoholism (1, 34, 43). Also, men's loss of identity and self-worth, societal tension and issues of power and control have been identified in some studies as contributing factors to increased violence against women and children, increased human trafficking and prostitution (1, 2, 43).

Another effect of climate and environment change on well-being of people in Arctic communities observed is a pattern of out-migration by young adult females in a number of northern regions, including Alaska, Greenland, the Faroe Islands, Iceland, Norway, Newfoundland and Russia (33, 34, 39, 44). Researchers point to education, marrying outsider men, access to services, including health care services, employment opportunities and search for security as the major reasons affecting women's decision to move from small rural places and communities (2). Following consequences of female out-migration were highlighted in the studies: the lack of reproduction in the communities contributes to their stagnation. Development of 'homosocial bachelor cultures' as a result of men's need for sustaining certain aspects of masculine identity is another feature (45). Ageing of population and increased poverty are also possible consequences (33). In many parts of the Arctic, economic cutbacks by national governments have often negative impact on small, rural and remote places, reducing the standard of living and the quality of life in these areas through limited employment opportunities, low wages and poor infrastructure and social services. According to Hoogensen, this leads to increased feeling of insecurity among women for their own future and the future of their children in the current place of residence and becomes one of the factors forcing women to migrate (45).

Thus, what social sciences and humanities mainly contribute with is proving to the fact that the picture of human development in the Arctic generally and the studies on climate and environment impacts on human health is to be understood in the light of gender approach. A gender approach in this respect contributes to knowledge building essential for human development

of the Arctic (2). What is more inspired by the traditions of post-structuralism and post-colonialism, social sciences and humanities turned their attention to the complexity of phenomena as well as concepts, representations and interpretations used to describe them. To grasp the complexity of human development in the Arctic, analysis of intersections of gender, ethnicity and of various processes that create differences between people in the Arctic brings very important perspectives into both research and policy agenda.

Multidisciplinary approach to climate change, human health and gender in the Arctic

Though the research addressing intersections of human health, climate change and gender is indeed scarce, there are some multi/transdisciplinary studies where these intersections are explored. One can mention, for example, the research carried out by Joanna Kafarowski on gendered dimensions of environmental health and contaminants in Nunavik in Canada (3, 46, 47). Kafarowski studies the differences between women's and men's perceptions of contaminants' threat to human health and shows that men and women not only have different perceptions of health risks but also develop different adaptation strategies. She concludes that both gender and ethnicity affect people's visions and are important for developing efficient environmental health policies and strategies in response to the contaminants in small native communities. Another example is Sandra Owens' research on Inuit indigenous women in Nain, Canada, and the ways indigenous people experience climate change through their daily activities. In her study, she particularly focuses on how indigenous women experience changes in the dietary patterns as a constantly decreasing access to traditional foods as healthy and nutritious ones (48). Women's access to decision-making processes is seen as crucial when encompassing reproductive health, sexual health and environmental justice (46, 49). Some researchers suggest, even though women develop original solutions to complex environmental issues in the Arctic, they, nevertheless, mostly advance the agenda at the grassroot level, within social and environmental activism (2, 6). Beyond the grassroots level, women are less visible in environmental politics. Men tend to assume positions of responsibility and power in the public sphere and, therefore, it is likely that environmental decision making itself is deeply gendered. The contributions of women are valued less than the contributions of men in western, non-indigenous societies and women are less likely to attain decision-making positions (39, 43, 44, 49).

What is of particular value with these studies is that they do their research at intersections of gender, ethnicity and the variety of processes that create differences in peoples' health rights and climate justice in the Arctic.

The only limitation is that the studies linking climate and health with gender and ethnicity, to our knowledge, mostly have been carried out in Alaska and Arctic Canada. Climate change is one of many sources of stress for communities in the Arctic. It affects people and their environment with potential consequences for communities' and individuals' psychosocial well-being and health (15–17). At the same time, 'any discussion of power relations and gender roles must also recognize the social and cultural diversity across the circumpolar North and the fact that many different perspectives can be applied when analyzing these roles' (2:187). Vulnerability of communities and individuals will vary depending on differences in climate alterations, distances, infrastructure, resources, etc. Climate change impacts on human health also vary between and within communities in the Arctic, and the examinations of gender relations illustrate the complexity of communities in the differences of perspectives that abound within and between them.

Conclusion

Various academic disciplines within Arctic research provide data showing that (a) climate change effects are not gender neutral and (b) direct and indirect effects of climate change and health risks vary for women and men. Gender perspectives on climate change and health is formally recognised as an important field of research. The analysis, undertaken in this article, illustrates that gender issues remain of marginal interest for environmental, climate change and public health studies in the Arctic. Yet the blame cannot be completely laid on climate change and health sciences as social sciences and humanities have likewise often ignored gendered dimensions of climate change impacts on human health. Or, rather, gender studies show little interest to climate change and the Arctic population health issues. As a result of the division of labour between disciplines, little dialogue is established cross-disciplinary, which results in narrow use of concepts and the disciplinary-bound pictures of human development in the Arctic.

The Arctic population health is an important dimension and an indicator of monitoring human development. There are different starting points for investigation of peoples' lives and climate change effects on their health. Awareness of differentiated climate and environment effects on health of women and men has to be incorporated in knowledge production in order to understand the processes taking place in the Arctic human development and to plan the future strategies. Attempts to implement a gender perspective will be successful only when different disciplines work together in multi/transdisciplinary research. Transdisciplinarity is a way to challenge academic/disciplinary homogeneity and their boundaries, to take advantage of the diversity of approaches and methods in the production of new integrated knowledge.

It is also a way to escape reproduction of trivial approaches towards complex phenomena and to develop new indicators for monitoring human health and elaborating effective and adequate policies and strategies to the benefit of both women and men in the Arctic.

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