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Medical Anthropology (10) **"Medical-Ecological Approaches to Health"**

based on Chapter 7 (pp.249-293), In: Winkelman M "Culture and Health: Applying Medical Anthropology", Jossey-Bass, 2009.

MEDICAL ECOLOGY AND DISEASE

Health is affected by many interactions with the environment. Medical ecology examines the relationships of health to physical, biological, and social environments such as climatic conditions, plants and animals, and population dynamics.
Medical-ecological approaches examine population health and disease as reflecting the group's biological, individual and cultural adaptations. Ecological systems are conceptualized as having three major aspects: abiotic (physical), biotic (biological) and cultural: interacting with each other (eg., Tropical rainforest environment support malaria-carrying mosquitoes, whose opportunities to infect humans are increased by artificial lakes and crowded population.)
Medical ecology focuses on the health effects of abiotic and biotic environments and is the closest of the medical anthropology approaches to the perspectives of biomedicine.
Medical ecology uses evolutionary perspectives to examine the relationship of human' evolved genetic potentials to their health conditions (eg., thrifty genotype, sickle cell anemia gene's over-dominance in African malaria-endemic area)
Different disease profiles associated with various ethnic groups are produced in a chain of causal and contributory linkages involving the interactions of agents with many factors: physiological and genetic characteristics, including susceptibilities and resistances to disease; nutritional input and other protective resources; stress and resistance resources, including immunological status; social networks and support for combating disease; health beliefs and practices that affect health behaviors and the incidence and course of maladies.
Medical-ecological approaches investigate many environmental factors affecting health: human behaviors directly related to adaptation and survival; reproduction and birthing practices; population dynamics; diet, nutrition and food; functional brain organization and evolutionary psychology; psychobiological effects of stress.

EVOLUTIONARY ADAPTATIONS AND HEALTH

Adaptations as the result of natural selection alter the genotype. Evolutionary adaptations affect health in diversified areas including diet, obesity, stress, reproduction, menstruation, pre-menstrual syndrome, breast-feeding, sleep, addictions, back and spinal conditions, CVD and mental illness.
Many environmental features affect disease: physical and chemical (climate, environmental and workplace contaminants), biological (other animals, food sources, habitats, reservoirs), familial (housing, hygiene, age distribution, cultural and behavioral characteristics), occupational (work conditions, stresses), socio-economic (nutrition, sanitation, health resources), social environment (public health, day care and medical facilities), psychosocial, inter-group interactions (migration, travel).
cf. Williams and Nesse, 1991. https://www.researchgate.net/publication/21102699_The_Dawn_of_Darwinian_Medicine
Nesse and Williams, 1998. https://www.researchgate.net/publication/221959255_Evolution_and_the_Origins_of_Disease

GENETIC, INDIVIDUAL, AND CULTURAL ADAPTATIONS TO THE ENVIRONMENT

Gene-culture co-evolution occurs in relation with natural selection and adaptation in disease and health
Nutrition in an evolutionary and cultural perspective: Nutritional anthropology (Johnston 1987, Ulijaszek and Strickland 1993, ...),
Thrifty genotype and its relation to obesity (Pima Indian in Arizona, Tonga, Samoa, and Nauru's high prevalence of diabetes)
Individual physiological adaptations: Thrifty phenotype (Barker's hypothesis about the high risk of cardiovascular disease among the people with low birth weight due to poor nutritional environment as fetus, related with epigenetics)
Acclimation (rapid, short term adjustment), Acclimatization (pervasive but reversible response to exposure over a longer time), Developmental (native) acclimatization (Irreversible adjustment to environmental stressors)
Cultural adaptations and health: postpartum sexual taboos affected breast-feeding and birth-spacing in Papua New Guinea or in Africa may have resulted in the protection of maternal and child health.
Disease in ecological context: three kinds of human disease causation ~ genetic characteristics, unique developmental influences of environment, and culture

RACIAL AND ETHNIC CATEGORIES AND HEALTH

Racial categories as cultural concepts, Population biological differences, Skin coloration as ecological adaptation
Rejecting the race concept => ethnicity (incl. social factor) concept

TRIUNE BRAIN STRUCTURES AND FUNCTIONS

Brain is composed of 3 anatomically distinct parts (reptilian=[regulation of motor, daily routines, behavioral, social, and ritual activities], paleomammalian=[emotional brain; mediates sex, eating, drinking, fighting, bonding, attachment, feelings of certainty], neomammalian=[symbolic process, language, cognitive functions, analytical processes, learning, logic, math, cultural transmission]).
Interconnection among instinctual response of the reptilian brain, autonomic emotional states of the paleomammalian brain, and cognitive processes of the neomammalian brain sometimes makes conflicts. The first 2 brains may function relatively autonomously: eg. Driving toward work on the weekend when you actually intended to go to shopping mall, Hair stands and heartbeats increase when you see a tiger coming close to you within a cage in the zoo.
Subsymbolic brain processes (by reptilian and paleomammalian brain) are key to healing and culturally induced maladies.
Paleomammalian processes represented in intuitions and feelings are vital to higher cognitive functions and behaviors: Synthesizing internal and external data, combining what the reactions of our bodies tell us with what we interpret in the outside world. Personal well-being is interwined with a sense of community (social identity) → providing the basis for various health problems.

EVOLUTION OF THE SICKNESS-AND-HEALING RESPONSES

Evolutionary perspectives indicate that sickness ("behavioral expressions of disease and injury") and healing ("culturally meaningful social responses aimed at undoing or preventing the effects of disease and injury") have a unity basis (Fábrega, 1977, p.ix): Humans

have a sickness-and-healing response, part of an integrated social and biological adaptation involved in helping others. Innate healing responses are derived from biological adaptations involving caring, altruism, compassion for offspring and relatives, on the hominid's evolutionary line of caregiving: Chimpanzees respond to the ill, wounded, dying by protection, caressing, grooming, assistance, food provisioning. Human's shamanism can be seen as evolved healing response: ASC (altered states of consciousness) are commonly seen in worldwide shamanism, in turn, the basis of religion, activating paleomammalian brain, giving adaptive effects in producing a sense of connectedness with others ("union" or "oneness"). Innate healing capacities are represented in hypnotic susceptibility and placebo effects.

EMOTIONS IN BIOCULTURAL PERSPECTIVE

Emotions involve:

* Physiological functions, processes, reactions
* Motivations and behaviors related to one's sense of well-being
* Interpersonal, social, communicative processes involving cultural appraisals

Universal vs Culturally Specific:

Cross-cultural research on the meanings of facial expressions suggests that human emotion is universal (eg. We can know some emotions like happiness and anger of the people from many different cultures by seeing photos).
However, emotions are also expressed in different ways by culture. Cultures may expect exaggerated emotional displays or suppression of emotions to convey a neutral emotional state, or even masking one emotion with another (eg. Smile to conceal anger).
Basic emotions are similar in humans and nonhuman primates, but anger-induced violence, sexual behavior, attachment to offspring, guilt, jealousy, envy are areas in which human emotions far exceed animal's response.

Different perspectives on emotions:

* evolutionary vs physiological
* constructionist vs bioculturalist

Emotions are culturally constructed at many levels:

* Elicitation of physiological functions (threat responses, fear, anxiety, etc.) through significance
* Structuring of psychological self-system and its components
* Linguistic and conceptual designation of types of emotions and their causes and functions
* Cultural ascription of their associated meanings and appropriate personal responses

<Debate of next week>

- The rationale of global health is based on biomedical facts[1], **moral, ethics and humanities[2]**. However, moral is not common for all countries. Can we establish the common moral as the base of global health activities? Or, is it impossible and thus the global health activities can only stands on the biomedical evidence or any kinds of rules through negotiation?
  - **Prop side: Global society can establish the common moral over the world in the future.**
  - **Opp side: It's impossible to establish the common moral over the world and thus the rules are needed.**
- For this topic, I recommend to read the book written by Dr. Yuichi Tei (Dr. Ung-il Chung), "*Diversity and Morality: Crossing Borders with Engineering Approach*", Amazon Services International, Inc., available from Kindle (In Japanese, 鄭雄一『東大理系教授が考える道徳のメカニズム』(ベスト新書),2013).
- There are many related articles such as:
  - Hanrieder T (2016) "Orders of worth and the moral conceptions of health in global politics" *International Theory,* 8: 390–421. https://doi.org/10.1017/S1752971916000099
  - Meijboom FLB, Brom FWA (2012) "Ethics and Sustainability: Guest or Guide? On Sustainability as a Moral Ideal" *J Agric Environ Ethics*, 25: 117–121. https://doi.org/10.1007/s10806-011-9322-6
  - Nagel T (2005) "The Problem of Global Justice" *Philosophy & Public Affairs*, 33: 113–147. https://doi.org/10.1111/j.1088-4963.2005.00027.x
  - Curry OS et al. (2019) "Is It Good to Cooperate? Testing the Theory of Morality-as-Cooperation in 60 Societies" *Current Anthropology*, 60(1): 47-69. https://www.journals.uchicago.edu/doi/full/10.1086/701478
  - Curry OS et al. (2019) "Mapping morality with a compass: Testing the theory of 'morality-as-cooperation' with a new questionnaire" *Journal of Research in Personality*, 78: 106-124. https://doi.org/10.1016/j.jrp.2018.10.008
  - Enke B et al. (2022) "Moral universalism: Global evidence" https://cepr.org/voxeu/columns/moral-universalism-global-evidence
  - Cappelen AW, Enke B, Tungodden B (2022) "Moral Universalism: Global Evidence," NBER Working Papers 30157, National Bureau of Economic Research, Inc. https://www.nber.org/system/files/working_papers/w30157/w30157.pdf
  - Ertör-Akyazi P, Akçay Ç (2021) "Moral intuitions predict pro-social behaviour in a climate commons game" *Ecological Economics*, 181, https://doi.org/10.1016/j.ecolecon.2020.106918
  - Bocian K et al. (2021) "Moral tribalism: Moral judgments of actions supporting ingroup interests depend on collective narcissism", *Journal of Experimental Social Psychology*, 93, https://doi.org/10.1016/j.jesp.2020.104098
  - Widdows H (2007) "Is global ethics moral neo-colonialism? An investigation of the issue in the context of bioethics", *Bioethics*, 21(6): 305-15. https://doi.org/10.1111/j.1467-8519.2007.00558.x

1 For example, the risk of severe symptoms and deaths caused by pandemic infectious agents, which are prevailing all over the world, the global material cycle including hazardous pollutants mostly generated from developed countries, and so on.

2 For example, the sympathetic emotion of "all people on the earth are same human-being and thus everybody can be friends", "extreme poverty and starvation should be eliminated", "SDGs aim universal health coverage, no one left behind", and so on.