

Mental, Physiological, Psychic Processes and External Conditions of Life and Death

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ABSTRACT

This article examines aspects of life and death across various dimensions of human experience. Life is a process of individual development: birth, growth, reproduction, and aging. It is characterized by the ability to reproduce, adapt to the environment, and accumulate experience. The genetic continuity of offspring ensures the immortality of humanity. A human mental characteristic is the awareness of one's own mortality. This gives rise to the fear of death and the search for meaning in life. Awareness of death imbues life with value and encourages authentic living. Religions offer a way to overcome the fear of death through faith in resurrection for eternal life. Modern research seeks ways to prolong life or overcome death through the fight against aging. Life and death are multifaceted phenomena that permeate all levels of human existence. Understanding them helps find motivation for a full life and develop ethical standards in medicine and society.

Keywords

Mental physiological mental processes, External conditions, Life, Death.

Introduction

The external environment has a significant impact on human health, life expectancy, and overall well-being. This impact is manifested through various factors: environmental, climatic, socioeconomic, and occupational.

Environmental Factors

Air pollution is a key health risk factor. Industrial emissions, vehicle exhaust, and fuel combustion saturate the air with microparticles (PM2.5, PM10), nitrogen, sulfur, and carbon oxides, as well as volatile organic compounds. This contributes to the development of bronchial asthma, chronic lung disease, cardiovascular disease, stroke, and lung cancer. According to the WHO, approximately 7 million people die annually due to exposure to air pollution.

Water pollution with heavy metals, pesticides, nitrates, and

pathogenic microorganisms can lead to acute intestinal infections, chronic poisoning, and reproductive dysfunction.

Soil pollution from agrochemicals and industrial waste impacts health through the food chain. Heavy metals (lead, cadmium, mercury) that accumulate in agricultural crops can cause problems with the nervous system, kidneys, and liver, and also increase the risk of cancer.

Noise pollution from transport, industrial facilities, and aircraft is associated with an increased risk of hypertension, heart attacks, strokes, and overall mortality from cardiovascular disease. Long-term exposure to noise can lead to decreased hearing sensitivity, tinnitus, dizziness, headaches, increased fatigue, and decreased immunity.

Radiation, as a source of ionizing radiation, can lead to mutations and cancer.

Climate and Meteorological Factors

A region's climate conditions influence the health of the population. For example, fewer sunny days per year can contribute to the development of depression and decreased vitamin D levels. Frequent, sudden changes in temperature and atmospheric pressure can cause discomfort and headaches in weather-sensitive individuals. The combination of low temperatures and high humidity can exacerbate joint conditions, while prolonged hot weather can exacerbate hypertension and cardiovascular diseases.

Global warming increases the frequency and intensity of extreme weather events (droughts, floods, heat waves), directly threatening people's lives, causing heatstroke, dehydration, and exacerbation of chronic diseases. Rising temperatures also contribute to the expansion of insect-borne infectious diseases (malaria, dengue fever).

Socioeconomic Factors

Low income often forces people to skimp on nutrition, leading to protein and vitamin deficiencies, excess carbohydrates, and, consequently, problems with the liver and pancreas. Limited access to healthcare and refusal to undergo preventive checkups also negatively impact health. Socially disadvantaged groups are more likely to have unhealthy habits (smoking, alcoholism), which exacerbates the situation.

Residents of poor areas are more likely to encounter air, water, and soil pollution and have limited access to quality healthcare. For example, industrial zones with high emissions are predominantly populated by poor people, which correlates with higher morbidity and mortality.

Occupational Factors

Certain occupations are associated with increased risks. For example, working with vibrating equipment can lead to the development of vibration syndrome, and in cement plant workers, fine dust particles can settle in the lungs and cause chronic lung diseases.

Other Factors

****Urbanization**** creates both advantages (access to healthcare, shops, employment opportunities) and disadvantages. A fast-paced lifestyle increases stress, while the large number of transport and industrial facilities worsens the environment. High population density contributes to the rapid spread of infections during epidemics.

Biological factors include the effects of viruses, bacteria, and other microorganisms that are sources of disease.

Measures to minimize negative impacts

Comprehensive measures are needed to reduce the impact of negative environmental factors:

- * reducing pollutant emissions;
- * switching to renewable energy sources;
- * improving water and air purification systems;

- * greening cities;
- * noise control;
- * radiation monitoring and protection of vulnerable groups.

At the individual level, preventative measures are important: using water and air filters, maintaining good hygiene, avoiding unhealthy habits, eating a balanced diet, being physically active, and managing stress.

Thus, the external environment influences human vitality through many factors, and taking them into account is important for maintaining and improving health [1-4].

Let's briefly consider the mental and existential aspects of human life and death. At the level of thought and worldview, life and death form an existential dyad, the unity and contradiction of two interconnected phenomena. Key mental processes are, firstly, the awareness of the finiteness of existence [5]. Secondly, a person is a being aware of their mortality. This knowledge influences motivation, actions, and activities:

****Search for the meaning of life****. Encountering the idea of death stimulates questions about the value of existence and what remains after a person.

****Formation of value-based semantic coordinates****. Experiencing birth and death (oneself and others) helps one understand the boundaries of one's self, the value of life, the extent of one's responsibility, and the limitations of one's powers.

****Generating a responsible attitude toward life****. Awareness of the partial control of life (including through confrontation with death) stimulates personal responsibility for one's path.

****Transcendence of the individual****. Understanding one's place in the world, one's connection to something greater (posterity, cultural heritage, nature, the Universe). Forms of immortality:

- * creative (in heritage—books, discoveries, art);
- * spiritual (in memory and traditions).

****Defining the boundaries of knowledge****. Birth and death remain partially incomprehensible, setting the mental boundaries of the human understanding of existence.

****The role of support for a person experiencing approaching death:**

- * non-intrusive presence of loved ones;
- * the opportunity to talk about one's feelings without superficial consolation;
- * respect for the process of accepting death.

A person usually dies as they lived: their characteristic feelings, thoughts, and behavior patterns persist at the end of life. In people with a healthy mental system, the personality before death usually does not change. Religious beliefs about the immortality of the soul can reduce the fear of death and provide peace.

The main goal of modern longevity medicine is not simply to prolong life, but to increase the number of healthy years [6-14].

Thinking, consciousness, and reflection are inextricably linked to human existence

This phrase echoes René Descartes's dictum "Cogito, ergo sum"

("I think, therefore I am"). Let's examine this in more detail:

****What does "as long as we think, we still live" mean?****

1. ****Biological level**** Thinking is a sign of the brain's activity. As long as it is active and generating thoughts, the body functions as a living system. The loss of consciousness or cognitive functions is perceived as a borderline state between life and death.
2. ****Existential level**** A person not only physically exists—they are **aware** of their existence. Thoughts, questions, doubts, and dreams create an inner life. Without this, a person becomes an automaton performing routine actions.
3. ****Creative and intellectual level**** Development, learning, and the creation of something new are possible only through thinking. As long as we ask questions, seek answers, and analyze, we grow and "live" fully, not just exist.
4. ****Emotional and Social Level**** Reflecting on our feelings, relationships, and values makes us sensitive and empathetic. We "live" fully when we are able to comprehend our own experiences and the experiences of others.
5. ****Philosophical Level**** Thought is the bridge between the material and the spiritual. By reflecting on the meaning of life, death, good and evil, we affirm our human essence.

****Examples in Culture:****

- * **In literature:** characters who have lost their meaning and ability to reflect (for example, Oblomov) symbolically "fall asleep" while still alive.
- * **In film:** plots about amnesia or artificial suppression of consciousness show how the loss of memory and thought processes deprives a person of identity.
- * **In proverbs:** "He lives without thinking, and he dies without remembering" (folk wisdom emphasizes the value of conscious existence).

****Conclusion:**** The phrase speaks not of physiological survival, but of a **full human life**—filled with meaning, exploration, feelings, and awareness of oneself in the world. As long as we are capable of thinking, asking questions, and being surprised, we truly live [5].

Cessation of Thought

Let's examine this issue in detail, taking into account the various contexts in which we can speak of cessation of thought.

Physiological Cessation of Thought (Brain Death)

Thinking as an information-processing process ceases ****at brain death****—this is an objective biological milestone. Criteria:

- * complete cessation of electrical activity in the brain (according to EEG);
- * absence of brainstem reflexes;
- * inability to breathe spontaneously;
- * confirmation by at least two independent examinations.

As long as the brain is alive and active, even in a coma or vegetative state, some forms of neural activity persist—that is, formally, thinking has not "stopped," but merely changed.

Temporary cessations/impaired thinking

Can occur in a number of conditions—without permanent brain death:

- * ****Absences**** (petit mal seizures): brief "freezing" periods lasting a few seconds, during which the person is unresponsive to their surroundings and unaware of what is happening.
- * ****Sperrung**** (thought blockage): a sudden feeling of "emptiness in the head," a cessation of thought processes in schizophrenia or other mental disorders. Lasts seconds to minutes.
- * ****Fainting****: a brief loss of consciousness due to reduced blood flow to the brain. Thinking stops only for the period of unconsciousness.
- * ****Deep anesthesia/medically induced coma****: artificial suspension of higher brain functions while maintaining vital functions.
- * ****Sleep****: During the deep sleep phase (N3), conscious thought is absent, but the brain continues to process information.

Gradual decline of cognitive functions

Occurs with progressive diseases:

**** Dementia**** (including Alzheimer's disease):

- * Initially, memory, abstract thinking, and orientation are impaired;
- * Then, speech and the ability to care for oneself;
- * In later stages, a person loses the ability to make meaningful reactions.

**** Severe brain damage****:

- * Consequences of stroke;
- * Brain tumors;
- * Traumatic brain injury;
- * Neurodegenerative diseases (Parkinson's, Huntington's, etc.).

Functional limitations of thinking

These do not completely stop, but sharply reduce cognitive abilities:

- * ****Mental disorders****: depression (slowed thinking), manic states (accelerated, chaotic), schizophrenia (disorganization).
- * ****Intoxication****: alcohol, drugs, medications, carbon monoxide poisoning, etc.
- * ****Metabolic disorders****: hypoglycemia, hepatic encephalopathy, hypoxia.
- * ****Stress/fatigue****: "exam stupor," information overload.

Summary

****Important:**** If you or a loved one exhibits signs of impaired thinking (sudden forgetfulness, slurred speech, disorientation), you should consult a doctor (neurologist, psychiatrist) for diagnosis. Early identification of the cause can prevent further deterioration.

Arrest of the human body's life process

Arrest of the human body's life process is a complex biological process that goes through several stages and culminates in irreversible changes in the body. In medicine, a distinction is made

between terminal states (pre-agonal state, terminal pause, agony, clinical death) and biological death.

Terminal States

Terminal states are critical stages of the decline of the body's vital functions that precede biological death. They are characterized by profound impairment of the functions of vital systems: respiration, circulation, and metabolism. Without resuscitation, these conditions are irreversible.

****Pre-agonal state**** is the initial stage, characterized by confusion, a sharp drop in blood pressure, a thready pulse, rapid and shallow breathing, and pallor or cyanosis of the skin. It can last from several minutes to several hours or even days.

****Terminal pause**** is a short-term state (lasting from a few seconds to 2-4 minutes) during which breathing ceases, the heart rhythm is disrupted, and the corneal reflex fades.

****Agony**** is the final burst of vital activity. It may be accompanied by a brief restoration of coronary activity and respiration, a slight increase in blood pressure, and a brief period of clearing of consciousness. This is the stage of maximum activation of the body's life-sustaining resources, but strength quickly fades.

****Clinical death**** is the transition period between life and death. It is characterized by respiratory and circulatory arrest and loss of consciousness. However, cellular processes (metabolism) are partially preserved, and the condition is reversible with timely resuscitation.

Clinical Death

****Signs of Clinical Death:****

- * Unconsciousness;
- * No breathing;
- * No pulse in the main vessels (carotid and femoral arteries);
- * Dilated pupils unresponsive to light;
- * paleness or cyanosis of the skin;
- * lack of reflexes.

****The duration of clinical death**** under normal conditions (at a normal body temperature of 36.5–37°C) is 4–6 minutes, rarely up to 8–10 minutes. In hypothermia (low body or ambient temperature), this period can increase to 20 minutes or more. If resuscitation efforts are not initiated within 5–10 minutes, clinical death progresses to biological death.

Biological Death

Biological death is the irreversible cessation of physiological processes in the cells and tissues of the body. Resuscitation efforts are ineffective in this case:

****Signs of biological death:****

- * ****Functional:**** absence of consciousness, breathing, pulse, blood pressure, and reflexes.
- * ****Instrumental:**** No brain activity on electroencephalogram, no blood flow in vessels on angiography.

* ****Biological:**** maximum dilation of the pupils, clouding and drying of the cornea, decreased body temperature.

* ****Corpseous changes:****

* ****Corpseous spots**** — purple spots on underlying parts of the body (e.g., on the back, buttocks, if the person is lying on their back).

* ****Rigor mortis**** — postmortem contraction of skeletal muscles that progresses "from top to bottom" (from the face and neck to the lower extremities).

* ****Cooling**** — temperature decreases by approximately 0.8–1°C per hour.

* ****Autolysis**** — tissue breakdown by the body's own enzymes.

Causes of Death

Death can be caused by various factors, including:

- * Cardiovascular accidents (acute myocardial infarction, ventricular fibrillation, asystole, massive pulmonary embolism, ruptured aortic aneurysm);
- * Severe respiratory failure (asphyxiation, drowning, airway obstruction, severe asthmatic status, respiratory muscle paralysis);
- * Shock, collapse, severe intoxication (e.g., drug poisoning, sleeping pills, cyanide poisoning);
- * Electrical injury, massive blood loss, anaphylaxis;
- * Multiple organ failure caused by long-term illnesses or complications.

Resuscitation Measures

In the event of clinical death, cardiopulmonary resuscitation (CPR) must be initiated immediately, which includes:

- * Maintaining a patent airway;
- * Chest compressions;
- * artificial ventilation.

Successful resuscitation depends on the timeliness and correctness of care. If clinical death has progressed to biological death, resuscitation measures are not performed.

****Important:**** If you suspect death, call an ambulance immediately. Until paramedics arrive, do not move the victim unnecessarily, administer medications, or perform any procedures unless you have the necessary skills.

Conclusion

Capillaries, through which the body's cells receive nourishment from the blood, ensure longevity. Cells absorb the substances they need to survive through capillaries. According to Japanese researchers, cells and capillaries form a nutrient pump. It is important to ensure its viability. The heart pumps blood into large vessels; the nutrient pump maintains blood circulation in the body [15].

Extending life and longevity based on scientific data and ongoing research is a key concern for humanity. Accessibility and quality of medical care, the state of the environment, healthy lifestyles, and advanced scientific technologies contribute to life extension and longevity [16-23].

Currently, the maximum lifespan is approximately 120–130 years. Average lifespan varies by region and lifestyle. With senolytics, the next 10–15 years can lead to 100–110 years of healthy life. With reprogramming and CRISPR, the next 30–50 years can lead to 110–135 years. Reversing aging requires aging for 150 years or more.

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