



Available Online at EScience Press Journals

International Journal of Agricultural Extension

ISSN: 2311-6110 (Online), 2311-8547 (Print)

<http://www.esciencepress.net/IJAE>

THE ROLE OF SOCIAL HEALTH IN THE MECHANISM OF MANAGING SOCIAL PROCESSES IN THE ARCTIC

Lidia N. Belonozhko*, Alexander V. Yakovlev, Ulyana D. Bibik

Industrial University of Tyumen, Tyumen, Russian Federation.

ARTICLE INFO

Article History

Received: July 12, 2021

Revised: November 23, 2021

Accepted: December 01, 2021

Keywords

Social health

Social capital

Climate change

Risk factors

Sustainable development

ABSTRACT

The practical need for studies of the Arctic region's social potential and identification of the mechanisms of its development determined the object and subject of the study, as well as defined the setting of the research goal. The conceptual basis of this study was formed by studies of a sociological direction, economic nature, and management theory. It is shown that the need to use systemic concepts is conditioned by the fact that the considered categories function as open systems and multilevel inclusion in the system of representatives of governing bodies, business, social communities allow for the possibility of their active actions in changing conditions. Special attention is paid to conceptual approaches to the disclosure of such a basic category as social health. The material of the study can serve as a basis for the development of an indicative model of social health in the Arctic region. The provisions and main conclusions set out in the work can be used by the expert community and state bodies when developing recommendations for the authorities when determining priority directions and forms of developing social potential in the Arctic; state and municipal authorities could address the presented research to adequately assess the factors that determine the state of social health of the region, drawing out programmes for its development.

*Corresponding Author: Lidia N. Belonozhko**Email: belonozhko7014@toronto-uni.com**© The Author(s) 2021.*

INTRODUCTION

The last decades of the 20th century have become a time for the active development of its resource potential for the Arctic region. The economic effect of the latter, estimated at tens of trillions of dollars, began to prevail in the minds of the leadership of the Arctic countries over the real social problems of the region. In 2021, the problems of sustainable development of the Arctic regions acquire special relevance. A decade of ambitious action to achieve the UN Sustainable Development Goals by 2030 begins. The attention of many scientists, experts, and government officials is focused on the problems of climate change in the Arctic region (Rynor,

2012; Parkinson *et al.*, 2014). At the same time, no less significant problems in the context of the UN Sustainable Development Goals (SDGs), in particular (SDG) 3 "Ensure healthy lives and promote well-being for all at all ages", are in the middle distance. Directly linked to this goal is SDG4 "Quality education" (in particular, education in the field of social health and healthy lifestyles), as well as SDG10 "Reducing inequality" (including inequality in access to healthcare). It is important to keep in focus projects aimed not only at preserving ecosystems, but also at ensuring the quality of life for the population of the Russian Arctic and local communities.

The raw material orientation of the Arctic economy has led to significant inequality in the socio-economic development of northern municipalities, depending on their resource endowment. There are municipal areas – so-called growth poles, where there is a huge number of shift workers, where corporate resource projects are deployed, and economic indicators are high. However, there are also such municipal districts that were bypassed by the resource boom. Per capita investments vary depending on the municipality – from zero to “absolute heights,” says Alexander Pilyasov – Director General of the Institute of Regional Consulting. According to the scientist, it is necessary to take measures to reduce economic and social contrasts.

It is difficult to disagree with this opinion. It is well-known that the state and change of habitat and activity are important factors for the socio-economic complex of the Arctic. The manifestations of direct and indirect effects of extreme climatic and geophysical conditions of the polar regions on the adapted and migrating population are particularly acute and specific. The international scientific community and society as a whole, and Russian scientists, in particular, have long felt the need to systematise the accumulated knowledge and posed, but unresolved issues in the field of socio-economic problems related to ensuring the social health of the inhabitants of the Arctic region in the context of managing social processes (Revich and Shaposhnikov, 2010; Markin and Silin, 2017).

The actualisation of the problem of social health as a social quality in management, considering the climatic, socio-economic, and cultural characteristics of the managed object, based on the interaction of state authorities, local governments, social institutions, the business community and the population, creates the basis for the social development of the region. In addition, substantiation of the importance of social health in the management of social development of the region makes it possible to lay a scientific foundation for management practice to achieve the successful functioning of territories in the specific conditions of the Arctic zone.

METHODOLOGY

The term “social health” has been actively included in the scientific discourse in recent years. However, its clear interpretation is extremely rare, which is due, first of all, to the complexity of defining the concept of health,

including social health. Most researchers agree that there is no universally accepted definition of health in medical science (Davidson, 2019). The most common and one of the most criticised is its interpretation as the absence of disease (pathocentric approach). In this regard, the following opinion seems relevant: modern doctors have learned to better determine the causes of a person's illness than his health (d’Hombres *et al.*, 2010). Thus, the prevalence of the pathocentric approach to the description of health is observed. However, this method of assessing health is recognised by most authors as untenable, which explains the importance of the problem of a positive definition of health, in this case, social (Saad, 2015). Another reason for the difficulty of defining social health is the lack of consensus among scientists regarding its object (Bhandari and Yasunobu, 2009; d’Hombres *et al.*, 2010; Saad, 2015; Yarotskiy *et al.*, 2021). The analysis of approaches to understanding social health reflects a variegated range of phenomena and processes designated by this concept, which include social and individual characteristics of biological, psychological, social, cultural, and spiritual and moral nature.

Analysis of the literature allows highlighting approaches in the interpretation of the concept of “social health,” in the first of which (sociological one) it is used as a characteristic of a social system describing the “vitality of society as a social organism” (Kawachi *et al.*, 2013). This approach originates in the tradition of organicism, where society is identified with the body, its effective functioning – with health, and social dysfunctions with ill health. Often, in this context, an indicator of the health (efficiency) of society includes the opportunities it provides for a person to realise their biopsychosocial functions, and social health is defined as optimal, adequate conditions of the social environment that prevent the emergence of social maladjustment and determine the harmonious development of the individual in the structure of society (Davidson, 2019).

Other scholars consider the more common approach, which can be designated as socio-demographic. Following it, social health is considered as social factors that determine the physical health of the population (d’Hombres *et al.*, 2010) and the object of its research is a part of the social structure that provides conditions for the prevention and successful overcoming of human diseases, health promotion (for example, availability and quality of healthcare services, opportunities for healthy

lifestyle). Often, the term “social health” is used as a synonym for public health (medico-demographic approach), and in this case, the object of research is the health of the population. Recognising the complex nature of health and relying on the WHO definition, in which it represents the trinity of physical, psychological (mental), and social well-being (Saad, 2015; Miroshnychenko, 2021), it is logical to argue that there is a synergistic relationship between two phenomena – “public health” and social health of each subject of public relations.

Namely, in this connection, it appears appropriate to consider the features and role of social health in the social environment of the Arctic region and the processes taking place in it. As a general framework, this study is based on the social constructionist theory of Berger and Luckmann (2011), which allows considering social potential as a tool for the development of the region and as a result of social construction, the creation of social norms, the institutionalisation of social relations arising in the process of interaction of individuals and groups. In turn, the concept of P. Bourdieu (2005) determines the socio-spatial approach to the analysis of social potential, including through the connection of physical, social, economic, political, and administrative spaces (Revich and Shaposhnikov, 2010; Davidson, 2019).

RESULTS AND DISCUSSION

As noted above, the formation of an attitude towards health as a source of socio-economic well-being in the system of social relations is an important area of social policy in health protection. This is not only a medical problem but also a social one, the solution of which requires the integration of fundamental knowledge and interdisciplinary research. For this study, the ideas of B. Merel (1809-1872) about preventive medicine are important: “society should engage in preventive prophylaxis, developing measures to change the physical, intellectual and moral conditions of human existence; for its health, it is engaged in protective prophylaxis, solving the problem of removing dangerous factors from its environment, whatever the reason” (Kawachi *et al.*, 2013).

Notably, the influence of climatic conditions on the health and quality of life of the population of the Arctic territories is assessed by the overwhelming majority of researchers as negative (Revich, 2017). Among the

specific risk factors, the most significant are prolonged exposure to cold, as well as mutually reinforcing wind, precipitation, and annual light aperiodicity (Revich and Shaposhnikov, 2010). Global warming is also negatively affecting the health status of populations living in high latitudes (Corell, 2006). In particular, during the Irkutsk study, a direct relationship was established between sharp temperature fluctuations (cold waves in winter and heatwaves in summer) and the mortality rate of the population of large cities (Parkinson and Evengard, 2014). Canadian and Finnish scientists have confirmed the existence of a relationship between living in a cold Arctic climate and a higher infant mortality rate and shorter life expectancy of the population. It has been found that an increase in the average January temperature for every 10 °C (with a meridian movement from north to south) increases the average life expectancy by six years and decreases the infant mortality rate by four per 1.000 live births (Harper *et al.*, 2020).

The results of the study carried out in the Yamalo-Nenets Autonomous District indicate that children born in the Far North are more susceptible to non-infectious risk factors for their health than children who also live in the Far North, but were born in southern, climatically more favourable regions (Waits *et al.*, 2018). Increased salt intake, low physical activity, dyslipidaemia, hyperglycaemia, smoking, low plasma magnesium concentration, overweight, high blood pressure make up an incomplete list of risk factors, the prevalence of which is estimated to be higher in this group (Dudley *et al.*, 2015; Kravchenko, 2021).

The influence of global warming as a factor threatening the state of population health is also being actively studied in various scientific schools. In addition to individual epidemiological studies, large-scale national and international projects are being implemented, the purpose of which is to coordinate joint efforts of public health services for citizens and public organisations. This area is among the priorities for the World Health Organization (WHO).

When evaluating the content of scientific publications on this matter, two of its most important aspects were identified. Firstly, climate warming is the reason not only for the aggravation of the overall burden of disease, fluctuations in mortality rates from specific conditions but also brings with it a change in living conditions in the Far North. This problem is especially relevant for

indigenous peoples due to the possible risks for their traditional methods of foraging (violation of conditions for grazing deer or a decrease in ocean biodiversity) (Harper *et al.*, 2020). The results of a study conducted among the Nenets living on Vaygach Island (Arkhangelsk Region) confirm this fact. More than half of the respondents have already been forced to change their usual way of life due to climate warming (Protsenko *et al.*, 2018).

Secondly, the improvement of transport accessibility of the Far North due to the melting of perennial ice can contribute to increased migration from the southern territories of countries with access to the Arctic Ocean. Experts see this as a serious threat to indigenous peoples, who may be at high risk of the spread of new infectious diseases, as well as further, already uncontrolled, changes in traditional lifestyles (Sharma *et al.*, 2011). Climate change is causing an increase in the incidence of injury, stress, and the consumption of unsafe food and water. The danger to population health also lies in the inversion of the life cycles of dangerous diseases pathogens (including parasitic ones) (Akearok *et al.*, 2019).

Environmental pollution is another important social and hygienic problem for the Arctic. The main groups of pollutants relevant to this region are the following (Jensen *et al.*, 2018):

- 1) heavy metals (cadmium, lead, mercury).
- 2) persistent organic pollutants: industrial waste (polychlorinated biphenyls); pesticides, organic chlorine compounds (dioxins, furans, chlorinated pesticides, DDT, hexachlorobenzene).

Since there are practically no large industrial centres with a permanent population outside of Russia north of the Arctic Circle, researchers consider representatives of the indigenous peoples of the Arctic as the main group subject to this threat. In particular, the study of the effect of anthropogenic pollution on the state of the endocrine system has been ongoing for several years, which is likely to be able to explain the significant sexual dimorphism among small ethnic groups in the Arctic (Revich, 2017). The fact of a higher incidence of stomach cancer in the Sami compared to the population of the southern territories of Sweden and Finland was recognised as evidence of the negative impact of the state of the environment on health (Rittmueller *et al.*, 2011). In addition to the representatives of the indigenous small-numbered peoples of the Far North,

pregnant women and children are among the group most exposed to pollutants. They are generally characterised by higher risks of malignant neoplasms, abnormalities during pregnancy and childbirth, low birth weight, and congenital developmental anomalies.

In the Arctic regions of Russia, the USA (Alaska), Canada, Denmark (Greenland) and Norway, there are several dozen indigenous peoples (about twenty of them in Russia), the state of group health of which is a popular research topic for European and American public health specialists. The study of this problem takes place in the aspect of three main postulates (Protsenko *et al.*, 2018):

- 1) high susceptibility of representatives of the indigenous peoples of the Arctic to natural and anthropogenic pollutants, climate change.
- 2) inequality in the availability of medical care (in comparison with the southern regions and depending on the socio-economic well-being of the country of residence).
- 3) “westernisation” of the way of life of certain indigenous peoples (mainly in the Western Hemisphere).

In general, the state of group health of small ethnic groups in circumpolar territories is characterised by the following features: low life expectancy (in comparison with the population of the southern territories); high infant and child mortality; high prevalence of infectious and some non-infectious diseases; high level of injuries, suicides in comparison with the population of the southern territories. In turn, the quantitative and qualitative study of these factors is complicated by certain behavioural characteristics of representatives of the indigenous peoples of the North (Cepon *et al.*, 2011): high prevalence of consumption of psychoactive substances (nicotine, alcohol, drugs (it is especially characteristic for the American Indians of Alaska)); unbalanced diet (more high-calorie diet, containing more cholesterol and fewer trace elements and vitamins); a Sedentary lifestyle (as a result of “Westernisation” the phenomenon is more typical for American and Canadian Indian tribes).

The available data indicate a stronger combined negative impact of the above risk factors on the state of group health of representatives of small ethnic groups in the Far North. For example, in North American Inuit, smoking is associated with lower dietary intake of many essential micronutrients and vitamins (Sharma *et al.*, 2011). Inuit female smokers consume less thiamine,

niacin, vitamin B6, folate, magnesium, sodium, protein, omega-3 fatty acids, iron, vitamin B12, and selenium (Rittmueller *et al.*, 2011). Nearly half of male and female smokers consume less than the required physiological volume of fat-soluble vitamins (A and K), folate, calcium, and magnesium. This, in turn, represents an additional risk of metabolic disorders and an increase in the overall burden of disease (Sharma *et al.*, 2011).

As part of a systematic approach to the assessment of social health in the framework of social processes and meeting SDGs, it should be noted that the features of the modern settlement system, which affects the social development of the region, are as follows: the predominance of the urban population, the low potential of territorial spaces, the remote location of settlements, the presence of spaces devoid of the presence of a human, the weak development of year-round transport links, the difficulty of creating an integrated infrastructure in the existing climatic conditions that negatively affect the population (International Arctic Forum, 2021).

Meanwhile, the concept of sustainable development denies a utilitarian attitude towards humans and nature and realises the principles of social justice, economic efficiency, and environmental safety. It creates an image of the desired future and offers a multifactorial path of development based on a combination of material and spiritual driving forces. It is a concept of purpose and, at the same time, a call to action. The gap is especially large in the field of research on the social dimension of sustainable development and social sustainability. For a long time, it has been overshadowed by an increased focus on environmental sustainability. In recent years, with the understanding that human development is the determining factor in the progress of countries, regions, and local communities, interest in the social component of sustainable development and social sustainability has been growing. Increasingly, the main role in the triad of "sustainabilities" is assigned to social sustainability – the state of societies, which ensures high quality and standard of living, social justice and citizens' involvement in governance, in short – the quality of society. The social sustainability of regions and local communities is one of the hotly debated topics in the international northern and arctic discourses.

Unlike other countries with territorial possessions in the Arctic, for Russia, it is more urgent to study the health risk factors for the population that does not belong to

the group of indigenous peoples. There are many reasons for this. In the former Soviet Union, the policy of stimulating labour migration to the northern regions has been consistently implemented for decades, which, on the one hand, has contributed to a radical change in the traditional national composition of the Arctic population, and on the other hand, has led to the unique demographic characteristics of the region. For other countries, on the contrary, historically the residence of Europeans and their descendants in the Arctic was not a mass phenomenon. Even now, in the circumpolar territories, the Europeans live mostly on a rotational shift basis. Therefore, it is believed that studying the effect of long-term exposure to climate and living conditions in the Arctic on their health is an extremely difficult task. Considering the social factors that determine the social health of the population of the Arctic region, it should be noted that in recent years the number of small and medium-sized enterprises in the Russian Arctic zone has decreased by 11 thousand. At the same time, the number of employees employed in small and medium-sized businesses decreased by 103 thousand people (Markin *et al.*, 2017). Accordingly, the reduction in social packages and incomes directly affects the lifestyle and standard of living of residents, which, in turn, is a determinant of the deterioration of their health. The fact is that the cost of organising one workplace (in small and medium-sized businesses) in the Arctic is on average 285 thousand roubles per employee, while in other territories of Russia it is 16 thousand roubles. In the Arctic, 23% of these costs are spent on wages, while in the rest of Russia – about 14%. Therefore, only 2% of Russian small and medium enterprises are now concentrated in the Arctic regions, – explains the Russian Chamber of Commerce and Industry (Markin *et al.*, 2017). "The Russian Arctic is home to two and a half million people. They also need services, food, beautiful things. Moreover, this need is exacerbated due to the inaccessibility of the benefits to which we are accustomed on the mainland – said an expert Maxim Fateev. "In addition, large enterprises, including those in the hydrocarbon sector, often use the services of "allied small enterprises." When implementing oil and gas projects, 80% of the work falls on their share. Someone sews mittens, someone – overalls, someone makes small deliveries" (Markin *et al.*, 2017).

Experts of the Russian Chamber of Commerce and Industry consider it important to consolidate at the

regional level the need to involve small and medium-sized businesses in large projects. This applies not only to the participation of small businesses in large oil and gas projects, but also to the development of Arctic tourism, environmental programmes, and other conventional business sectors (Markin and Silin, 2017). Economic imbalances in the region lead to social and public health imbalances. Thus, the need for a systematic approach to social health within the framework of managing social processes in the Arctic region as a whole is obvious. The health status of representatives of indigenous peoples is characterised by many features that are determined by genetic factors and living conditions in the Far North. A relatively high prevalence of thyroid autoimmune disorders is quite common for small ethnic groups in the Circumpolar region (Revich *et al.*, 2016). Life expectancy in the indigenous population is generally lower in comparison with the population of the southern regions. However, this feature is relative and depends on the socio-economic characteristics of the region and country of residence. Even in prosperous Canada, the average life expectancy of Inuit is ten years less than in the country as a whole, despite the large number of measures taken by the government of this country to prevent diseases and promote a healthy lifestyle.

Considering the prevalence of some of the most important groups of diseases in the population of small ethnic groups, the following features can be noted. First, there is high variability in morbidity and mortality rates from malignant neoplasms. For example, for all Sami living in the northern regions of Norway, Sweden, and Finland, as well as on the Kola Peninsula, the incidence of this group of diseases is lower than for the population of the southern regions (in standardised indicators, an average of 30%) (Hossain and Cambou, 2018).

The indigenous peoples of the Arctic bear a significant burden of non-communicable diseases. The prevalence of some of them is tens of a percent higher than the average for the population of the southern territories (Hossain and Cambou, 2018). In particular, the indigenous peoples of the North of Russia (Nenets, Selkups) are characterised by a high incidence and prevalence of tuberculosis, rheumatic fever, congenital heart defects, and alcoholism (Gjorv *et al.*, 2013). Some indigenous peoples of the Arctic at the beginning of the 21st century adopted the above-mentioned so-called "Western" way of life, and this fact has created a real

threat to their group health status. This process, accompanied by a significant decrease in the level of physical activity, a high prevalence of behavioural risk factors (smoking, alcohol and drug consumption) among small ethnic groups have been called "Westernisation" (Ellsworth and O'Keeffe, 2013). "Westernisation" of the way of life of small ethnic groups of the North is the cause of several negative social phenomena. Systematic reviews have shown tremendous increases in the suicide mortality rate for young people living in some Arctic regions (up to twenty times the global average) (Ellsworth and O'Keeffe, 2013).

In the 20th and 21st centuries, methods appeared that allow researchers to determine the degree of influence of dietary characteristics on human health. In this regard, indigenous peoples can again be divided into heterogeneous groups. Historically, small ethnic groups of the North, who consumed mainly fish rich in polyunsaturated fatty acids and selenium, were characterised by a relatively low prevalence of pathologies of the cardiovascular system and oncological diseases (Rittmueller *et al.*, 2011). Given the considerable physical exertion, this protective factor could prevail over the influence of negative climatic conditions. But in the 21st century, the fish diet of some indigenous peoples of the North began to be perceived by researchers as a risk factor, which is associated with a high concentration of substances hazardous to human health (Rittmueller *et al.*, 2011). In other words, small ethnic groups in the Arctic fell victim to the industrialisation process in Europe, America, and later in China and India due to the transfer of pollutants with air masses and ocean currents.

The most important challenge to the national health systems of countries with territorial possessions in the Arctic is the inequality in the availability of medical care and healthcare services for the population of the Far North in comparison with residents of the southern regions, which has already been noted above. The proof of this statement is the higher incidence of some diseases, the chronic nature of the course of many pathologies, late diagnosis and, as a result, higher mortality rates from several conditions (see above). The indigenous and rural populations of the High North are even more potentially threatened (Ellsworth and O'Keeffe, 2013). Although the legislation of almost all countries with territorial possessions in the circumpolar regions guarantees citizens equal access to healthcare, in

practice this is not true (Badaev, 2021). At the same time, in the territorial possessions of different countries, the determining factors of this phenomenon have their specifics. For Russian regions, inequality in the access and quality of healthcare services is caused by the unevenness of the raw materials industry, the high cost of organising production in the Arctic, as well as the imperfection of public-private partnership mechanisms to maintain and improve the social development of the region, preserve social capital.

Due to the peculiarities of the provision of medical care in the regions of the Far North (low population density), the national health services are actively introducing information technologies into practice. There are two telemedicine systems: the so-called “telehealth” and “e-health.” The “telehealth” system implies the use of communication and information technologies to implement or support the implementation of the provision of medical services when the participants in this process (that is, the specialist doctor and the patient) are separated by space. The “e-health” system suggests that healthcare services and health information are provided or enhanced by the Internet and related technologies. The latter system is also used as a means of consulting or training specialists from central scientific or medical centres in remote areas (International Arctic Forum, 2021). In scientific publications, the focus of attention of researchers are directed to the study of the following aspects of this topic: the possibilities of using telemedicine in specific conditions; the perception by doctors and patients of the fact of treatment thanks to telecommunication technologies, and the economic efficiency of the telemedicine system (Aliiev, 2021; Bondar *et al.*, 2021 Yevtushenko *et al.*, 2021).

Another issue that is being actively studied is the development of a sanitary transport system in the hard-to-reach territories of the Far North. The effectiveness of emergency and planned medical aviation is assessed (International Arctic Forum, 2021). Emergency services are recognised in many studies as the most expensive and less effective on several indicators. At the same time, the so-called “planned” or “diagnostic” aviation has great efficiency. The latter can be represented by an air ambulance (helicopter) or a land vehicle with a full range of diagnostic equipment on board (up to computed tomography devices) (International Arctic Forum, 2021). Moreover, the possibilities of creating an online platform for the exchange of best practices in

Arctic municipal governance between its bodies are also being considered.

The concept of public health, reflecting the goals of a living system and its properties at a different evolutionary-hierarchical level, should be considered as a socio-political category, which includes the goal-setting and responsibility of the state, on the one hand, of all its subsystems (and not just the healthcare system) for ensuring the health of the nation, and on the other – the responsibility of a member of society for their health. Unlike the concept of “individual health,” public (social) health is a socio-political category characterised by statistical indicators of population reproduction, its physical and spiritual development, the preservation of the potential and activity of the population's life, due to the level of reproduction of social resources, the quality of the environment and quality of life. This definition, in the opinion of the authors of this study, is constructive, since it accentuates the goals of public health protection, the relationship of public health with the main groups of factors influencing it, highlights the main areas of searching for correlations between health indicators and factors of social production, ecological and sanitary well-being of regions, quality life, characterising the level of public, family and individual consumption of public goods (Yarotskiy *et al.*, 2021).

It should be noted that linking the category of “human capital” with its carriers – individuals and groups – scientists considered its development in the discourse of their potential capabilities, which contributed to the emergence and consolidation of the concept of “human potential.” As a result of scientific searches, the researchers came to the understanding that the totality of the possibilities (potentials) of individuals and social groups can be realised only in the system of social interaction, thereby predetermining the emergence of the concept of social capital. In the unfolding discussion of social capital, the positions of J. Coleman, P. Bourdieu, and R. Putnam are especially influential, who, within the framework of the non-classical field of sociology, contributed to the shift in emphasis from social structures to social interaction (Bhandari and Yasunobu, 2009). This made it possible to define the category of social capital through the totality of social qualities of an individual and a social group, which are aimed primarily at creating networks of informal interaction that contributes to the achievement of certain life goals, including the goal of achieving and maintaining social

health as one of the priority goals. In this context, the calculation of the integral index of the level of social health can be carried out by aggregating the corresponding private indicators of the quality of life following the formula:

$$Y_{sh} = 0.21 \times Y_{si} + 0.19 \times Y_{he} + 0.20 \times Y_{ue} + 0.22 \times I_{sl} + 0.18 \times I_{dr} \quad (1)$$

where: Y_{sh} is the integral index of the level of social health; Y_{si} is the integral index of the level of social sustainability for social infrastructure; Y_{he} is the integral index of the level of social sustainability in the field of health and education of the population in the field of healthcare and healthy lifestyle; Y_{ue} – integral index of the level of social sustainability in the field of environmental quality; I_{sl} – integral index of the level of social sustainability in the sphere of the population's standard of living; I_{dr} is an integral index of the level of social stability in the demographic sphere. All numerical values in the above formula are examples of weighted averages, calculated based on the weights determined by a group of qualified experts for each indicator/group of indicators. Like other forms of capital, social capital is productive, as one of the recognised authorities on the subject, Saad, points out. It contributes to the achievement of certain goals that cannot be achieved in its absence (Saad, 2015).

The preservation and development of public health is a complex problem, but many researchers agree that namely social determinants are primarily responsible for its solution (Davidson, 2019). At the same time, as shown by numerous studies, social capital has an increasing impact on health (Kawachi *et al.*, 2013). These observations are also confirmed by sociological measurements in Russia. In particular, back in the 1990s, the influence of social capital resources on mortality rates in various regions of the country was studied (Protsenko *et al.*, 2018; Leksin, 2019). It was found that in Russia, social capital affects health both independently and with its other socio-structural factors. Thus, the role of social health in the mechanism for managing social processes in the Arctic is mediated by the functioning of social capital. This approach opens up new opportunities for studying and solving the problems of the social health crisis in the Arctic, both at the societal and at the group and individual levels.

CONCLUSIONS

The analysis of the demographic and socio-economic situation in the Arctic territories, in particular, those belonging to the Russian Federation, made it possible to single out the following key characteristics of them: stratification into “poor” and “rich,” social insecurity, unsatisfactory state of infrastructure, alcoholism, poor ecology, low level and quality of life in population, housing problems, inaccessibility and low quality of healthcare, small number and density of the population of the Arctic zone, insufficient number of human resources in healthcare, poor development of the social environment, high incidence of morbidity, disability, mortality at working age, unemployment and social illness. In this regard, achieving and maintaining the social health of the Arctic regions as a systemic phenomenon within the framework of sustainable development is a necessary condition for their economic development, ensuring population density and preserving knowledge about how to live and work in the North and the Arctic. This is a guarantee of long-term crisis-free development of these territories, maintaining national security and ensuring national interests.

The main thing that allows achieving the approach we propose is the ability to reasonably determine the priorities of the controlling action (impact), consider the distinctive features of the North and the Arctic, and identify those areas that ensure a high level of social health within the framework of social sustainability of these unique territorial societies.

Another feature is the expediency of ensuring the interstate nature of the research being carried out. In this case, their results are of greater scientific and practical value, since they allow assessing namely the contribution of the socio-economic component during certain social processes in the Arctic. Accordingly, this will allow specialists of national health services to consider the effectiveness of the experience of foreign colleagues fully.

ACKNOWLEDGEMENTS

This study was carried out with the financial support of the Grant of the President of the Russian Federation for state support of young Russian scientists – candidates of science in the framework of the study MK-2980.2021.2 “Monitoring the social health of the population of the Arctic region”.

REFERENCES

- Akearok, G., S. Holzman, J. Kunnuk, N. Kuppaq, Z. Martos, C. Healey, R. Makkik, C. Mearns, A. Mike-Qaunaq and T. Tabish. 2019. Identifying and achieving consensus on health-related indicators of climate change in Nunavut. *Arctic*, 72(3): 289-299.
- Aliiev, E., R. Maliehin, V. Ivliev and O. Aliieva. 2021. Simulation of the process of cavitation treatment of liquid feed. *Scientific Horizons*, 24(2): 16-26.
- Badaev, M. 2021. Public-private partnership in healthcare and pharmaceutical sector of the Republic of Kazakhstan. *Scientific Bulletin of Mukachevo State University. Series "Economics"*, 8(2): 45-55.
- Berger P. L., T. Luckmann. 2011. *The social construction of reality: A treatise in the sociology of knowledge*. Open Road Media, New York.
- Bhandari, H. and K. Yasunobu. 2009. What is social capital? A comprehensive review of the concept. *Asian Journal of Social Science*, 37(3): 480-510.
- Bondar, I. I., V. V. Suran, O. Y. Mynya, O. K. Shuaibov, I. V. Shevera, V. M. Krasilnits. 2021. Formation of structured films upon irradiation of an aqueous solution of copper sulphate with high-power laser radiation. *Scientific Herald of Uzhhorod University. Series "Physics"*, 49: 43-47.
- Bourdieu, P. 2005. *The social structures of the economy*. Polity Press, Cambridge UK.
- Cepon, T.J., J. J. Snodgrass and W. A. Leonard. 2011. Circumpolar adaptation, social change, and the development of autoimmune thyroid disorders among the Yakut (Sakha) of Siberia. *American Journal of Human Biology*, 23: 703-709.
- Corell, R. W. 2006. Challenges of climate change: An Arctic perspective. *Ambio: A Journal of Environment and Society*, 35(4): 148-152.
- d'Hombres, B. L., L. M. Rocco, M. Suhrcke and M. McKee. 2010. Does social capital determine health? Evidence from eight transition countries. *Health Economics*, 19(1): 56-74.
- Davidson, A. 2019. *Social determinants of health: A comparative approach*. Oxford University Press, Oxford.
- Dudley, J., E. Hoberg, E. Jenkins and A. Parkinson. 2015. Climate change in the North American Arctic: A one health perspective. *EcoHealth*, 12: 713-725.
- Ellsworth, L. and A. O'Keeffe. 2013. Circumpolar Inuit health systems. *International Journal of Circumpolar Health*, 72: 21402.
- Gjorv, G. H., D. Bazely and M. Goloviznina. 2013. *Environmental and human security in the Arctic*. Routledge, London.
- Harper, S. L., C. Wright, S. Masina and S. Coggins. 2020. Climate change, water, and human health research in the Arctic. *Water Security*, 10: 100062.
- Hossain, K. and D. Cambou. 2018. *Society, environment and human security in the Arctic Barents region*. Routledge: London.
- International Arctic Forum. 2021. *Healthcare in the Arctic: Two years' progress and new objectives*. <https://forumarctica.ru/en/news/zdravoochraniye-arktiki-itogi-dvuh-let-i-novye-tseli/>
- Jensen, P.E., T. W. Hennessy and R. Kallenborn. 2018. Water, sanitation, pollution, and health in the Arctic. *Environmental Science and Pollution Research*, 25: 32827-32830.
- Kawachi, I., S. Takao and S. Subramanian. 2013. *Global perspectives on social capital and health*. Springer, Berlin.
- Kravchenko, L. V. 2021. Development of noxological culture in students teaching occupational safety and health in pedagogical institutions of higher education. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 7(1): 63-70.
- Leksins, V. N. 2019. Healthcare system in the Arctic Zone of Russia. Known and emerging issues and solutions to them. *Russian Economic Journal*, 3(20).
- Markin, V. V. and A. N. Silin. 2017. Human and social potential of neo-industrial development of the Arctic: Sociological analysis, modeling, and regulation. *Economic and Social Changes: Facts, Trends, Forecast*, 10(6): 75-88.
- Markin, V. V., O. M. Barbakov, A. N. Silin and V. A. Yudashkin. 2017. Expertise of the correlation of stability and the dynamics of social processes in the Arctic region. In: A.N. Silin (Ed.), *Man in the Arctic: innovative technologies for solving social problems*. TIU, Tyumen.
- Miroshnychenko, O. A. 2021. Psychological background of age differences in the adaptation of Ukrainian winterers to living conditions in Antarctica.

- Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology", 7(3): 126-133.
- Parkinson, A. J. and B. Evengard. 2014. Climate change and health in the Arctic. *Climate Change and Global Health*, 6: 206-217.
- Parkinson, A.J., B. Evengard, J. C. Semenza, N. Ogden, M. L. Børresen, J. Berner, M. Brubaker, A. Sjöstedt, M. Evander, D. M. Hondula, B. Menne, N. Pshenichnaya, P. Gounder, T. Larose, B. Revich, K. Hueffer and A. Albihn. 2014. Climate change and infectious diseases in the Arctic: Establishment of a circumpolar working group. *International Journal of Circumpolar Health*, 73: 25163.
- Protsenko, O. D., K. N. Glazov, S. E. Ermakova and I. G. Yurikova. 2018. Main aspects of social and economic development and life support system of the population of the Arctic territories of the Russian Federation. *Economics and Management*, 9: 4-11.
- Revich, B. A. 2017. Determinants of public health in Arctic and Subarctic territories of Russia. *Studies on Russian Economic Development*, 28(1): 39-47.
- Revich, B. A. and D. A. Shaposhnikov. 2010. Extreme temperature episodes and mortality in Yakutsk, East Siberia. *Rural and Remote Health*, 10: 13-38.
- Revich, B. A., T. L. Kharkova and E. A. Kvasha. 2016. Demographic processes, dynamics of labor processes, and risks to health of the population of the European part of the Russian Arctic. LENAND, Moscow.
- Rittmueller, S. E., C. Roache and S. Sharma. 2011. Dietary adequacy and dietary quality of Inuit in the Canadian Arctic who smoke and the potential implications for chronic disease. *Public Health Nutrition*, 15(7): 1268-1275.
- Rynor, B. 2012. Climate change poses health threats in Arctic. *Canadian Medical Association Journal*, 184(1): E33-E34.
- Saad, E. 2015. *Manage socially: The social process model*. CreateSpace Independent Publishing Platform, Scotts Valley.
- Sharma, S., A. B. Barr, H. M. Macdonald, T. Sheehy, R. Novotny and A. Corriveau. 2011. Vitamin D deficiency and disease risk among aboriginal Arctic population. *Nutrition Reviews*, 69(8): 468-478.
- Waits, A., A. Emelyanova, A. Oksanen, K. Abass and A. Rautio. 2018. Human infectious diseases and the changing climate in the Arctic. *Environment International*, 121(1): 703-713.
- Yarotskiy, V. L., Yu. D. Dreval and S. O. Zaika. 2021. System signs of statutory regulation of occupational health and safety in the republic of Poland. *Journal of the National Academy of Legal Sciences of Ukraine*, 28(3): 238-247.
- Yevtushenko, I., D. Bilyi, O. Tsymerman and A. Nepochatova. 2021. Clinical manifestation and methods of treatment of pododermatitis in dogs. *Scientific Horizons*, 24(1): 29-35.

Publisher's note: EScience Press remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made. The images or other third-party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.