

Effects of Internal and External Environment on Health and Well-Being: From Cell to Society

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ABSTRACT

Stem cell fate in cell culture depends on the composition of the culturing media. Every single cell in an organism is influenced by its microenvironment and surrounding cells. Biology, psychology, emotions, spirit, energy, lifestyle, culture, economic and political influences, social interactions in family, work, living area and the possibilities to express oneself and live full life with a sense of well-being have influence on people appearances. Disease is as much social as biological. It is a reaction of an organism to unbalancing changes in the internal environment caused by the changes in the external environment and/or by the structural and functional failures or unfortunate legacies. Health gradient in the society depends on the every day circumstances in which people live and work. The health of the population is an insight into the society. The problem facing medicine in the complex society of today cannot be resolved without the aid of social sciences, as cultural, social, ecological and mental processes affect physiological responses and health outcomes. Anthropology could be a bridge between biomedicine and social sciences and influence strategies in public health to prevent rather than cure and in education for fulfillment in life and improvement of society.

Key words: anthropology, health, disease, medicine, social sciences, emotions, environment, work stress, well-being

Medical Anthropology and Environmental Influences on Human Health

Anthropologists collect data from human remains and human living experiences¹. Medical anthropology is concerned with the causes and the consequences of human diseases and various theoretical orientations². Medical anthropologists study people and factors that influence human health, etiology of diseases, experiences and distribution of illness, preventive measures that humans as members of sociocultural systems have constructed to prevent the onset of diseases and curative measures created in the efforts to eradicate disease or mitigate consequences as well as study of social relations, therapy management and cultural importance, health ecology, types of medical systems, development of systems and health care, patient-practitioner relationships, political, economic studies of health ideologies, alternative medical systems in diverse environments and study of ethnomedicine or traditional medical practice. Research studies into traditional medicine has been covered mainly by anthropologist and the cultural heritage has contributed substantially to human health and development of indigenous medical knowledges^{3,4}.

People are the product of biological and sociocultural evolution. Human body is subjected to environmental assaults, aging, relationships between health related issues and sociocultural processes and arrangements of the modern World. Health and disease are conditions that people in a society encounter and dealing with them depends on access to basic as well as prestige resources. Disease is not just a straightforward result of a pathogen or physiological disturbance. Factors that are connected with the environment and socioeconomic conditions such as malnutrition, economic insecurity, occupational risks, industrial pollution, bad housing, stress, contribute to susceptibility to disease. Disease must be understood as being as much social as biological. Anthropological research studies shows the differences and graduation between people from the physical and cultural point of view. As all living biological organisms human populations depend on the environment and there are too many different influences that affect people. Environmental intakes are food, drink, air, pollutions, chemicals, radiations, drugs. There are also influences from the social en-

environment such as home and family, relationships, working place, living area, state, economic and political situation, etc. All that mixtures of environmental signals have impact on health. The biggest impacts on the health are reactions and biological responses. People sense of their bodies in the state of health and well-being or in the state of disease and distress are mediated by sociocultural meaning of being human. Different diseases appear in different societies due to the climatic or geographical conditions but also due to the way the productive activities and resources are organized and carried out in the society. Social context, social relationships, environmental, occupational, nutritional, residential and experiential conditions have impact on health. Biomedicine focusses on diagnosis and treatments are based on human physiology and human pathophysiology. The central concern of biomedicine is not general well-being of a person but dealing with disease. Medicine emphasizes curing over prevention and spends more money on hospitals, clinics and drugs, than on public health facilities, preventive education, environment and elimination of stress associated with modern life^{3,5,6}.

Health of populations is affected by the relationships between humans, cultural norms, social institutions, micro and macro politics and forces of globalizations. There is no doubt that culture is crucial for medicine. Health disparities across ethnic and racial groups as well as cultural influences on health practices are too evident to be overlooked. The concept of culture in medicine is different from the concept of culture in anthropology. Physicians are under the cultural influences as well as their patients. Culture is not only about differences in dress, etiquette and diet but also about what is really relevant to people⁷.

Major international health problems in the epidemics spreading around the globe underlie deaths due to pesticides, infant diarrhea and dehydration, cigarette smoking and the side effects of drugs, problems of homeless and medically uninsured, child sexual abuse, drug addiction, social, economic and cultural factors, immunodeficiency syndrome, infant mortality, cost of pharmaceuticals, diseases from environmental contaminations and social pathologies such as mental illness and violent assault. Cultural, social, economic and political factors have impact on the human health around the World. Cultural and health interactions are involved in cardiovascular deaths due to the lifestyle. Economic and cultural factors are central to health issues of obesity accidents. The problem facing medicine in the complex society of today cannot be resolved without the aid of social sciences, as cultural, ecological and mental processes affect physiological responses and health^{8,9}.

Holistic, individual approach to a personal appearance is important for understanding the cause or the trigger for disease. Disease is not just a personal or family problem. It is reflected on the working place and economy. Today huge percentage of the sick leaves is due to depression. Even if the people are not on sick-leave if they have no senses of well-being their working enthusi-

asm and productivity is diminished. The exposition to an unhealthy environment during the period of time such as exposure to chemical toxins, toxic food, toxic drinks, toxic relationships, toxic working atmosphere, stress, people are going to develop different symptoms and diseases. Some people are going to develop systemic disorders while others are going to develop mental disorders.

Processes of globalisation are changing populations. Today there are no many part of the World where population is still indigenous and without influences. If someone moves to other part of the World and lives different life then the perceptions is changing as well as the exposure to physical and mental toxins, working habits, illness, etc. Cultural habits are changing as well as working rules. The same person can act, feel, express completely different in different environment. Environment is important for mental and physical well-being, health and productivity.

Population's activities are cultural and all patients and healers inevitably conceive the World, communicate and behave in a certain way. Medical anthropology has been stereotyped as peripheral, exotic and being relevant only to ethnic minorities¹⁰. The medicine is linked to natural sciences while anthropology is focused on psychiatry and social construct. Even so anthropology did not have a significant influence on psychiatry¹¹. In practice there are no absolute distinction between the social and the biological sciences. Clinicians are unperceptive to theoretical constructs of social sciences, they want to know what to do and how the changes in their behaviour will improve outcomes for their patients¹². Anthropology needs to give evidence how psychological and social processes impact the individual's biology and health.

Psychological and social determinants influences affect physical health and longevity as health is sensitive to social environment. The certain lifestyle outcome is disease of a person, cost of the health care system and sick leaves and low productivity and effectivity at the working place. Policies and actions for health need to address the social determinants of health, attacking the causes of illness before they can lead to the problems. This is challenging task for both decision makers and public health actors¹³. The main aim of medical anthropology could be to influence public health. So far medical anthropology helped to articulate some problems but without providing realistic solutions. Medicine has lost focus on the person and personal experience of illness. It does not respond properly to patients needs to find a meaning and understanding how, what and why. Medicine put its base on technical procedures and tests. Modern medicine emphasises technological fixes rather than psychosocial interventions. Curing becomes more important than caring. The patient is observed as a body machines and this tends to dehumanise doctors. Physicians are preoccupied with quantifications, objectifications and measurements. Biological data are considered more real and clinically significant while psychosocial data are not considered or are largely ignored¹⁴.

Conception of the body and philosophical underpinning are central in medical anthropology. Western assumptions about the mind and body, the individual and society, affect theoretical viewpoints and research paradigms and influence the ways in which health care is planned and delivered in Western societies. Nancy Scheper-Hughes propose three perspectives from which the body may be viewed: (1) as a phenomenally experienced individual body-self; (2) as a social body, a natural symbol for thinking about relationships among nature, society, and culture; and (3) as a body politic, an artifact of social and political control. The study of emotions as an area of inquiry hold promises in providing new approach¹⁵.

Health and Disease

The World Health Organization defines health as not merely the absence of disease and infirmity but complete physical, mental and social well-being¹⁶.

People in all societies perceive disease as a disruptive event that in one way or another threatens the flow of daily life. Health is, more than a physiological or emotional state. It is a concept that people have developed in order to describe their sense of well-being. The notion of »wellness« has also become a key concept within the holistic health movement. Sander Kelman makes distinction between »functional health« and »experiential health«. He defines functional health as a state of optimum capacity to perform roles within society and to carry out productive work while experiential health defines as a freedom from illness and alienation and the capacity for human development, including self-discovery, self-actualization, and transcendence from alienating social circumstances^{3,17}.

Public health is based on the hypothesis that diseases are caused by exposure to damaging factors from the external environment. Disease is a reaction of the human organism (or/and failure to cope with) to unbalancing changes in its internal environment caused by one or more unfavourable exchanges with the external environment or/and failures in the structure and function of the organism or unfortunate legacies¹⁸.

There are differences in the way the people enter the sick role and their choices regarding the use of different kinds of health services. Some basic features of health-seeking behaviour in transitional societies are different from those in industrialized countries¹⁹.

Every illness raises question concerning its causes and even more its meaning. Some people change their life, some don't. Some people take the lesson from their experience, some don't. Some people get well, some don't. These questions call for an interpretation which goes beyond a simple application to the individual body and the medical diagnosis²⁰.

Conventional medicine is not sufficient for dealing with diseases. Technology and science achievements lead to better knowledge of constituent part but also to the fragmentation of human body. Human is not just physio-

logical appearance but a complex, profound combination of biology, psychology, spirit, energy, genetics, lifestyle, nutrition, economy, social conditions and micro- and macroenvironmental influences.

Medicine of today heals symptoms but rarely the cause and origin of disease. Deflections of the symptoms does not demolish the resource of disease and consequently disease appear again or in some other form or place. Thanks to the biomedicine the lifespan is extended but it is not followed by the expansion of productive, healthy and happy life. There are still too many chronic diseases, disabilities, lifelong medications and hospitalizations. Medicine is still separated from social research and if human functioning and healing processes are to be understood the individual, holistic approach should take serious part and consideration. This is where anthropology steps in with observations and researches of human life, culture, similarities and differences between people, how they live, what they do, how they feel, how observe, how they act.

Human health depend on biology and without having in mind the whole person and the circumstances in personal life the recovery can't be successful. In all areas of research there are progresses but the whole picture and the holistic approach to a person is lost. More is known about diseases, their mechanisms and the cure than about the mechanisms and reasons why diseases occur in the first place. With all the advancements in science and medicine people are not as healthy and happy as they could be. Anthropology can give at least some insights on that questions and provide answers and can serve as a bridge and help in planning strategies in public health and diseases prevention policy.

Increased interest is arisen in the contribution that social sciences might have to the epidemiological studies of patterns of health and disease. The incidences of chronic, non-infectious diseases rise within developed World populations and are important cause of morbidity and mortality. The chronic disease is strongly influenced by the lifestyle which is influenced by social and cultural forces.

Single Cell, Organism and Environmental Signals

Stem cell in culture depends on the culturing media. Human organisms, as well, entirely depend on their environment. Every single cell in human body is influenced by its microenvironment and other cells. Signals are transferred to each single cell. A cell membrane with all the receptors and constitutive parts is the cell contact with the environment. Each cell reacts to that signals by activating processes within the cell that result in products that influence cells as well as environment. No cell is isolated as well as no organism is isolated from the environment. Environmental signals are responsible for selecting genes expressed by an organism engaging cytoplasmic processes that alter gene expression and thereby control cell fate, influence cell movement, control cell

survival, or sentence cell to death. The better we understand the single cell the better we can understand the community of cells that comprises each human being. The activity of our genes is constantly modified in response to the life experiences. Survival is provided by the behaviors that support growth and those that support protection. If there is a threat the growth resources are redirected to protection. The fate and behaviour of an organism is directly linked to its perception of the environment. The new emphasis on nurture (environment) controlling nature (genes) focuses special attention on the importance of the maternal environment in fetal development^{21,22}.

Perception of Health Status in Croatia: Environmental Influences and Counties Differences

Quality of life depends on the all together life circumstances. One of the health status indicators, although not always in accordance with objective state of personal health, is self-evaluation. United Nations Development Programme studied subjective health perceptions of Croatian inhabitants. Counties that have lowest income rate have biggest share of inhabitants that find their health status bad with exceptions in Krapina-Zagorje County where inhabitants evaluated their health status bad although their household income is in the upper part of the household income distribution, while in Vukovar-Srijem county inhabitants find their health bad in the same share as the citizens of Zagreb. The inhabitants of the Adriatic area evaluated their health fine. Mediterranean climate, food, way of life and less stressful environment have positive influences on life perceptions and health²³. Income rates influence health status but also the way of life and feelings of acceptance and affiliations and meanings of life.

The Role of Emotions and Positive Psychology Movement

Psychological, social and cultural factors play roles in human health and health related behaviour. The nature of feelings and emotions are among the less understood aspects of human beings. Social contacts and relationships are complex and responsible for personal self experience and self-esteem. That is particularly important in the childhood when basic security, confidence and trust is built. The lack of careful and loving environment in the childhood can be the reason for latter on suffering, traumas and diseases. During the time of grow and development child can experience physical or psychological symptoms of traumas, while some children can become violent and aggressive. The insults caused by other people in interpersonal relationships can lead to autodestruction or violence, pain and suffer, emotions of meaningless, inferiority and guilt and end up in developing mental or physical disorders^{24,25}. People pursue happiness through the paths related to well-being: pleasure, engagement

and meaning. A person that lives full life is the happiest, values intrinsic life goals and has good self-control. A person that lives an empty life has the lowest sense of well-being, values extrinsic and intrinsic life goals less and has low self-control. Eudaimonia refers to the feelings of the individual moving toward self realization, development of personal unique individual potentials and purpose in life. The eudaimonic approach is oriented to personal growth and life towards the fullest potential. The hedonic approach considers well-being as a pleasure, satisfactory life fulfilled with positive and without negative emotions²⁶. Well-being is related to work enthusiasm, relationships and health.

Positive psychology movement is about improving human conditions on work on optimism, motivation and character, to get out most of life and make good life for individuals and communities. Positive psychology is about well-being, happiness, cultivation of personal talents, deep, lasting relations, feelings of pleasure and meaningful contribution to the World. It is how innovative schools can educate for fulfillment in life and how corporations can improve their performance at the same time as they raise employees well-being²⁷.

Working Environment and Health Outcomes

Health outcomes are associated with exposure to psychosocial stressors. Hypothalamus-pituitary-adrenal axis is among the first responds to social stressors^{28,29}. Burn-out, as a psychological response to work stress, is characterized by emotional exhaustion, depersonalization and reduced feelings of personal accomplishment. Ganster and Rosen focus on primary (stress hormones, anxiety, tension), secondary (resting blood pressure, cholesterol, body mass index) mediators, as well as tertiary disease end points (cardiovascular disease, depression, mortality). Stress is process by which environmental events create a series of cognitive and physiological reactions that affect well-being. The effects of work place on mental and physiological well-being take impact on life satisfaction, health and productivity. Work characteristics are linked to mental and physical health outcomes²⁹. Epidemiological studies in identifying risk factors for major diseases have focus on risk factors that are relatively proximal causes of disease such as diet, cholesterol level, exercise etc. Individually based risk factors studies must be put in context by examining what put people at risk. Socioeconomic status and social support are connected to the health outcomes as allowed access to important resources³⁰.

Michael Marmot in his research studies in public health shows that social status affects people health and longevity. Health is in correlation with the status in social hierarchy. In different geographical, personal and occupational surroundings the same model repeated. The sense of life control and society inclusion or complete society involvement seems to be crucial categories for the good health. Lower position in the socio-economical hier-

archy seems to improve worse health as the sense of incapacity to control the events produces chronic stress. The health gradient in the society depends on the every day circumstances in which people work and live. The control over the life circumstances, social activities and participation in society benefits are unequally distributed in the society and the result are health variations or health gradient. The life experiences and circumstances and psychological experiences of inequality have deep effects on the corporal systems. If personal need to live successful, free, fullfill life is endangered the health is at risk. People have issues with their lives as well as with their bodies. The character of the society has impact on the health gradient in the population. Correlation between health and socio-economic development means that by examining the health of the population we are getting the insight into the society and the sense of prosperity and well-being of the population that lives in the area. The control over the life shows observable influence on health. It is connected with the effects of biological mechanisms of stress and it is evident that the society has influences on biology. The important cause of health gradient is differ-

ent environment. The certain group of people that is exposed to the threats more frequently is going to suffer from the consequences more often. Healthier population means fulfilled life and society that contribute to that goal³¹.

Conclusion

Humans, as well as every single cell, live and depend on their environment. Health and quality of life depend on the all together life circumstances. The environment needs to be appropriate for healthy, full-fill life and well-being. Humans are biological and social beings. Correlation between health and socio-economic development mean that by examining the health of the population we are getting the insight into the society and the sense of prosperity and well-being. Public policy can play role in shaping social environment that is more conductive to better health. Anthropology should be a bridge between medicine and social sciences, clinic and field work, people, politics, public health strategies, disease prevention and society improvement.

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UTJECAJ OKOLINE NA ZDRAVLJE I DOBROBIT: OD STANICE DO DRUŠTVA

SAŽETAK

Sudbina matične stanice u kulturi ovisi o sastavu hranidbenog medija. Na svaku pojedinu stanicu organizma djeluju njen mikrokoliš i okolne stanice. Biologija, psihologija, emocije, duh, energija, životni stil, kultura, ekonomski i poli-

tički utjecaji, socijalne interakcije u obitelji, na poslu, životnoj okolini te sposobnost da se živi punim životom i s osjećajem blagostanja čini čovjeka. Bolest je socijalna kategorija kao i biološka. To je reakcija organizma na poremećaje ravnoteže u unutarnjem sustavu uzrokovani nepovoljnim vanjskim utjecajima i/ili funkcionalnim ili strukturalnim pogreškama odnosno nepovoljnim nasljeđem. Populacijski gradijent zdravlja ovisi o svakodnevnim okolnostima u kojima ljudi žive i rade. Zdravlje populacije daje uvid u društvo. Problemi s kojima se suočava medicina u današnjem složenom društvu ne mogu se riješiti bez pomoći društvenih znanosti jer kulturološki, društveni, ekološki i mentalni procesi utječu na fiziološki odgovor organizma, a time i zdravlje. Antropologija može povezivati medicinu i društvene znanosti i utjecati na donošenje strategija u javnom zdravstvu koje se temelje na prevenciji umjesto na liječenju, u obrazovanju na stvaranju ispunjenog života, te u poboljšanju društvenih uvjeta.