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THE GENERAL HYGIENE AND ECOLOGY DEPARTMENT**

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VALEOLOGY

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CHAPTER 1. INTRODUCTION IN VALEOLOGY

Study Questions.

- 1. Valeology as a science, its purpose, tasks. Valeology interrelation with other sciences. Methodology and theoretical bases of valeology.*
- 2. Differentiation of valeology.*
- 3. History of valeology development.*
- 4. Healthy lifestyle and its components.*
- 5. Persons health, the third state.*
- 6. Diagnostics, forecasting and management of health.*

1. Valeology as a science, its purpose, tasks. Valeology interrelation with other sciences. Methodology and theoretical bases of valeology.

Valeology – is a science about formation, maintenance and strengthening of individual health and its management.

The subject of valeology is individual health and mechanisms of its formation.

The object of valeology – a healthy person, and a person in preillness condition. Such person is usually out of sphere of doctor's interests until he would become really ill.

The purpose of valeology is to preserve and to strength of individual health by means of formation of healthy lifestyle and perfection of health mechanisms.

Tasks:

- studying of person adaptation mechanisms to environment;
- health estimation and reserve possibilities of human body, screening and monitoring of health;
- studying of the third state, preillness;
- research of scientifically proved recommendations about formation of healthy lifestyle;
- propagation medical and valeological knowledge and abilities;
- forecast and management of health.

Valeology differs from other sciences studying health of the person. Valeology studies health and a healthy person, medicine - illness and a patient, hygiene - inhabitancy and conditions of persons life activity, directly influencing on health. Main principle of valeology is the following position: «Person, learn and create yourself».

As a science valeology is connected with biology, ecology, anatomy, physiology, hygiene, physical training, psychology, pedagogic, sociology, political science, economy, philosophy, cultural science, history and other sciences.

Methodological bases of valeology:

- A person's health can be quantitatively and is qualitatively characterized, and it can be controlled (to form, keep, strengthen);
- Between health and illness there is a transitive state - preillness («the third state»).

There are medical examination and clinical supervision.

Medical examination includes physiological, biochemical, immunologic, anthropometrical, physiomeyrical, psychological methods. Mathematical, experimental, sociological methods, methods of forecasting, system analysis and others can be used. Clinical supervision gives the chance to reveal signs of prepathological conditions in an organism.

2. Differentiation of valeology.

Now valeology is divided into general, medical, pedagogical, age, professional, special, family, ecological, social.

Medical valeology defines difference between health and illness, diagnoses a person's condition, studies ways of prophylaxis, develops methods and criteria of health state estimation, investigates external and internal factors menacing to health, develops recommendations about maintenance of health and a person's healthy lifestyle.

Pedagogical valeology studies questions of training and education of person.

Age valeology investigates features of age formation of person's health, his interrelation with factors of the external and internal environment during the various age periods.

Professional valeology studies problems of professional testing and professional orientation, using scientifically proved methods of estimation of person's individual properties, considers features of professional factors influence on person's health, defines methods and means of professional rehabilitation.

Special valeology investigates influence on persons health of various extreme factors and criteria of its safety, defines methods and means of health preservation.

Family valeology studies role and place of family, and also each of its members in health formation, develops recommendations about family's health maintenance.

Ecological valeology studies laws of environment influence on people's health and develops recommendations about behavior optimization in real conditions.

Social valeology studies people's health in a society, in social groups, collectives.

3. History of valeology development.

In history of valeology development allocated empirical, scientifically-experimental and modern stages. Systematization of knowledge, concerning person's health, has begun in antiquity when improving systems "Kung fu" in China (2600 BC), "Ayurveda" in India (1800 BC), «About a healthy way of life» of Hypocrite (400 years BC) and others have been created. The basic idea of these systems - formation, preservation and health strengthening.

Relation to health essentially began to change in slaveholding communities. Slaveholders gave attention to health ever less. So, the medicine lost the improving and preventive value and more and more specialized on treatment of illnesses.

Throughout the next centuries scientists also paid attention to health problems. Ibn-Sina (980-1037) in the «Canon of medical science» specified the most effective way to longevity - health maintenance. However during the subsequent periods of civilization development the medicine gave ever less attention to a person's health, concentrating it mainly on treatment of illnesses.

Hallen has formulated concept of «the third state» - transitive state between health and illness. This problem has been studied by I.M.Sechenov, S.P.Botkin, I.P.Pavlov, I.A.Arshavsky, N.M.Amosov, etc.

During the scientifically-experimental period N.A.Semashko has orientated to infectious and parasitic diseases prevention. Organized under his management antiepidemic actions promoted increase of average life expectancy of people for account of elimination of mass infectious diseases giving high death rate: plagues, cholera, smallpox, typhus and others.

The founder of the science about person's health I.I.Brehman working in Vladivostok is considered. He for the first time (1982) studied methodological bases of maintenance and strengthening of health of practically healthy people. He said about necessity to change all strategy of public health services by studying of etiology, diagnostics of quality and quantity of person's health. A new scientific direction named "valeology". I.I.Brehman in 1987 has published the first monograph on this problem «Introduction in valeology - science about health» in which asserted, that the science about health should not be limited by one medicine, and to be integrated, being formed on basis of medicine, ecology, biology,

psychology and other sciences. In 1990 there was a second, added and reprocessed edition of this monography.

Kiev where formation of valeological directions has been connected with sports medicine became the second centre of valeology development. In 1985 G.L.Apanasenko has presented for the first time proved model for estimation of level of person's somatic health on direct indicators, has opened prospects of use of this model in prevention of diseases and population improvement.

In 1986 the Central administration of educational institutions of Health Ministry of the USSR had been confirmed «Interdepartment plan of valeology teaching for students of medical institutes». The first manual on medical valeology for medical students has appeared in the Altay medical institute (Barnaul, 1989).

Beginning from 1991 experts of State research centre of preventive medicine of Health Ministry of Russia have joined to research of valeology problems (I.A.Gundarov, A.A.Aleksandrov, etc.) where major scientifically-practical problems has been solved.

Beginning from 1994 the Russian institute of preventive medicine (St.-Petersburg) starts to spend annual national congresses on problems of preventive medicine.

Social movement «Healthy world» is generated, decision about creation of new practical specialty - a doctor-valeologist (November, 1996) was accepted and realized.

Last decades growth of people's well-being, working out of highly effective industrial technologies, disturb ecology and other objective factors have led to that the way of life of a modern person in a large measure began to provoke hypodynamia, overeating, mental overstrain. For example, in Russia for last 10 years predicted average life expectancy has decreased with 73.6 till 64.0 years. In Belarus decrease in life expectancy - for 6.1 years at women and for 11 years - at men is marked. During training at school number of healthy children reduce in 4-5 times, especially in 5-6 classes when raised academic load coincides with critical changes in an organism, connected with puberty. In specialized schools with complicated curriculum and programs general morbidity in 2-2.5 times above, than at general schools. Also quantity of schoolchildren's chronic diseases of blood circulation, locomotorium, endocrine and urinogenital systems increases. Only 6-8 % of school leavers can be considered as the healthy.

Today the valeology becomes a science which can effectively resolve health problems in immediate prospects. If not to accept person's health a priority direction of the state activity there can be a position when all other actual aspects of

life of our society will already not excite anybody owing to physical degradation of the nation.

4. Healthy lifestyle and its components.

Lifestyle - is a complex characteristic of person's behavior during life, in educational institutions or in manufacture, in society.

Person's behavior is defined by features of mentality and education, culture, habits, traditions, personal interests, moral principles, social status, material possibilities, hygienic and socially-public norms.

Life conditions cause a lifestyle. The quantitative part of life conditions, size and structure of material and spiritual population needs, population incomes, security habitation, medical aid, educational level, duration of worker and free time define **life level**.

Life quality is defined by quality of living conditions, feed, comfort level, satisfaction by work, dialogue.

Style of life - feature of concrete people behavior.

Approximately 50 % of people's health is established to depend on lifestyle.

Questions of physical training, balanced diet, eradication of bad habits prevail in formation of **population healthy lifestyle**. Certain moral values, industrial, ecological and sexual culture, culture of life, rest, consumption and interpersonal relations, ethics of home life, social activity, and health and beauty cult are included.

Harmonious development of person is possible at an optimum parity of leading *components of healthy lifestyle*:

- refusal of bad habits;
- regular physical and impellent activity;
- high-grade work, rational work regimen, active rest;
- balanced diet;
- personal hygiene;
- positive emotions, psychological comfort and psychophysiological satisfaction;
- correct sexual behavior, strong family;
- active vital position, economic and material independence, conformity of biological and psychological possibilities of person to conditions and requirements of natural and social environment.

In formation of healthy lifestyle it is necessary to consider person's typological features (type of higher nervous activity, morphofunctional type, prevailing mechanism of vegetative nervous regulation), and also age, sex and

social conditions in which he lives (marital status, trade, traditions, working conditions, material maintenance).

Organization of healthy lifestyle for a person should be defined by hereditary factors, objective social conditions and socioeconomic factors, concrete conditions of life activity in which family-household and professional work are carried out, defined by persons outlook and culture, degree of their orientation to health and a healthy lifestyle.

5. Person's health, the third state.

According to WHO, **health** is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. **Physical well-being** is harmony of physiological processes and maximum adaptation to environment factors, **mental well-being** - negation of illnesses, physical defects and its overcoming, **social well-being** - active relation of individual to itself, society, the whole world.

Human body is an opened system and can be characterized by *reaction, functional condition* and *health*. **Health** is a harmony and intersystem order providing energy potential and performance of biological and social functions.

A number of interconnected factors influence a person during life, such as ecological (temperature, humidity, atmospheric pressure), social and economic (working conditions, life, feed, medical aid), biological (heredity, sex, constitution, etc.), and psychoemotional (stress and distress factors). In formation of health 20 % belong to genetic factors, 20 % - to environmental contamination factors, 10 % - to medical etiological factors.

Adaptive character of life is one of its essential features. **Adaptation** is development of new biological properties of an organism, providing life activity of a biosystem at change of environment or parameters of biosystem itself. Adaptation allows supporting constancy of internal environment, increases capacity homeostatic mechanisms, carries out communication with environment and allows keeping essential parameters of organism in physiological limits.

Adaptive protectively reactions are divided into *specific*, providing resistibility of an organism only against data irritant and *nonspecific*, promoting stability and general resistibility of an organism to any environment factors.

Health is a balance between adaptable possibilities of person and constantly varying environment conditions. Effective adaptation of organism to influence of various environment factors is leading sign of the health, healthy person easily transfers physical and mental loadings, well adapts to heat and cold, climate, change of time zones.

Now allocate following components of health: somatic, physical, mental, moral, sexual. Somatic health is current condition of bodies and human body systems, physical - level of growth and development of bodies and organism systems, mental - condition of mental sphere, sexual - condition of reproductive system. Moral health is system of motivational values, installations, norms of behaviour of individual in society.

Following are the characteristics of a healthy individual:

- a) Emotionally he is stable and does not overreact to pleasant/ painful stimuli;
- b) He is free of pains, aches, discomforts, difficulties (in breathing, eating, urinating, defecating, etc.), depression, disorientation, sores, lumps, bleeding tendencies, and other symptoms;
- c) In dealing with family members, friends, colleagues, neighbours and others follows the be good and do good principle;
- d) He can hear and see normally without the aid of gadgets His other senses (taste, smell, etc.) are adequately developed.

Special interest represents **the third state** of person - is borderline case between health and illness, limited to level of decrease in reserves of health and beginning signs of infringement of functions and developments of pathological process.

The mechanisms of self-organizing providing formation, preservation and health strengthening, are defined as valeogenesis. At somatic level the most studied mechanisms are regeneration, physical adaptation and compensation.

Risk factors for health are superfluous weight the bodies (adiposity), insufficient impellent activity (hypodynamia), irrational feed, infringement of personal hygiene rules, mental overstrain, negative emotions, professional harm (noise, dust, vibration), chemical substances on manufacture and in life, abusing nicotine, alcohol, etc.

6. Diagnostics, forecasting and management of health.

4 conditions of a human body are distinguished: health (optimum stability to pathogenic factors, physical, mental and social adaptability), preillness, or a prepathology, pathological process without progressing signs and illness.

Prenozological health diagnostics is carried out by calculation of blood circulation system potential. Age, body weight, growth, pulse rate, blood pressure are considered.

There are method of health diagnostics on direct indicators, which includes definition of biological age.

An intuitive prediction, analogy, extrapolation, modeling, a method of expert estimations are used for health level forecasting. The forecast criteria are sex, constitution, blood groups, blood circulation type, risk factors, temperament.

Management of health is a management of valeogenesis mechanisms, that is mechanisms of self-organizing of the live system, providing its dynamic stability. Aspects of formation, preservation and health strengthening are thus allocated.

Health formation - the complex of actions for optimization of reproduction, growth and rising generation development. So, pre-natal formation of health includes prophylaxis of gametopathy, improvement of mother, the prevention of stress, medical control. In children and teenagers optimization of life conditions, a healthy way of life, formation of the somatic constitution, training, specific and nonspecific illness prophylaxis are important. Optimization of life conditions, a healthy way of life, training, illness prophylaxis are necessary for an adult person.

Health maintenance - is the complex of actions for maintenance, strengthening and recovery of an individual health. Health strengthening is its augmentation by training influences. The most universal training influences are physical and hypoxical trainings, tempering.

Health improvement is health returning to safe level by activization of its mechanisms.

The first stage of improvement is harmonization of an organism relationship with environment by optimization of this environment and search of adequate forms of live ability.

The second stage includes internal harmonization of the person.

Last stage of improving actions consists in influence on a physical body - normalization of trophotropic organism functions (normalization of digestive system activity, feed, dream), and also restoration of ergotropic functions (improving physical trainings, tempering).

Any activity of the person will not be enough effective while it is not supported by information. Therefore valeological training and education is the major component of health improvement.

CHAPTER 2. BASES of PHYSICAL HEALTH

Study questions.

- 1. Health benefits of physical activity.*
- 2. Physical health, its indicators and criteria.*
- 3. Physical fitness, its components.*
- 4. Physical training, its principles and methods.*
- 5. Physical education lesson, its structure and value.*
- 6. Activities that promote fitness.*

1. Health benefits of physical activity.

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. Physical inactivity, (a lack of physical activity) is an independent risk factor for chronic diseases, and overall is estimated to cause 1.9 million deaths globally.

Physical activity:

- Is a key determinant of energy expenditure, and thus is fundamental to energy balance and weight control.
- Reduces the risk of coronary heart disease and stroke.
- Reduces risk of Type II diabetes.
- Reduces the risk for colon cancer and breast cancer among women.
- At least 30 minutes of moderate-intensity physical activity 5 days per week reduces the risk of several common noncommunicable diseases (NCDs) in adults: cardiovascular disease, stroke, type II diabetes, colon cancer, breast cancer.

Increasing levels of various types of physical activity may benefit health through positive effects on:

- hypertension;
- osteoporosis and falls risk;
- body weight and composition;
- musculoskeletal conditions such as osteoarthritis and low back pain;
- mental and psychological health by reducing depression, anxiety and stress;
- control over risky behaviors particularly among children and young people (e.g. tobacco use, alcohol / substance use, unhealthy diet and violence).

Global recommendations on Physical Activity for Health

The recommendations outlined below are the minimum levels required to promote and maintain health. Since there is a dose-response relationship between physical activity and health, greater benefit is derived by exceeding these minimum recommendations. Importantly, physical activity can be accumulated throughout the day in blocks as short as 10 minutes.

- Young People (5-18 Years old) - 60 minutes of moderate - to vigorous-intensity physical activity each day that is developmentally appropriate and involves a variety of activities.

- Adults (18-65 years old) - 30 minutes of moderate-intensity physical activity 5 days per week; or 20 minutes of vigorous-intensity physical activity 3 days per week; or an equivalent combination of moderate- / vigorous-intensity physical activity; and 8-10 muscular strengthening exercises (8-12 repetitions) at least 2 days per week.

- Older Adults (65+ years old) - same recommendations as described for adults (outlined above) with due consideration for the intensity and type of physical activity appropriate for older people; and exercises to maintain flexibility; and balance exercises.

The intensity of different forms of physical activity varies between people. The intensity of physical activity depends on an individual's previous exercise experience and their relative level of fitness. Consequently, the examples given below are provided as a guide only and will vary between individuals.

<p>Moderate-intensity physical activity (approximately 3-6 METs) Requires a moderate amount of effort and noticeably accelerates the heart rate.</p>	<p>Vigorous-intensity physical activity (approximately > 6 METs) Requires a large amount of effort and causes rapid breathing and a substantial increase in heart rate.</p>
<p>Examples of moderate-intensity exercise include:</p> <ul style="list-style-type: none"> • Brisk walking • Dancing • Gardening • Housework and domestic chores • Traditional hunting and gathering • Active involvement in games and sports with children / walking domestic animals • General building tasks (e.g. roofing, thatching, painting) • Carrying/moving moderate loads (<20 kg) 	<p>Examples of vigorous-intensity exercise include:</p> <ul style="list-style-type: none"> • Running • Walking / climbing briskly up a hill • Fast cycling • Aerobics • Fast swimming • Competitive sports and games (e.g. Traditional Games, Football, Volleyball, Hockey, Basketball) • Heavy shoveling or digging ditches • Carrying / moving heavy loads (>20 kg)

Metabolic Equivalents (METs) are commonly used to express the intensity of physical activities. MET is the ratio of a person's working metabolic rate relative to their resting metabolic rate. One MET is defined as the energy cost of sitting quietly and is equivalent to a caloric consumption of 1kcal/kg/hour. It is estimated that compared with sitting quietly, a person's caloric consumption is three to six times higher when being moderately active (3-6 METs) and more than six times higher when being vigorously active (>6 METs).

2. Physical health, its indicators and criteria.

Physical health is the overall condition of perfect self-regulation functions, harmony of physiological processes, maximum adaptation to environment, and the condition of optimal well-being. Physical health provides mental, moral and sexual health.

At the bases of physical health there are morphological and functional reserves of cells, tissues, organs, and organism as whole. Somatic health is current condition of organs and organism systems.

Physical health is defined by anthropometrical, physiological and biochemical indicators. *Anthropometrical* indicators: high-mass index of Brok (relation of body weight in kg to growth in sm minus 100), Quetelet (relation of body weight in kg to growth square in m^2) and others.

Structure of body weight depends on person's physical activity and nutrition. Active weight includes cellular liquid, fibers, and mineral salts, less - fat, bone mineral salts and extracellular water. For revealing of body weight structure usually define fat's general and hypodermic content, muscular and skeletal weight absolute and relative.

Health *physiological* indicators include pulse and type of cardiovascular system reaction to physical activity, pulse restoration after physical activity, organism's training level, reserve of cardiovascular system, health reserve; and *biochemical* indicators - general cholesterol in relation to level lipoproteins high density in organism.

The express method with use of body weight indexes, breath, hand strength, cardiovascular system and restoration time of pulse after 20 knee-bends during 30 seconds is applied for estimation of physical health level. Each indicator is estimated in points and then total points are summed up. If the total sum points of all 5 indicators less or equal to 3 points, health level is low, 4-6 points - below an average, 7-11 points - average, 12-15 points - above an average, 16-18 points - high.

Physical health criteria are physical development level, age anatomy-physiological features, physical readiness degree, acute or chronic diseases presence, physical defects.

Physical health level depends on internal (heredity, sex, constitution) and external (ecological, social-economic) factors.

In inherited preconditions of health morpho-functional constitution, prevailing nervous and mental processes, predisposition degree to diseases, fertility and longevity are especially important.

Irritating factors of modern life causing changes in genes has resulted in increase of hereditary diseases in the world. Often hereditary infringements are caused by lifestyle of parents or pregnant woman. Ecological factors influencing on organism include influences of physical, chemical and biological factors of atmosphere, hydrosphere and lithosphere, biosystems character and its landscape combinations, equation and stability of climatic conditions, rhythm of natural phenomena, etc. Socially-economic factors include working conditions, life, feed, education, medical maintenance etc.

3. Physical fitness, its components.

Physical fitness comprises two related concepts: general fitness (a state of health and well-being) and specific fitness (a task-oriented definition based on the ability to perform specific aspects of sports or occupations). Physical fitness is generally achieved through exercise.

In previous years, fitness was commonly defined as the capacity to carry out the day's activities without undue fatigue. However, as automation increased leisure time, changes in lifestyles following the industrial revolution rendered this definition insufficient. These days, physical fitness is considered a measure of the body's ability to function efficiently and effectively in work and leisure activities, to be healthy, to resist hypokinetic diseases, and to meet emergency situations.

A general-purpose physical fitness program must address the following essentials:

- Cardiovascular Fitness;
- Flexibility Training;
- Strength Training;
- Muscular Endurance;
- Body Composition;

- General Skill Training.

However, along with these essential components, a comprehensive fitness program that is tailored to an individual will probably focus on one or more specific skills, and on age- or health-related needs such as bone health. Many sources also cite mental and emotional health as an important part of overall fitness. This is often presented as a triangle made up of three points, which represent physical, emotional, and mental fitness. Physical fitness can also prevent or treat many chronic health conditions brought on by unhealthy lifestyle or aging. Working out can also help people sleep better. To stay healthy it's important to participate in physical activity.

4. Physical training, its principles and methods.

Training should be matched to an individual's needs. By using the principles of training as a framework a doctor can plan a personal training programme that uses scientific principles to improve performance, skill, game ability and physical fitness.

A successful training programme will meet individual needs which are personal fitness needs based on age, gender, fitness level and the sport for which we are training. A successful training programme will also include exercise in the correct heart-rate target zone.

The key principles when planning a programme are:

1. Specificity – training must be matched to the needs of the sporting activity to improve fitness in the body parts the sport uses.
2. Overload - fitness can only be improved by training more than a person normally does.
3. Progression – trainings should start slowly and gradually increase the amount of exercise and keep overloading.
4. Reversibility – any adaptation that takes place as a result of training will be reversed when a person stops training.
5. Moderation - It is important to have rest periods which allow the body to adapt. Too much training (overtraining) can lead to injury.

In planning a programme, also use the **FITT** principles to add the detail:

- Frequency - decide how often to train.
- Intensity - choose how hard to train.
- Time - decide for how long to train.
- Type - decide which methods of training to use.

Calculating the target zone also helps assess how much aerobic or anaerobic training a person needs to do to improve fitness.

Person can use maximum heart rate (**MHR**): $220 - \text{age} = \text{MHR}$. Improve aerobic fitness by working at 60-80% of MHR.

Aerobic fitness is another way of describing cardiovascular fitness, or stamina. It is possible improve aerobic fitness by working in person's aerobic target zone. This is found between 60-80% of his MHR. Person cross his **aerobic threshold**, the heart rate above which his gain aerobic fitness, at 60% of MHR.

It is possible improve **anaerobic fitness**, which includes strength, power and muscular endurance, by working in person's anaerobic target zone. This is found between 80-100% of person's MHR. **Anaerobic threshold** is the heart rate above which gain anaerobic fitness. Person cross his anaerobic threshold at 80% of MHR. Below 60% MHR do not improve aerobic or anaerobic fitness at all.

When working anaerobically create an oxygen debt and can only keep going for a short time. **Oxygen debt** is the amount of oxygen consumed during recovery above that which would normally be consumed during rest. This results from a shortfall of available oxygen during exercise.

It is possible monitor fitness levels by recording person's **recovery rate** after exercise. The recovery rate is the time it takes for the pulse rate to return to normal after exercise.

Remember that percentages of MHR are approximate and personal levels of activity and fitness will cause differences in the thresholds.

Methods of training. Training can be aerobic or anaerobic.

In *aerobic* exercise, which is steady and not too fast, the heart is able to supply enough oxygen to the muscles. Aerobic training improves cardiovascular fitness.

Anaerobic exercise is performed in short, fast bursts where the heart cannot supply enough oxygen to the muscles. Anaerobic training improves the ability of the muscles to work without enough oxygen when lactic acid is produced.

Specific training methods can be used to improve each fitness factor.

- Circuit training involves performing a series of exercises in a special order called a circuit. Each activity takes place at a 'station'. It can be designed to improve speed, agility, coordination, balance and muscular endurance.

- Continuous training involves working for a sustained period of time without rest. It improves cardio-vascular fitness.

- Cross training involves using another sport or activity to improve your fitness. It happens when an athlete trains in a different environment. For example a volleyball player uses the power training for that sport to help with fitness for long jump.

- Fartlek training or 'speed play' training involves varying your speed and the type of terrain over which you run, walk, cycle or ski. It improves aerobic and anaerobic fitness.

- Interval training involves alternating between periods of hard exercise and rest. It improves speed and muscular endurance.

- Weight training uses weights to provide resistance to the muscles. It improves muscular strength (high weight, low reps), muscular endurance (low weight, high reps, and many sets) and power (medium weight and reps performed quickly).

- Altitude training is aerobic training high above sea level, where oxygen levels are lower. It is used to increase aerobic fitness quickly.

General methods of training can be applied to specific sports. For example, continuous training might involve swimming, cycling, rowing, aerobics or running.

Account principle of individual loadings assumes that organization and maintenance of physical training should correspond to concrete person's features. It concerns his genetically determined features. It is necessary to consider constitution type, predisposition to certain diseases. Another important genotypic factor is type of higher nervous activity. It is necessary to consider features of blood clotting, prevailing type of vegetative nervous regulation etc.

In physical training organization it is necessary to consider features of person's marital status, his professional accessory, work regimen and many other factors.

The **effects of exercise** on various systems are as follows:

1. *Respiratory system:* During exercise the number of respiration is increased and breathing becomes deeper. The pulmonary circulation is quickened and brings into use all the air sacs of the lungs. There is a considerable increase in the amount of oxygen inhaled and carbon dioxide and water vapours exhaled. Outdoor exercise plays an important role in prevention of tuberculosis.

2. *Circulatory system:* Active exercise increases the force and frequency of the heart. Blood and lymph circulate more freely through the whole body. Oxygenation of the blood is very much increased. Lack of muscular activity tends the blood to stagnate in the abdominal viscera. Exercise is beneficial to the normal heart; for it keeps it well nourished, in good tone and prolongs its usefulness.

3. *Muscular system:* The nutrition of the muscles is improved, which contributes to their growth and energy. Without exercise, muscles become pale and flabby and begin to waste and wither away.

4. *Cutaneous system:* There is a marked increase of perspiration owing to the increased action of the skin.

5. *Alimentary system:* Exercise brings about an increased assimilation of food and thus creates a demand for food.

The appetite is improved and the action of bowels is stimulated. It plays an important role in the prevention of constipation.

6. *Urinary system:* Quantity of urine is diminished, though the amount of urea remains unaltered. The excretion of uric acid is slightly increased.

7. *Nervous system:* The mind is refreshed and the powers of observation, precision and tolerance are developed.

Effects of Excessive Exercise

Exercise is a stressor and the stresses of exercise have a catabolic effect on the body - contractile proteins within muscles are consumed for energy, carbohydrates and fats are similarly consumed and connective tissues are stressed and can form micro-tears. However, given adequate nutrition and sufficient rest to avoid overtraining, the body's reaction to this stimulus is to adapt and replete tissues at a higher level than that existing before exercising. The results are all the training effects of regular exercise: increased muscular strength, endurance, bone density, and connective tissue toughness.

Too much exercise can be harmful. Without proper rest, the chance of stroke or other circulation problems increases, and muscle tissue may develop slowly.

Inappropriate exercise can do more harm than good, with the definition of "inappropriate" varying according to the individual. For many activities, especially running, there are significant injuries that occur with poorly regimented exercise schedules. In extreme instances, over-exercising induces serious performance loss. Unaccustomed overexertion of muscles leads to rhabdomyolysis (damage to muscle) most often seen in new army recruits. Another danger is overtraining in which the intensity or volume of training exceeds the body's capacity to recover between bouts.

Stopping excessive exercise suddenly can also create a change in mood. Feelings of depression and agitation can occur when withdrawal from the natural endorphins produced by exercise occurs. Exercise should be controlled by each body's inherent limitations. While one set of joints and muscles may have the tolerance to withstand multiple marathons, another body may be damaged by 20 minutes of light jogging. This must be determined for each individual.

Too much exercise can also cause a female to miss her period, a symptom known as amenorrhea.

5. Physical education.

Physical education (P.E.) or gymnastics (gym or gym class) is a course taken during primary and secondary education that encourages psychomotor learning in a play or movement exploration setting. The term physical education is

commonly used to denote they have participated in the subject area rather than studied it.

The primary aims of physical education have varied, based on the needs of the time and place. Most modern schools' goal is to provide students with knowledge, and the enthusiasm to maintain a healthy lifestyle into adulthood. Activities included in the program are designed to promote physical fitness, to instill knowledge and understanding of rules, concepts, and strategies. Students learn to either work as individuals, in a wide variety of competitive activities.

Physical Education trends have developed recently to incorporate more activities into P.E. Introducing students to lifetime activities like bowling, walking/hiking, or frisbee at an early age can help students develop good activity habits that will carry over into adulthood. Some teachers have even begun to incorporate stress-reduction techniques such as yoga and deep-breathing. Teaching non-traditional sports to students may also provide the necessary motivation for students to increase their activity, and can help students learn about different cultures.

There are also many different models that have been created as of late that change the face of P.E. One example of this is the Health Club Model. Teaching with this model is very different from the "Organized Recess" of 20 or 30 years ago. Spun off the boom in the health club industry, a P.E. class provides many of the same "classes" that are found at a health club. Monday a student could be doing kickboxing, the next day is yoga, Wednesday the student is doing Spinning. This type of program provides a great variety of activity for students, a lot of high intensity exercise, and helps introduce these activities for use later in life. The Sports Education model is another example of a new model were the class is run like a sports league, with students taking the role of coaches, scorers, referees, and reporters as well as players. Using this model, students practice management skills, mathematic skills, and writing skill all while learning sports skills and being active.

Stages of a training session

1. **Warm-up**
 - a. Whole body exercise to raise heart rate and body temperature.
 - b. Stretching to prepare muscles, ligaments and joints.
 - c. Practising skills and techniques to be used in the session.
2. **Main activity** - this could be:
 - a. Fitness training - which may be linked to repeated technique work.
 - b. Skill development - drills or team practices.
 - c. Modified or Conditioned Games.
3. **Warm down (sometimes called cool down)**

a. Light exercise to help remove carbon dioxide, lactic acid and other waste products.

b. Gentle stretching to prevent muscle soreness and stiffness later.

For carrying out of physical training of preschool children they are divided into three groups depending on health state. First group - children I and partially II groups of health.

Second group - children which physical training can be spent with restriction of muscular efforts, and tempering - without decrease water and air temperature. Children concern this group with detention of physical development, convalescents, anemia, bronchial asthma, compensated heart diseases.

Third group - all kinds of physical training spend very cautiously and tempering by water procedures is not carried out absolutely. There are children with raised body temperature of any etiology, with acute inflammatory processes of any localization, with heart diseases in subcompensative stage, kidneys chronic diseases.

School children are divided in three groups: basic, preparatory and special. Basic group includes pupils with small functional deviations in activity of cardiovascular system, with insignificant physical development delay, if general state of person's health is good.

The preparatory group includes few trained people, with small functional infringements of cardiovascular and respiratory systems activity, suffering from gastritis, chronic bronchitis, and pupils being recently suffered from acute infectious diseases (diphtheria, scarlet fever, etc.).

In the special group there are pupils sick with rheumatism, with heart diseases in subcompensation, with considerable physical development delay, and pupils being recently suffered from acute gastroenteric diseases, with high degree of short-sightedness, with defects of locomotorium. Their physical training is considerably limited or forbidden.

6. Activities that promote fitness.

There are many types of activities that improve a person's physical fitness. The options range from traditional aerobics to alternative practices such as yoga and martial arts. Each activity has its own specific benefits and requires different kinds of equipment. Choosing the best activities involves finding the ones that are the most pleasurable and fun. The most important thing is doing some kind of activity on a regular basis.

1. **Aerobic exercise** strengthens the heart and lungs and tones the body. There are two types of aerobics: high-impact and low-impact. Both involve moving the body for at least twenty minutes in order to increase the heart rate to a point

where the body is burning fat. High-impact aerobics involves dance combinations and jumping movements, while low-impact aerobics uses similar movements without the jumping. Low-impact aerobics is gentler to the joints because one foot is always touching the floor and therefore it is less likely to cause injury.

2. **Biking** is another fun activity that builds strength and balance. Riding for twenty minutes will make the heart strong and help the body burn fat.

3. **Boxing** tones and strengthens the whole body. Whether a person is just punching the air, called shadow boxing, or punching a bag, boxing helps burn fat, relieve stress, and increase endurance and confidence.

4. **Dance** is great exercise for the whole body. It not only tones the body and burns fat, but it also improves balance and coordination. There are many different types of dance, including ballet, tap, modern, country-western, jazz, and hip-hop.

5. **Gymnastics** is an intense activity that strengthens every muscle in the body. It also improves coordination and flexibility; however, it can be risky since many of the moves include flips and jumps that can cause injury. Practicing gymnastics requires classes at a gym with special equipment, a training camp, or a gymnastics clinic. It also requires an instructor, as gymnastic moves are difficult and cannot be learned without proper instruction. With the right clothing and a coach, a person can become involved with gymnastics for fitness. There is also rhythmic gymnastics, which combines dance and gymnastics and is generally less physically intense than traditional gymnastics.

Kids and Exercise

Physical activity and exercise are not the same. And while both are good for all people, most experts recommend that kids and preteens focus more on being physically active (such as playing or bike-riding) than on actually doing structured exercise (such as an aerobic exercise class). For example, the American Academy of Pediatrics recommends that weight training not be undertaken until after puberty and bone growth are complete.

1. **Hiking** gives the legs and heart a good workout. Going up and down hills will strengthen the muscles in the thighs. Continuous hiking will increase the heart rate and burn fat. One of the best things about hiking is being surrounded by nature.

2. **Ice Skating**. On a frozen pond or in a rink, ice skating works the lower body, including thighs, hips, and buttocks. It also strengthens the heart, burns fat, and improves balance and coordination.

3. **In-Line Skating** is similar to ice-skating but it's done on concrete, not ice. It works the lower body and strengthens the heart. In-line skating has grown in

popularity over recent years and many people consider it to be one of the most fun activities to do.

4. **The Martial Arts** are a combination of physical activity and mental strength and development. The practice of the arts goes back thousands of years; they work to improve the body's strength, power, speed, endurance, control, balance, awareness, and timing. In addition to physical training, martial arts benefit the mind through meditation that brings peace of mind in daily life. The different types of martial arts include karate, kung fu, aikido, judo, jujitsu, tae kwan do, and tai chi.

5. **Playing** is simple and fun, and anyone can do it. The options are endless and the benefits are great. Playing increases strength, flexibility, coordination, and muscle tone and, because it increases the heart rate, it burns fat as well. In addition to the physical benefits, playing relieves stress and gives the player a positive attitude about life and physical fitness. The types of playing activities include, but are not limited to, Frisbee, tag, hide-and-seek, raking and jumping in leaves, playing with a pet, gardening, and hopscotch.

6. **Running** is an intense exercise. It's great for increasing heart rate, burning fat, and relieving stress. The muscles in the legs and stomach become stronger through running, and many runners talk of a "runner's high," which can be attributed to the release of endorphins, or the body's natural pain reliever, into the bloodstream. While most physical activity signals the body to produce endorphins, running causes the body to release more because of the intensity of the workout.

7. **Skiing and Snowboarding.** Downhill and cross-country skiing and snowboarding can be done only during the winter months, but they all have great physical benefits. Downhill skiing improves muscle tone for the whole body, as well as increasing balance and endurance. Cross-country skiing means constantly moving the arms and legs in a rhythmic fashion, which keeps the heart pumping fast. Snowboarding increases muscle tone in the lower body, while also improving balance and coordination.

8. **Swimming** is a fun activity that is easy on the body's joints because the water cushions the body while it moves. Swimming tones the whole body and increases the heart rate. It can be structured or unstructured. Doing laps with different types of strokes (backstroke or sidestroke, for example) is a possibility, as is just playing around in the water with friends or participating in a water volleyball game.

9. **Team Sports** offer a variety of benefits that are unique to each sport. Hockey, basketball, and soccer, for example, require constant movement and therefore are great for increasing the heart rate, burning fat, and toning muscle. They also improve coordination and endurance. Softball, baseball, football, and

volleyball increase muscle strength and coordination. Track and field benefits the whole body as it can involve running, sprinting, jumping, and throwing.

10. **Tennis** can be played with two or four people or, in other words, singles or doubles. Either way provides a good workout, increasing strength in the arms and the legs, as well as improving eye-hand coordination. Singles is a more intense activity since one does not have a partner to help cover the court. Doubles can be more fun, however, because it involves more people and can be considered a social activity with friends. Both doubles and singles increase heart rate and burn fat, resulting in overall improved physical fitness. The game of tennis is competitive, which gives people a challenge and improves their mental skills of strategy and concentration.

11. **Walking** is one of the most simple and accessible activities. Most people do some walking every day. Going for a fast, long walk, sometimes called power walking, will increase heart rate and burn fat, while also improving endurance. Walking uphill will increase muscle tone in the legs, back, stomach, and buttocks. Pumping the arms while walking will tone the arms and shoulders.

12. **Yoga** is a way of life that connects the mind, body, and spirit. Through different poses, or postures, yoga improves flexibility, strength, circulation, and relieves stress while helping a person achieve peace of mind. Yoga will also improve the body's alignment, which means all the body's parts are in the right position for good health.

CHAPTER 3. AN ORGANISM TEMPERING

Study questions.

1. *An organism tempering and its value.*
2. *Principles and content of tempering.*
3. *An organism tempering by means of ultra-violet beams.*
4. *An organism tempering by means of air.*
5. *An organism tempering by means of water.*
6. *Features of children's tempering.*
7. *An organism tempering by means of a sweating room and a sauna.*

1. An organism tempering and its value.

Tempering is a system of procedures directed on formation of organism stability to adverse meteorological factors.

The essence of tempering is to train the physiological mechanisms of thermoregulation and immunity increase.

During tempering the organism ability to bear strong environment temperature fluctuations increases. The leading part in it belongs to the central nervous system which defines the activity level of physical and chemical thermoregulation.

During tempering there is a difficult reorganization of functionality and morphological structures, since cellular and finishing system level of the organization. Proper response of these mechanisms allows to prevent an organism overcooling.

2. Principles and content of tempering.

The main principles of tempering:

- a) systematic character;
- b) step-by-step dosage increase;
- c) considering of an organism's specific features;
- d) variety of means and forms of tempering;
- e) combination of general and local procedures;
- f) self-checking.

Systematic character - regular performance of tempering procedures. Usually in 2-3 weeks after the end of procedures immunity decrease is observed. Hence, training can be kept only by means of continuous performance of necessary procedures - irrespective of age and weather.

Step-by-step dosage increase - consecutive transition from small doses to big, gradual stimulus strengthening.

Specific features of the person - age, state of health, physical condition.

Reaction of an organism to tempering procedures can be different at different people. The persons who have recently suffered from any disease, older persons and children react to meteorological influences more strongly.

Combination of general and local tempering procedures. During general tempering all surface of a body is exposed to influence, during local - only its separate parts (feet, neck, etc.).

Variety of means and forms of tempering procedures provides all-round tempering. Organism immunity rises only to that factor to which influence it repeatedly was exposed.

In the course of tempering constant self-checking is necessary.

The basic indicators of correct carrying out of tempering:

- good sleep;
- good appetite;
- improvement of state of health;
- working capacity increase.

In case of wrong tempering carrying out a person can suffer from:

- sleeplessness;
- irritability;
- appetite loss;
- working capacity decrease

Tempering contents: natural factors - the sun, air and water.

System of tempering procedures:

- a) convective (general and local air baths);
- b) conduction (general and local water procedures, and walking barefoot);
- c) use of ultra-violet radiation (solar baths and an artificial irradiation).

3. An organism tempering by means of ultra-violet beams.

Biological action of UV-radiation:

- a) raises an organism immunity;
- b) raises activity of subthalamic-pituitary system;
- c) leads to activation of biochemical processes;
- d) improves trophic processes;
- e) accelerates an organism growth and regeneration;
- f) raises resistibility to infections;
- g) renders pigmenting and erythema influence on a person's skin;
- h) leads to provitamin D production;
- i) improves working capacity.

Natural source of UV beams is the sunlight.

Artificial sources of UV-radiation:

- erythema luminescent lamps;
- erythema mercury lamps of a high pressure;
- xenon lamp;
- erythema uviol lamp;
- bactericidal uviol lamp.

Photarium is the premise for carrying out of group irradiations by artificial UV-beams. The irradiation of 25-30 persons which stand round a lamp on the distance of 2.5-3.0 m is possible

Sun deck is a cabin with lamps of low pressure. It has tunnel-like form, allowing increasing the sunburn area by 20 %. The sun deck is used at treatment of psoriasis, acnes and alopecia, for the prophylaxis of varicose veins.

UV overdose signs:

- growth of tumors;
- infringement of hair structure;
- change of skin pigmentation;
- loss of skin elasticity.

The sun deck is counter-indicative to children, patients suffering from precancer diseases (leukoplakia, nevus), patients suffering from benign and malignant tumors (endometriosis, uterus myoma, mastopathy).

Solar baths - an organism tempering by natural UV beams.

Solar baths tempering principles:

1. Solar baths accept in the morning from 8 o'clock till 11 o'clock, in the evening from 16 o'clock till 18 o'clock.

2. The first session of solar baths proceeds 6-10 minutes, the time of next procedures increases for 2-3 minutes, the final time should be 30-40 minutes.

4. An organism tempering by means of air.

Air baths (aerotherapy) - the most accessible and universal remedy for tempering. Influence of air baths on an organism:

- tone up nervous system;
- train up thermoregulation;
- improve metabolism, appetite and sleep.

Air baths are divided:

- warm (30 - 20°C);
- cool (20 - 14°C);
- cold (lower than 14°C).

Air baths should be taken in specially places (aerariums). Requirements to aerariums:

- a) sites with green plantings;
- b) far from sources of pollution;
- c) equipped by wooden canopies and plank beds.

Rules of air baths:

- beginners should start at air temperature 15-20°C during 20-30 minutes;
- after that a person can take a cold air bath at temperature 5-10°C during 15-20 minutes;
- well tempered people can take air baths at temperature 0°C, during 5-10 minutes;

- speed of movement of air should not exceed 0,1m/s;
- relative humidity should be 40-60 %;
- cool and cold air baths are necessary to combine with physical exercises.

The lower air temperature, the more vigorous movements should be.

5. Tempering of an organism by means of water.

The acting factors - water temperature - a primary factor at external action of water on an organism. Water can be cool (20-30°C) and cold (lower then 20°C).

Water procedures:

- a) wiping;
- b) sponging down;
- c) shower;
- d) bathing.

Wiping - the softest water procedure which is carried out by means of a moistened sponge.

Carrying out rules:

- quickly humidify hands, neck, breast, back;
- wipe and grate with a dry towel;
- do the same with stomach and waist;
- arms and legs grate from fingers up to body;
- body grate with circular movements towards auxiliary and inguinal lymphonodus;
- duration of procedure of 4-5 minutes;
- cool water 20-24°C is applied for wiping in the beginners, gradually reducing it to 16°C.

Sponging down is more strong water procedure. During sponging down small pressure of water stream joins cold action, strengthening an irritation effect.

Sponging down is contraindicated to people with hypererethism of nervous system.

Sponging down action:

- causes spasm of skin vessels with subsequent their fast relaxation;
- raises a tone of nervously-muscular device;
- raises working capacity;
- creates feeling of vivacity.

Techniques of procedure:

- begin a sponging down with temperature 30°C, gradually lower it on 1°C in 2-3 days and lead up to 15°C;
- duration of a sponging down is 1-1,5 minutes;

- duration of all procedure with the subsequent drying of a body is 3-4 minutes.

Shower - widespread water procedure.

- cold (15-20°C);
- cool (21-30°C);
- indifferent (31-36°C);
- warm (37-38°C);
- hot (above 37°C).

Depending on the form of a stream shower is subdivided on:

- The fan-shaped shower - water temperature 30°C, duration of procedure is 1.5-2 minutes, after that it is necessary to grate a skin with a towel.

- The Sharcou shower - is spent by water with temperature 35°C under the pressure 1,5 - 3 atm. Procedure lasts for 2-3 minutes and should be repeated some times till skin reddening.

- The Scottish shower is a combination of a hot and cold shower. The stream of water with temperature 35-40°C during 30-40 seconds moves at first, and then with temperature 10-20°C during 10-20 seconds from distance of 2.5-3 m. The procedure begins with hot water, finishes with cold.

- The rain (descending) shower has an easy freshening, calming and toning up effect. It is prescribed as independent procedure (temperature 35-36°C), usually after sauna.

- The circular shower has a toning up effect. It is used after a sauna, 2-3 times a week. Duration of procedure is 2-3 minutes

- The cascade shower promotes normalization of oxidation-reduction reactions, a muscle tone etc. It is some kind of «water massage» at which from height to 2.5 m the considerable quantity of cold water falls.

Bath - the most widespread hydropathical procedure.

A bath should be taken early in the morning or in the middle of the day, before taking meals. It should not be taken immediately after meals or after exhaustion due to fatigue. Good quality soap should be used while taking bath, since the function of soap is to wash away the sweat and dirt and to emulsify the sebaceous secretions of the skin or the skin oils, thus rendering the cleansing of skin easier and quicker. Cheap toilet soaps containing an excess alkali should be avoided.

Cold bath: Cold bath acts as a stimulant to heart and it contracts the peripheral blood vessels. Young healthy persons should use cold water for a bath as it is invigorating, more refreshing and acts very stimulatory to improve the texture, tone, firmness and color of the skin and stimulates the circulation of the blood throughout the body. It stimulates the skin and increases the power of the body to react to variations in the temperature. Some people taking plunge bath by immersing their whole body in the water (e.g. river, lake or stream) such baths are beneficial and are invigorating.

Warm bath: Bathing in warm water relieves muscle tension. In warm bath the temperature is approximately that of the body. It is of value chiefly to clean the skin, particularly when soap is used. It does not have much stimulating effect on skin or the circulation. It soothes the nervous system and may be used to induce sleep, if taken just before retiring.

Hot bath: It raises the temperature of the surface of the body and dilates the superficial blood vessels and stimulates the sweat glands. It thus causes hyperemia through the skin by withdrawing a large quantity of blood from the interior organs. There is a danger of chilling of the body due to dilated skin vessels and so it is not advisable to go out in the cold after taking a hot bath. If hot bath is continued for long it becomes depressing. Vigorous rubbing of the body with rough and, dry towel, after taking a bath is very beneficial, as it act as a massage to the skin and provides a certain amount of bodily exercise and excites circulation of the blood in the skin.

- Baths with fresh water (hygienic) at temperature 36-37°C are applied after physical exercises. Duration of bath is 10-20 minutes. After taking a bath it is recommended to take a rain shower (temperature 33-35°C) within 1-2 minutes.

- Hot baths with water temperature 38-40°C can be used during bathing in open pool, at overcooling. Duration of procedure is 5-10 minutes.

- Contrast baths are characterized by the training action on cardiovascular and nervous systems. The difference of temperatures should not be less than 5-10°C. It is possible to repeat transition from one bath in another of 2-5 times.

Bathing in an open reservoir - a good way of water tempering.

Requirements to a reservoir:

- the reservoir should be pure and has a sandy bottom;
- for children the reservoir site should be fenced, depth should be no more than 1 m;
- the place for bathing should be placed above any pollution sources.

Techniques of carrying out:

- in opened reservoirs it is possible to start bathing at water temperature 20-22°C;
- duration of the first procedure should not exceed 4-5 minutes;
- well tempered persons finish a swimming season at water temperature 12-13°C;
- the best time for bathing - morning and evening hours;
- it is impossible to bath after meal, 1-2 hours of rest is required.

Winter swimming renders the greatest tempering effect.

Bathing technique:

- the place for bathing (ice-hole) should have a short flight of stairs with a wooden handrail for entrance in water and exit from it;

- before entering into water, it is necessary to execute some vigorous movements - such muscular activity considerably raises heat-loss of an organism in water;

- the first stay in water should not exceed 20 seconds, further stay time increases till 40-50 seconds;

- in water it is necessary to move, float, make not less than 30 rowing movements in a minute;

- after an exit from water it is necessary to dry the body by a towel;

- bathing are spent not more often than 2-4 times a week in the winter.

6. Features of children's tempering.

Tempering of children by means of air:

- twice a day the child should be bared at a room temperature (20-22°C);

- duration of a bath is increased gradually from 4 till 30-40 minutes within 10-14 days;

- for preschoolers and schoolboys initial level of air temperature - 16-18°C;

- in the course of tempering air temperature gradually decreases on 1°C every 3-4 day and can culminate 10°C.

Tempering by means of UV-beams:

• aged till 1 year begins tempering with duration of a solar bath no more than 2 minutes (1 minute on a stomach, 1 minute - on a back). each next day an exposition should be increased for 1 minute;

• duration of an irradiation session of children from 1 till 6 months should not exceed 10 minutes;

• from 6 months till 1 year - 20 minutes;

• during session it is necessary to watch the state of health, to change a body position, to dry a body with a towel from sweat, to protect eyes and head from direct solar beams.

Tempering by means of water:

• till 6 months of the child is necessary to bathe in warm water;

• further (till 6-year-old age) tempering by water consists in washing of the child with cool water. daily it is necessary to wash not only a face and hands, but also a neck, feet, shins, forearms;

• it is possible to begin a regular tempering of all body with 6-year-old age, gradually increasing intensity of procedures: wiping, sponging down.

7. An organism tempering by means of a sweating room and a sauna.

Actions of hot air:

a) integument clears;

b) skin pores opens;

c) diaphoresis is intensified;

- d) blood circulation intensifies;
- e) oxygen consumption increases.

Air temperature in a sweating room should be 50-60°C at relative humidity of 80-100 %.

Rules of sweating procedures:

- take a warm shower (it is not necessary to wet a head);
- put on a felt hat;
- having entered into a sweating room, sit a little bit on the bottom shelf, where air temperature is lower;
- having got used to a heat to rise above;
- make 2-3 attempts 8-10 minutes duration;
- in the end of sweating procedure take a contrast shower.

In case of dizziness, difficulty of breath, weakness the person should pass immediately into a locker room. Otherwise the heatstroke or other serious consequences is possible.

Sauna (a dry bath) is rather popular and useful. Optimum conditions in a sauna are air temperature 70-75°C, and relative humidity 5-10 %.

CHAPTER 4. BASES of MENTAL HEALTH

Study questions.

1. *Mental health, its criteria.*
2. *Indicators of mental health.*
3. *Mental disorders and its reasons.*
4. *Most common mental disorders (depression, hysteria, eating and sleeping disorders)*
5. *Emotional stress, its prevention.*
6. *Psychoprevention, psychohygiene, psychotherapy.*
7. *Modern approaches to mental improvement.*

1. Mental health, its criteria.

The term **Global Mental Health** refers to the international perspective on different aspects of mental health. Taking into account cultural differences and country-specific conditions, it deals with the epidemiology of mental disorders in different countries, their treatment options, mental health education, political and financial aspects, the structure of mental health care systems, human resources in mental health and human rights issues among others. The overall aim of the field of Global Mental Health is to strengthen mental health all over the world by providing information about the mental health situation in all countries and identifying mental health needs in order to develop cost-effective interventions to meet those specific needs.

Up to 30% of all people worldwide have a mental disorder, and although interventions for the treatment of mental disorders are available, the proportion of those people with mental disorders who would need treatment but who do not receive mental health care is very high. This so-called treatment gap is estimated to reach about 76-85% for low and middle-income countries, and still 35-50% for high-income countries. Even those who are treated are often treated inefficiently or in an inhumane way.

Mentality - sphere of emotions, feelings and thinking. Person's mentality has realized (10 %) and not realized (90 %) parts. Realized part, or consciousness - is representation about itself and how the person represents itself to society.

Not realized part of mentality includes subconsciousness and superconsciousness. Subconsciousness - is mental experience, which person has already passed. Superconsciousness - mentality highest level to which person only goes and feels it in itself.

There are two important levels in subconsciousness structure: signs of opposite sex and quality which are not shown in society which do not like person.

In subconsciousness all consequences of mental stresses, psychotraumas and psychocomplexes are fixed. Not realized part of mentality has language of images and symbols produced by right hemisphere.

Normal psychological processes and mental properties of person, general laws of normal person's mental activity formation are studied by **psychology**. Medical psychology gives important attention to psychological factors influencing occurrence and course of illnesses and also mentality role in health strengthening and diseases prevention. It includes clinical psychology, psychiatry, somatopsychology, psychohygiene, psychopharmacology, psychotherapy and other sections.

Mental health does not mean absence of mental illness. It is a sense of well being an individual feels. There should be some positive qualities in every human being that enables him to live happily in society. Mental health and physical health are interrelated and interdependent.

World Health Organization defines **mental health** as "the capacity of an individual to form harmonious relationships with others and to participate in, or contribute constructively to, changes in the social environment." *Meninger* defines mental health as "the adjustment of human-beings to the world and to each other with a maximum of effectiveness and happiness."

In a narrow sense, mental health is described as a healthy mind. It requires a balance between the body, mind and spirit and the environment in which a person lives. Mental health is an ability to maintain - an even temper, an alert intelligence, a socially considerate behaviour, and a happy disposition. Good adjustment is the basic component of mental health. Mental health is an individual and personal matter. It involves an individual human mind. A social environment or culture may be conducive either to sickness or health, but the quality produced is characteristic only of a person.

Mental health - is condition of full composure, ability to be self-controlled, shown by equal, steady mood, ability quickly to adapt to difficult situations, to overcome its and during short time to restore composure. Mental health is component of general health.

For mental health individual dynamic set of mental properties is characteristic. Its set allows adequately to gender, age, social status to learn surrounding validity, to adapt for it and to carry out biological and social functions.

Valeological aspect of mental health includes management of mentality condition with elements of self-knowledge and mental improvement. In mental health there is "force" and "harmony". Steady, positive, adequate, stable self-estimation is characteristic for healthy person.

Criteria of mental health are based on concepts of adaptation, socialisation and individualization. Adaptation includes person's ability sensibleness concerns to organism's functions and to regulate mental processes - to operate thoughts, feelings, desires. Socialization is characterized by reaction of person to other person, on existing norms and relations between people. Individualization is relation of person to itself.

Criteria of mental health are comprehension and feeling of continuity, constancy and identity physical and mental "I"; feeling of constancy and identity of experiences in same situations; criticality to itself, to own mental activity and its results; adequacy to force and frequency of environmental influences, social circumstances and situations; ability of self-management by behavior according to social norms, rules, laws; ability to plan own ability to live and to realize it; ability to change way of behavior depending on change of vital situations and circumstances.

There are **4 groups of mental health:**

- 1 - Absolutely healthy, complaints are not present.
- 2 - Easy functional infringements, irregular complaints of asthenoneurotic nature caused by concrete psychoinjuring situation.
- 3 - Preclinical condition and clinical forms in compensative stage, complaint asthenovegetative nature without psychoinjuring and difficult situation, overstrain of adaptation's mechanisms.
- 4 - Clinical forms of diseases in subcompensative stages, insufficiency and breakage of adaptation's mechanisms.

Characteristics of a mentally healthy person

A mentally healthy person is free from internal conflicts. He is not at war with himself. Does not suffer from disorders of mental functions like thinking, emotion, learning, intelligence, memory, orientation, perception, etc. He is well adjusted. He is able to get along well with others. He is able to form effective relationships. He accepts criticism and is not easily upset. Enjoys total harmony with self and the surroundings i.e., he is well adjusted to self and the surroundings. He searches for an identity and strong sense of self-esteem. Experiences sense of tranquillity, happiness, contentment and fulfillment. He knows himself, his needs, problems and goals (This is known as *self actualisation*). Utilises fully his potentialities, capacities and creativity for the welfare of the community and the humanity at large. He has good control over his behavior. He faces problems and tries to solve them intelligently, i.e., has the ability to cope with stress and anxiety.

Mental health is the full and harmonious functioning of the whole personality. Three requirements of mental health are:

1. Full expression (of potential, personality, etc.)

2. Harmonisation

3. The direction to a common end of our native and acquired potentials.

Living in a stress free environment will pave the way for mentally healthier and happier life. In general, mental health can be achieved in many ways, like individual treatment, treatment of families and educational programmes. Sound behaviour patterns can be encouraged and reinforced in a well established social network. Thus, healthy social surrounding is the need of the hour. Mental health is a positive science as it sets out to establish a condition of healthy mindedness.

2. Indicators of mental health.

Indicators of mental health are emotions, intellection, memory, temperament, character.

Emotions are generalized sensual reactions arising in reply to various signals - exogenic (starting from environment) and endogenic (starting with own bodies and tissues). Some emotions occur over a period of seconds (e.g. surprise), whereas others can last years (e.g. love). The latter could be regarded as a long term *tendency* to have an emotion regarding a certain object rather than an emotion proper (though this is disputed). A distinction is then made between emotion episodes and emotional dispositions. Dispositions are also comparable to character traits, where someone may be said to be generally disposed to experience certain emotions, though about different objects. For example an irritable person is generally disposed to feel irritation more easily or quickly than others do.

There are emotions: affection, anger, annoyance, angst, apathy, anxiety, awe, boredom, compassion, contempt, curiosity, depression, desire, despair, disappointment, disgust, ecstasy, empathy, envy, embarrassment, euphoria, fear, frustration, gratitude, grief, guilt, happiness, hatred, hope, horror, hostility, hysteria, jealousy, joy, loathing love, lust, misery, pity, pride, rage, regret, remorse, sadness, shame, suffering, surprise, wonder, worry.

Most people believe that emotions give rise to emotion-specific actions: i.e. "I'm crying because I'm sad", or "I ran away because I was scared". The James-Lange theory, conversely, asserts that *first* we react to a situation (running away and crying happen before the emotion), and *then* we interpret our actions into an emotional response. In this way, emotions serve to explain and organize our own actions to us.

Intellection is higher informative process. It represents generation of new knowledge, active form of creative reflexion and transformation by person of reality.

Impressions which person receives about world around, leave certain trace, remain, fixed, and at necessity and possibility - are reproduced by **memory**. The person has 3 kinds of memory - voluntary, logic and mediation.

Temperament is determined through specific behavioural profiles, usually focusing on those that are both easily measurable and testable early in childhood. Commonly tested factors include irritability, activity, frequency of smiling, and an approach or avoidant posture to unfamiliar events. There is generally a low correlation between descriptions by teachers and behavioural observations by scientists of features used in determining temperament.

Temperament is hypothesized to be associated with biological factors, but these have proven difficult to test directly.

Temperament - set of person's psychodynamic properties - force, mobility and steadiness of cerebral processes which are inherited and being character physiological basis. It is defined by specific features of mental processes - attention, emotionality, imagination, memory, motility.

There are 4 basic types of temperament: choleric, sanguine, phlegmatic and melancholic.

Choleric type of temperament is characterized by congenital weakness of inhibition and unbalance at high mobility of excitation and inhibition processes. Choleric person is stormy reacts to any influence or situation.

Main sign of **melancholic** - weakness of exciting process. It is passive, shy, diffident person. Melancholic quickly gets tired, is capable to work only in favorable conditions.

Sanguine type of temperament differs by high mobility of excitation and inhibition. Sanguine person - cheerful, mobile, emotional person.

Inertness, low mobility of excitation and inhibition processes is expressed at **phlegmatic** temperament. Phlegmatic person is distinguished by slowness, validity, patience, composure; they avoid risk and adventures.

Extrovert is characterized by high contacting. Extroverts have many friends, familiar; often conflict; are ready to attentively listen other person. Concede leadership to other people, prefer to submit and be in vestige. Features are dominance submissiveness, levity, rashness of acts, passion to entertainments.

Introvert, unlike previous, characterizes very low contacting, isolation, loneliness, rare conflict. Features are restraint, presence of stable belief, adherence to principles, restraint, obstinacy.

Person's temperament hardly gives in to correction, it can vary with the years. Sometimes the positive result is given by psychological work directed on person's social adaptation.

Character - is set of person's steady specific features developing and shown in activity, dialogue and causing of behavior typical ways.

Person's positive character features are kindness, sociability, responsiveness, fidelity, honesty, truthfulness. Negative character features are egoism, hard-hearted, apathy to people, envy, dishonesty.

3. Mental disorders and its reasons.

Recognition of a mentally ill person

- Disturbances of mental functions like thinking, emotion, intelligence, memory, attention, orientation, perception, etc.
- Rowdy, violent, assaultive, destructive, abusive, suicidal or homicidal behaviour.
- Anxiety, tension, irritability, poverty of concentration, diminished work efficiency, irrational fears (phobias), unwanted ideas (obsessions), repetitive meaningless activities (compulsions).
- Somatic symptoms like headache, bodyache, weakness, anorexia, constipation, diarrhoea, sleeplessness, palpitation and breathlessness at rest, without any organic cause.
- Somatic syndromes produced by emotional disturbances which involve autonomic nervous system (sympathetic as well as parasympathetic), i.e., the psychosomatic diseases like peptic ulcer, bronchial asthma etc.
- Antisocial behaviour like criminality, sexual perversions, addiction to drugs and alcohol, (vii) Incomplete development of mental faculties (mental retardation),
- Disorders of cerebral functions due to emotional disturbances e.g. epilepsy.

No one single factor is held responsible. Multiple factors are incriminated. Interaction of all these is commonly observed. The **causes** of mental illnesses can be grouped as:

- Biological;
- Environmental.
 - (a) physical or ecological;
 - (b) sociocultural;
 - (c) psychological or experiential.

The important causes are as follows:

1. Heredity.
2. Constitution and physique (body build).
3. Physiological changes in the body at puberty, menstruation, involution,

senescence, etc.

4. General cerebral dysfunction.
5. Trauma, particularly head injury.
6. Infection - acute, subacute and chronic.
7. Biochemical, metabolic and endocrine disturbances.
8. Dehydration and deficiency states.
9. Drugs, chemicals and heavy metals.
10. Alcohol.
11. Physical defects and physical illnesses.
12. Psychological factors like strained interpersonal relationship (at home, place of work, school, college, etc.), bereavement, loss of prestige, job, etc.
13. Childhood insecurities due to pathological personality types of parents, faulty attitudes of parents, like over-strictness, abnormal parent child relationship like overprotection, rejection, inconsistency, unhealthy comparisons, deprivation of child's essential psychological and social needs, etc.
14. Educational problems due to unhealthy comparison and favouritism made by teachers, discriminations made on the basis of economic class and social caste, overstrictness or indifference of the teachers, controversies and rapid changes in the curriculum etc.
15. Social and recreational deprivations resulting in boredom, isolation, alienation.
16. Sexual difficulties arising out of improper sex education, unhealthy attitudes towards sexual functions, pre and extramarital sex relations.
17. Marriage problems, like forced bachelorhood, disharmony due to physical, emotional social, educational or financial incompatibility, childlessness, too many children.
18. Occupational difficulties due to unhappy working conditions, strained relationship with superiors or colleagues, shift system, lack of job satisfaction, intermittent employment, temporary employment, unemployment.
19. Economic or financial conditions, e.g., poverty, affluence, accompanying vices like gambling, alcoholism, etc.
20. Family situation, e.g., strained interpersonal relationship, broken home due to death, divorce, dispersion or desertion, too big a family, very small family.
21. Religious and cultural traditions.
22. Political upheavals and social crisis.
23. Migration particularly from villages to cities for earning livelihood leading to estrangement, loneliness, maladjustment to the fast tempo of city life, generation gap from the family members, etc. (problems of modernisation).
24. Adverse physical environment like neighbourhood influences, problems

due to overcrowding, lack of housing and civic facilities, slums, pollution, etc.

4. Most common mental disorders (depression, hysteria, eating and sleeping disorders)

Depression – a mood disorder characterized by intense depression without any subsequent periods of elevated feelings. Unless we lead a truly charmed existence, our daily lives bring some events that make us feel sad or disappointed. Unfortunately, depression is all too common; it is by far the most frequent type of psychological disorder and is more common among women than men. Approximately 25% of all women experience an episode of depression during their lives, while for men the figure is only 10 percent.

Causes of depression:

1. Biochemical Factors.
2. Psychological Factors.

Clinical features of depression

Physical Symptoms: feeling tired, listless and run down (fatigue), insomnia, anorexia and loss of body weight, bulimia and increase in body weight, abdominal discomfort, hot flushes, vague aches and pains in the body, tingling and numbness, dryness of mouth, constipation, urinary frequency, menstrual changes, sexual disturbance, cardiovascular disturbances, giddiness, blurred vision, dermatological disturbances, etc.

Emotional Symptoms: Common symptoms are - despondency or gloom, loss of cheerfulness, diminished enthusiasm and interest in activities, crying spells, lack of confidence, irritability, unexplained fears (phobias), haunting ideas (obsessions), anxiety, feelings of guilt, remorse or sin, ideas of worthlessness, uselessness and hopelessness suicidal tendencies, rumination and attempts.

Psychological Symptoms: Common symptoms are - psychomotor retardation i.e., slowing down of physical and mental functions, agitation, avoiding people and social responsibilities, tendency to postpone and indecisiveness, neglect of daily routines and work, negativism and stupor, impaired concentration and forgetfulness, delusions of various types, illusions and hallucinations, unexplained worries.

Hysteria is more common in women than in men. It is commoner in young women and adolescent girls. Patients with hysteria have multiple vague, bodily complaints which mimic neurological or physical disorders. Physical examination does not reveal any abnormality and investigations are negative.

Forms of Dissociative Disorder

1. **Psychogenic Amnesia:** Amnesia - loss of memory - can sometimes be produced by injuries to the brain and by several kinds of illness.

2. **Hysterical Trance:** Behavior usually performed during religious ceremonies. The person in a trance state may feel that a spirit has entered her body and believe that she has the power to heal the sick, communicate with the dead or to predict the future.

3. **Hysterical Possession State:** A culture-bound syndrome which is very common in India. Hindus believe in possession traditionally. The person is not blamed for his abnormal behavior and gets attention; she also gets a socially recognized status of being possessed.

4. **Multiple Personality:** The existence within the individual of two or more distinct personalities one of which is dominant at a particular time.

5. **Hysterical Personality:** A hysterical personality is immature, dependent, possessive, seductive but frigid. She is demanding, manipulative, over demonstrative and has a tendency to pretend, tell fantastic lies and behave in a dramatic way.

Conversion hysteria is the unconscious process through which anxiety is converted into physical symptoms. Thus, an emotional conflict is converted into a physical problem. Conversion disorders are associated with increased stress, repressed ideas and maladaptive coping methods. Conversion disorders have no organic cause.

Common Features of Hysteria

1. Primary gain-reduction of anxiety.
2. Secondary gain-advantages, sympathy, or concession.
3. They correspond to an idea in the mind of the patient concerning physical or sensory changes or psychological function.
4. They are definable as somatic in terms of positive evidence, and as psychological by clinical examinations.
5. They are related to emotional conflict - a patient develops hysterical symptom when she faces stress intolerable.

Eating disorders

Alteration in appetite and thirst may present primary behavior or arise secondary to a variety of physical causes. Eating disorders have become the focus of much interest among mental health professionals in recent years. An increasing number of people, predominantly women, report gross disturbances in their eating behavior. Emaciation, dehydration, electrolyte imbalance, lethargy, confusion, psychosis, seizure, coma and death - these are the complication that develops in eating disorders.

Kinds of Eating Disorders

- **Anorexia nervosa:** It is characterized by preoccupation body weight and food, behaviour directed towards losing weight.

- Compulsive water drinking: It results in water intoxication and hyponatremia. The signs and symptoms of water intoxication are lethargy, confusion, psychosis seizures and coma.

- Pica: It is eating on non-edible substances. Geophagia (mud eating) is the commonest variety. This is due to lack of zinc or iron deficiency and child interaction.

- Failure to thrive: Infant may present with a clinical picture marasmus, with body wasting or they may present with edema.

- Psychogenic vomiting: It is a clinical problem precipitated psychosocial and other environmental stressor.

- Bulimia nervosa: It is an eating disorder manifested by excessive hunger, resulting in compulsive or overeating. Bulimics lose control over eating behaviour and consume large quantities of calorie rich food.

- Obesity: The etiology of obesity are - genetics, physiological factors, life-style, physical activity and drugs. The complications due to obesity are - hypertension, diabetes mellitus, gout and cancer of ovary, uterus, breast and cervix.

Sleeping disorders

Normal sleep is a predictable alteration in rapid eye movement and non-rapid eye movement, sleep, with each cycle lasting - approximately 60-100 minutes. Sleep and dreams have been subjects of interest for long years. Sleep can be regarded as a physiological, reversible reduction of conscious awareness. Most people require between 6-9 hours of sleep per day. Those who require less than 6 hours of sleep, are called 'short sleepers', and those who require more than 9 hours of sleep are called 'long sleepers'. Short sleepers are generally more healthy, active and better adjusted. Sleep requirements increase in children and old people. More hours of sleep are needed in pregnancy, sickness, mental stress, depressed mood and after strenuous work.

Classification of Sleeping Disorders

- Cataplexy: Sudden decrease or loss of (sleep paralysis) muscle tone, often generalized and may lead on to sleep.

- Kleine-Levin syndrome: Periodic episodes of hypersomnia.

- Narcolepsy: Uncontrollable, recurrent brief episodes of sleep associated with cataplexy.

- Nightmares: Sleep disturbance with frightening or bad dreams.

- Night terrors: Sleep disturbance accompanied by panic, confusion and no recall of the frightening dream.

- Pick Wickian: Hypersomnia associated with obesity and respiratory disturbance.

- Bruxism (teeth grinding): Sleep with loud noise and damage to teeth.
- Enuresis: Bed wetting during sleep.
- Sleep talking: Very common by itself or as a part of some other sleep disorder or psychiatric disorders.
- Sleep walking: Sleep, in which walking or other motor acts are performed.

Insomnia

Insomnia is an inability to fall a sleep and maintain sleep. It includes frequent awakening during the night and morning awakening. Insomnia is defined as quantitatively or qualitatively insufficient sleep on the basis of the individual need. Insomnia is the term applied collectively to complaints involving the chronic inability to obtain adequate sleep. Insomnia is difficulty in falling-asleep, difficulty in maintaining sleep or insufficient sleep. Insomnia is of three types:

1. Sleep onset insomnia-difficulty in falling asleep.
2. Frequent nocturnal awakening-interrupted sleep characterised by frequent awakening.
3. Early morning awakening-waking up early in the morning and not being able to fall back asleep.

Disorders of Insomnia

- Social disorder - Separation or divorce, overwork, career change, traumatic experience (accident, assault), immigration, serious illness in the family, birth in the family, death of spouse or close relative financial loss, acquiring a physical handicap, retirement, etc.
- Drug-Related disorder - Stimulants, thyroid hormones, sympathomimetic, diuretics, corticosteroids, beta-blockers.
- Physical disorder - Uneasiness, discomfort, dyspnoea, cough, itching, nocturia, chronic pains, headache, neuralgia, cramps, orthopaedic disorders, cancer, endocrine disorders, menopause, hyperthyroidism, hypoglycemia.
- Psychiatric Disorders - Depression, anxiety, hypomania, schizophrenia, chronic alcoholism and drug addiction.
- Behavioral disorder Naps (during the day) - Irregular sleeping hours, lack of physical exercise, alcohol or tobacco abuse, excessive coffee in the evening, disturbing environment (heat, cold, noise).

5. Emotional stress, its prevention.

Characteristic features of emotional stress:

- long, inexplicable weariness;

- frustration of digestion;
- dorsodynia;
- sleeplessness;
- absent-mindedness;
- apathy etc.

Negative psychoemotional stresses lead to:

- hypertension;
- stomach ulcer;
- diabetes;
- bronchial asthma;
- thyrotoxicosis;
- neurosis;
- neurosis-like states;
- mental frustration.

Distress - stress can be accompanied by negative emotions. **Aeustress** - pass with positive attitude at preservation of choice possibility, control of situation and prediction of consequences. Aeustress has stimulating influence. Its neuroendocrinal mechanisms have features in form of synthesis activation «mediators of happiness» - endorphins, encephalins, etc.

Women are more sensitive and emotional. They suffer from digestion frustration, dysphagias, are more subject to fears and depressions.

Frequent reasons of stresses at men are non-recognition of social and personal advantages and also reduction of muscular force. Are characteristic: vascular infringements, alcoholism and smoking, stomach ulcer, functional frustration of sexual sphere.

Psychotrauma - is sensual reflexion in consciousness of individually significant events in a life, rendering oppressing, disturbing and negative action. If a psychoemotional stress caused by psychotrauma, has not been reacted and has been shipped in subconsciousness it can become basis for psychocomplex formation. **Psychocomplex** - is not realized formation causing structure and orientation of consciousness. It is formed at early life stages, including fetal period and accompanies person all life.

One of most frequent consequences of mental stress is somatizive depression - neurotic state with hypochondria. Negative emotions always cause vegetative reactions accompanied by infringement of bodies functions.

Prevention of mental stress and correction of its consequences includes:

- increase of stability to stress by preventive conceptualism (person's psychological preparation for stressful situations)
- acquisition of management's skills by mentality state.

Pharmacological correction with use of sedatives, inhibitors of peroxide oxidations, b - adrenoblockers is expedient.

Programm based on positive things.

A person can boost his happiness by focusing on positive things and reducing his negative thinking.

How it works: The ratio of positive to negative thoughts is a major factor in overall happiness. Human brain is constantly monitoring the emotional tone of thoughts – too many negative thoughts and the brain responds by creating stress and sadness in the body. When a person adds more positive thoughts, his brain will create relaxation and happiness.

The Steps

1. To list happy thoughts.
2. To be aware of negative thoughts and feelings.
3. To follow with a happy item.

6. *Psychoprevention, psychohygiene, psychotherapy.*

Psychoprevention - section of general prevention directed on prevention of psychological frustration and diseases occurrence, elimination of psychogenic factors among a person. Task of psychoprevention - is psychological help to people in crisis situations of family, educational and industrial character, etc.

Distinguish primary, secondary and tertiary psychoprevention.

Primary psychoprevention includes:

- health protection of future generation;
- prevention of hereditary diseases;
- hygiene of marriage and conception;
- health protection of future mother;
- prevention of harmful influences on embryos;
- correct and qualified organisation of obstetric aid;
- prevention of patrimonial traumas;
- early revealing of developmental anomalies at newborns and their timely

treatment at all stages of development.

Secondary prevention is directed on revealing of diseases at earliest stages, at prepathology level on characteristic compensative-decompensative functional alterations. A big role is played by early diagnostics, application of effective methods and remedy, long supporting therapy excluding possibility of palindromia.

Tertiary prevention - is prevention of relapses and aggravations, disabilities, invalidism at chronic diseases. Important role is played by correct use of medicines, application of medical and pedagogical correction.

Psychohygiene - is a branch of psychology and hygiene studying factors, environmental conditions and lifestyle, well influencing on mental development and state of person, developing recommendation about preservation and strengthening of mental health.

Psychohygiene's task - is giving of specialized help to practically healthy people for prevention of psychological and psychosomatic diseases and also simplification of acute psychotraumatic reactions.

The basic method of psychohygiene - mass inspections with purpose of risk groups revealing and preventive work with them.

There are some **directions of psychohygiene** reflecting age aspects and kinds of person's activity:

- psychohygiene of family and family education;
- psychohygiene of medical-genetic councils and consultations;
- psychohygiene of marriage and sexual life;
- psychohygiene of persons during crisis periods of their life (presuicidal situations, climacteric period etc.);
- psychohygiene of doctor's work training and education;
- psychohygiene of medical establishments' regimen;
- psychohygiene of mutual relations of doctor and patient;
- psychohygiene of patients, bodies suffering by defects of bodies and systems (blindness, deafness etc.).

Psychotherapy or personal counseling with a psychotherapist, is an intentional interpersonal relationship used by trained psychotherapists to aid a client or patient in problems of living.

It aims to increase the individual's sense of their own well-being. Psychotherapists employ a range of techniques based on experiential relationship building, dialogue, communication and behavior change and that are designed to improve the mental health of a client or patient, or to improve group relationships (such as in a family).

Psychotherapy may also be performed by practitioners with a number of different qualifications, including psychiatry, clinical psychology, counseling psychology, mental health counseling, clinical social work, marriage and family therapy, rehabilitation counseling, music therapy, occupational therapy, psychiatric nursing, psychoanalysis and others.

Most forms of psychotherapy use spoken conversation. Some also use various other forms of communication such as the written word, artwork, drama, narrative story or music. Psychotherapy with children and their parents often involves play, dramatization (i.e. role-play), and drawing, with a co-constructed narrative from these non-verbal and displaced modes of interacting.

There are several main broad systems of psychotherapy:

- Psychoanalytic - it was the first practice to be called a psychotherapy. It encourages the verbalization of all the patient's thoughts, including free associations, fantasies, and dreams, from which the analyst formulates the nature of the unconscious conflicts which are causing the patient's symptoms and character problems.
- Cognitive behavioral - generally seeks to identify maladaptive cognition, appraisal, beliefs and reactions with the aim of influencing destructive negative emotions and problematic dysfunctional behaviors.
- Psychodynamic - is a form of depth psychology, whose primary focus is to reveal the unconscious content of a client's psyche in an effort to alleviate psychic tension. Although its roots are in psychoanalysis, psychodynamic therapy tends to be briefer and less intensive than traditional psychoanalysis.
- Existential - is based on the existential belief that human beings are alone in the world. This isolation leads to feelings of meaninglessness, which can be overcome only by creating one's own values and meanings. Existential therapy is philosophically associated with phenomenology.
- Humanistic - emerged in reaction to both behaviorism and psychoanalysis and is therefore known as the Third Force in the development of psychology. It is explicitly concerned with the human context of the development of the individual with an emphasis on subjective meaning, a rejection of determinism, and a concern for positive growth rather than pathology. It posits an inherent human capacity to maximize potential, 'the self-actualizing tendency'. The task of Humanistic therapy is to create a relational environment where this tendency might flourish. Humanistic psychology is philosophically rooted in existentialism.
- Brief - "Brief therapy" is an umbrella term for a variety of approaches to psychotherapy. It differs from other schools of therapy in that it emphasizes a focus on a specific problem and direct intervention. It is solution-based rather than problem-oriented. It is less concerned with how a problem arose than with the current factors sustaining it and preventing change.
- Systemic - seeks to address people not at an individual level, as is often the focus of other forms of therapy, but as people in relationship, dealing with the interactions of groups, their patterns and dynamics (includes family therapy & marriage counseling). Community psychology is a type of systemic psychology.
- Transpersonal - Addresses the client in the context of a spiritual understanding of consciousness.

7. Modern approaches to mental improvement. Autogenic trainings.

Valeological work in field of mental health includes preventive activity, psychosomatic trainings and correction of state with negative emotional coloring. It divides into following **directions**:

- Individual psychohygiene with self-knowledge elements (maintenance of mentality health at high level at management's expense of his state);
- Psychoecology of vital space;
- Mental improvement (restoration of mental working capacity and adaptability to social environment at restoration's expense of energy's quantity and harmony of person's mentality).

Modern approaches to mental improvement include:

- ability to work with subconsciousness;
- ability to work with changed condition of consciousness;
- research of interrelations of mentality and body and restoration's ways of psychosomatic harmony.

Autogenic training. The word autogenic literally means 'self origin', so autogenic training is training originating from oneself. The first stage of the autogenic process is composed of a series of six 'exercises' to be progressively learned and carried out three or four times each week. Each exercise begins with a brief phase in which the person concentrates intensely on a specific phrase, such as 'the right arm is very heavy.' A person is advised to not think in words but, rather, to simply look inward, turning to the pictures of the inner self that correspond with the phrase. So, when thinking 'the right arm is very heavy', the arm should, in reality, feel heavy. As each procedure is learned and followed through, additional ones are added. The last four exercises are directed toward gaining control over the heartbeat, the breathing apparatus, the inner organs and the mind. During the entire training session a person is always to concentrate on the thought: 'I am completely relaxed.'

The basic idea of the training program, devised by Johannes Shultz in the 1930s, is that the body should follow the dictates of the mind. Autogenic training should also allow a person to become totally relaxed at any time. It is believed by its proponents that autogenic training does far more than this, however. According to Dr. Gisela Eberlein, who studied the technique under the guidance of the founder Shultz, "One learns to influence the organs and the organic system, that is to say, to quiet the palpitating heart and the nervous stomach. The circulatory system, for example, can be influenced to prevent blushing."

Firstly, it is widely known that relaxation and release of tension can have beneficial physical effects. Then there is the placebo effect. People who strongly

believe in certain types of remedy tend to get better. The power of positive suggestion is also an influence.

There are, however, certain cautions to consider. It is strongly advised that training only take place under the guidance of a qualified instructor. If not properly handled the techniques could be dangerous. Emotional problems could result from improper execution of the techniques. There is also the danger that a person may see autogenic training as a cure-all and neglect needed medical attention. Autogenic training, in fact, has its roots in hypnotism. It has been described as a form of self-hypnotism.

CHAPTER 5. BALANCED DIET

Study questions.

1. Value of food for a person's health. Features of food at the present stage.

2. Dietary supplements, its value.

3. Balanced diet.

4. Individual norms of food.

5. A person's food status, its estimation.

6. Modern concepts and food systems.

1. Value of food for a person's health. Features of food at the present stage.

A leading role among environmental factors influencing health belongs to food.

Functions of food

1. Growth and Repair

Foods provide the raw materials for the growth of the body (from the birth weight and height of about 2.8 Kg. and 48 cm to the adult measurements of 55 Kg and 165 cm, respectively). Also they provide substance for the replacement of dead tissue (as cells constantly die and are replaced by new ones).

Foods that principally serve this function are called the body building foods. These are the ones that are rich in high-class proteins such as milk, egg, meat, fish, etc.

2. Regulation of Vital Processes. Following are some of the functions for which foods are required:

- The synthesis of hormones (such as insulin and thyroxin), pigments (haemoglobin, rhodopsin), enzymes (carboxylase, cytochrome oxidase, coenzyme A), biological lubricants (saliva, synovial fluid), plasma proteins and mucopolysaccharides.
- The coagulation of blood.
- The contraction of muscles including cardiac muscle.
- The transport of oxygen in the blood.
- The regulation of heart beats.
- The maintenance of the osmotic pressure.
- The stimulation of the intestinal motility.

3. Supply of Energy. Energy is needed by the human body for the following purposes:

- Regulation of temperature of the body;
- Elimination of the products of excretion;
- Absorption and digestion of foods;
- Physical activities;
- The beating of heart and the contraction of the respiratory muscles.

Some foodstuff possesses pharmacological activity and food intake is necessary for an active influence on a human body. On the other hand, the food sometimes can be a risk factor, the reason of occurrence of the alimentary diseases, infectious illnesses, and food poisonings.

Features of modern food:

- thermal processing of food;
- clearing of food substances;
- mixture of animal and vegetative food;
- presence of spices and artificial additives in food.

Features of thermally processed food:

- food structure is broken;
- proteins, vitamins and enzymes are destroyed;
- mineral substances are washed away;
- bactericidal and anti-inflammatory properties of food are lost;
- contains few vegetative bioregulators that results in breaking of neurochemical mechanisms of saturation and in overeating;
- provokes reproduction of pathogenic microflora in intestine, reduction of intestine peristalsis, delay of feces passage that leads to constipation, colitis, polyps, cancer and other diseases.

Consequences of refined products usage:

- fall of thyroid gland and adrenal glands functions;
- disease of metabolism;
- cardiovascular, digestive, nervous diseases;
- overconsumption of the cleared sugar leads to asthenia, depressions, obesity;
- surplus of sugar causes rotting of proteins, fermentation of carbohydrates, flora suppression in intestines;
- destruction of dentine, caries and other stomatologic pathology;
- consequences of the mixed food;
- long stay of carbohydrates in a stomach leads to fermentation and rotting under the influence of the microorganisms which have arrived with food;
- formed harmful substances are soaked up in blood and complicate liver function and secretory function of kidneys;
- insufficiently digested proteins promote uric acid and urea increase in blood that leads to development of various pathological processes;
- changed digestion leads to infringement of intestinal flora, activation fermentation and rotting in intestines, to phenol, indol and other toxic substances occurrence.

Food adulterants. Food adulterants are of two kinds:

(a) worthless, inferior substances that are added to foods by unscrupulous users and (b) the prohibited additives. Some examples of adulterants and the foods to which they are added follow:

Worthless substances: Stone chips and chaff are added to cereals. Chalk powder is added to milk. Blotting paper is mixed with ice cream. Used tea leaf is combined with fresh tea leaf.

Inferior matter mixed with superior one and sold as wholly superior food: Discoloured and fungus-spoiled rice with healthy rice; vanaspathi with ghee; jaggery solution with honey; and crude oil with edible oil.

Spurious matter passed off as genuine food: Tamarind seeds are sold as coffee beans. Papaya seeds are sold as black pepper. Prohibited additives: Lead chromate, metanil yellow, ferric sulfate, and copper carbonate.

Food adulteration: Legally food adulteration is much broader in scope than the addition of worthless, spurious, and inferior substances or of prohibited additives. Apart from addition it includes the following:

1. *Dilution.* Addition of water to milk is adulteration.
2. *Abstraction.* Removal of cream from milk is an example of adulteration by abstraction.
3. *Substitution.* An example is the substitution of starch for fat in diluted milk in order to increase its specific gravity.
4. *Mislabeling.* Affixing the label of 'pure coffee' on the bottle filled with a mixture of coffee and chicory is adulteration.
5. *Putting up for sale stale food as fresh one.* The selling of old meat brightened with red dye as fresh meat constitutes the offense of adulteration.

Selling of prohibited item: Selling of non-iodized salt in adulteration.

Following are the hazards of food adulteration: Epidemic dropsy, poisoning from lead chromate, dyes, trycresyn phosphate, etc., gastritis (from the ingestion of coppci bicarbonate), and testicular damage (from metanil yellow).

For preventing adulteration an Act called the Prevention of Food Adulteration Act was passed in 1954. Standards for different foods have been laid down in this Act. Food inspectors employed by local authorities visit shops, take samples of suspected foods and send them for analysis.

2. Nutraceuticals, its value.

Nutraceuticals is a broad umbrella term used to describe any product derived from food sources that provides extra health benefits in addition to the basic nutritional value found in foods. Products typically claim to prevent chronic diseases, improve health, delay the aging process, and increase life expectancy.

Classification of nutraceuticals:

1. Dietary supplements.
2. Functional foods.
3. Medical foods.
4. Farmaceuticals.

A **dietary supplement** is a product that contains nutrients derived from food products that are concentrated in liquid or capsule form. The Dietary Supplement Health and Education Act (DSHEA) of 1994 defined generally what constitutes a dietary supplement. "A dietary supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. The "dietary ingredients" in these products may include: vitamins, minerals, herbs or other botanicals, amino acids, and substances such as enzymes, organ tissues, glandulars, and metabolites. Dietary supplements can also be extracts or concentrates, and may be found in many forms such as tablets, capsules, softgels, gencaps, liquids, or powders."

Functional foods are designed to allow consumers to eat enriched foods close to their natural state, rather than by taking dietary supplements manufactured in liquid or capsule form. Functional foods have been either enriched or fortified, a process called nutrification. This practice restores the nutrient content in a food back to similar levels from before the food was processed. Sometimes, additional complementary nutrients are added, such as vitamin D to milk.

All functional foods must meet three established requirements:

- a) foods should be present in their naturally-occurring form, rather than a capsule, tablet, or powder;
- b) consumed in the diet as often as daily;
- c) should regulate a biological process in hopes of preventing or controlling disease.

Medical foods aren't available as an over-the-counter product to consumers. The Food Supplements Directive (FDA) considers medical foods to be "formulated to be consumed or administered internally under the supervision of a physician, and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, on the basis of recognized scientific principles, are established by medical evaluation."

Medical foods can be ingested through the mouth or through tube feeding. These foods are often designed to meet certain nutritional requirements for people diagnosed with specific illnesses. Medical foods are closely monitored by medical supervision.

Farmaceuticals - compounds produced from modified agricultural crops or animals (usually through biotechnology).

The FDA of 2002 requires that **dietary supplements** be demonstrated to be safe, both in quantity and quality. By definition, vitamins and minerals are essential, i.e. the body cannot make them, so they must be obtained exogenously or from the diet, but excessive intakes can be harmful, notably Vitamin A. Consequently, only those supplements that have been proven to be safe may be sold without prescription. As a category of food, food supplements cannot be labeled with drug claims in the bloc but can bear health claims and nutrition claims

Russian legislation, Ministry of Health's order number 117 dated as of 15 April 1997, under the title "Concerning the procedure for the examination and health certification of Biologically Active Dietary Supplements" (BADs), provides the usage of the following terminology:

As a rule, BADs are foodstuffs with clinically proven effectiveness. BADs are recommended not only for prophylactics, but can be included into a complex therapy for the prevention of pharmaceutical therapy's side effects and for the achievement of complete remission.

The development of BADs and their applications has been very fast moving. They were originally considered as dietary supplements for people who had heightened requirements for some normal dietary components (for example, sportsmen). Later, they were employed as preventive medicines against chronic diseases.

In the United States, a dietary supplement is defined under the Dietary Supplement Health and Education Act of 1994 (DSHEA) as a product that is intended to supplement the diet and contains any of the following dietary ingredients:

- a vitamin;
- a mineral;
- an herb or other botanical (excluding tobacco);
- an amino acid;
- a concentrate, metabolite, constituent, extract, or combination of any of the above.

Furthermore, it must also conform to the following criteria:

- intended for ingestion in pill, capsule, tablet, powder or liquid form;
- not represented for use as a conventional food or as the sole item of a meal or diet;
- labeled as a "dietary supplement".

Pursuant to the DSHEA, the FDA regulates dietary supplements as foods, and not as drugs. While pharmaceutical companies are required to obtain FDA approval proving the safety or effectiveness of their products prior to their entry into the market, dietary supplements, like food, do not need to be pre-approved by FDA before they can enter the market.

Manufacturers are permitted to make claims about the product's structure and function (e.g., good for urinary tract health) but cannot make or imply claims for the product as a drug or therapy. Dietary supplements are the most commonly used of all complementary and alternative therapies, primarily because they are widely available and can be bought without consulting a professional health practitioner. Most patients who use dietary supplements assume that they are good for health generally, are safe and effective for treating specific conditions, or both, because such supplements are natural (i.e., derived from plants or animals) and because some are supported by centuries of use in traditional systems of medicine. Many physicians incorporate some supplement

use into their practice; their reasons include proven benefit of the supplement, a desire to ensure that supplements are used safely by patients who will use supplements anyway, and the physician's belief that the supplements are safe and effective. There are few data to guide patient counseling regarding supplement safety. But some experts believe that the overall number of problems due to dietary supplements are rare compared with the overall number of doses taken and that the product, if correctly manufactured, is likely to be safe. As a result, these experts advise purchase of supplements from a well-known manufacturer, and many recommend buying supplements made in Germany because there they are regulated as drugs and thus oversight is stricter than in the US.

Actions of nutraceuticals:

- increase physical and intellectual working capacity;
- protect against stresses and harmful factors of environment;
- slow down ageing;
- prolong active longevity;
- change metabolism;
- fill shortage of food substances;
- raise nonspecific resistance of an organism;
- render immunomodulating action;
- remove xenobiotics.

The following supplements are ones that are most popular, are effective, or have some questions about their safety: chamomile, chondroitin sulfate, chromium picolinate, coenzyme q10, creatine, echinacea, feverfew, fish oil, garlic, ginger, ginkgo, glucosamine sulfate, milk thistle, saw palmetto, valerian, zinc, etc.

3. Balanced diet.

A balanced diet means getting the right types and amounts of foods and drinks to supply nutrition and energy for maintaining body cells, tissues, and organs, and for supporting normal growth and development.

The World Health Organization makes the following 5 recommendations with respect to both populations and individuals:

- Achieve an energy balance and a healthy weight;
- Limit energy intake from total fats and shift fat consumption away from saturated fats to unsaturated fats and towards the elimination of trans-fatty acids;
- Increase consumption of fruits and vegetables, legumes, whole grains and nuts;
- Limit the intake of simple sugar;
- Limit salt / sodium consumption from all sources and ensure that salt is iodized;

Other recommendations include:

- Sufficient essential amino acids ("complete protein") to provide cellular replenishment and transport proteins. All essential amino acids are present in animals. A select few plants (such as soy and hemp) give all the essential acids. A combination of other plants may also provide all essential amino acids. Fruits such as avocado and pumpkin seeds also have all the essential amino acids.
- Essential micronutrients such as vitamins and certain minerals.
- Avoiding directly poisonous (e.g. heavy metals) and carcinogenic (e.g. benzene) substances;
- Avoiding foods contaminated by human pathogens (e.g. E. coli, tapeworm eggs).

4. Individual norms of food.

A food for each person should contain individual set of food substances, frequency of food intake, to consider genotypic features, and so on.

For **asthenic** person it is recommended to use more high-calorie grain, sweet berries and fruits, thermally processed vegetables, vegetative and animal fats, poultry, fish, sour-milk products.

For **hypersthenic** person mainly easy food is recommended: groats, vegetable oils, fruit and vegetables with high content of cellulose, bean, spices, poultry.

Intermediate characteristics of food are recommended for **normosthenic** person.

At the organization of an individual food are considered time and frequency of food intake high level of health, and also invariable optimum body weight should be the basic indicator of a food.

Water (to 1-1.5 dm³/day) should be present at a diet necessarily. It is recommended to use room temperature water before meal.

60-80 % of a diet should belong to vegetative, mainly crude products: vegetables, fruit, greens, sprouted grains, soaked groats, and porridge. Passing in intestines, vegetative products stimulate peristalsis, adsorb harmful substances, are exposed to influence of intestinal microflora with formation of some vitamins, amino acids.

Meat is characterized by high food and biological value, and low biological efficiency. It is acquired on 92-97 %, creates long feeling of saturation and satisfaction of meal. *Fish* has high food, biological value and biological efficiency, average power value. *Eggs* and milk are characterized by high food and biological value, biological efficiency, average power value.

5. A person's nutritional status, its estimation.

The nutritional status - is a certain state of health which has developed under the influence of a previous actual food.

The **optimum** status is characterized by high level of health and presence of the adaptable reserves providing existence and work in extreme situations.

The **usual** nutritional status is observed at the majority of people with a balanced diet which health is characterized by absence of functional and structural changes and sufficient level of adaptation to usual conditions.

The usual *compensated* status meets at functional changes of a homeostasis.

The usual *subcompensated* status is formed at considerable reduction of adaptable reserves,

The **superfluous** nutritional status is observed at people with the raised body weight.

Superfluous *premorbid* nutritional status is formed at people with excess of body weight on 30-49 %.

Superfluous *morbid* status develops at surplus body weight on 50 % and more, presence of functional and structural infringements, an atherosclerosis, a diabetes, hypertensive and other illnesses.

The **insufficient** status of a food takes place at power insufficiency of a food against decrease in adaptable reserves, working capacity and health level.

The insufficient *defective* status of food is formed at deficiency of body weight on 9 %, insignificant decrease in adaptable reserves and preservation of the basic indicators of a homeostasis.

Insufficient *premorbid* nutritional status takes place at reduction of body weight by 9-10 % against considerable decrease in adaptable reserves of an organism, deterioration of state of health and indicators of a physical condition.

Insufficient *morbid* status of food is diagnosed at deficiency of body weight more than 10 %, and at presence of oligotrophy clinical symptoms.

The most simple method of studying of an individual food is the menu-apportion. The estimation of an individual food is carried out on the basis of energy expenses an organism. The size of the basic exchange can be calculated approximately: it is necessary for each person 1 kcal on 1 kg of weight of a body in 1 hour. Thus, the basic exchange of a man 80 kg for day will be equal:

$$1 \text{ kcal} \times 80 \text{ kg} \times 24 \text{ hours} = 1920 \text{ kcal.}$$

6. Modern concepts and food systems.

Last decades there were many original concepts of food which are not entered in frameworks of traditional representations.

There are a number of types of **vegetarianism**, which exclude or include various foods:

- Lacto-ovo vegetarianism includes animal products such as eggs, milk, and honey;
- Lacto vegetarianism includes milk but not eggs;
- Ovo vegetarianism includes eggs but not milk;

- Veganism forbids all animal flesh and animal products. Vegans do not consume milk, honey, eggs, or any product of animal labor;
- Raw veganism includes only fresh and uncooked fruit, nuts, seeds, and vegetables;
- Fruitarianism permits only fruit, nuts, seeds, and other plant matter that can be gathered without harming the plant;
- Su vegetarianism (such as in Buddhism), excludes all animal products as well as vegetables in the allium family (which have the characteristic aroma of onion and garlic): onion, garlic, scallions, leeks, or shallots.

Strict vegetarians also avoid products that may use animal ingredients not included in their labels or which use animal products in their manufacturing e.g. cheeses that use animal rennet (enzymes from animal stomach lining), gelatin (from animal skin, bones, and connective tissue), some sugars that are whitened with bone char (e.g. cane sugar, but not beet sugar) and alcohol clarified with gelatin or crushed shellfish and sturgeon.

Vegetarianism may be adopted for ethical, health, environmental, religious, political, cultural, aesthetic, economic, or other reasons.

Semi-vegetarian diets consist largely of vegetarian foods, but may include fish and sometimes poultry, as well as dairy products and eggs. With these diets, the word "meat" is often defined as only mammalian flesh. A pescetarian diet, for example, includes "fish but no meat".

Vegetarianism is considered a healthy, viable diet. The American Dietetic Association and the Dietitians of Canada have found a properly planned vegetarian diet to satisfy the nutritional needs for all stages of life, and large-scale studies have shown that "Mortality from ischemic heart disease was 24% lower in vegetarians than in nonvegetarians". Necessary nutrients, proteins, and amino acids for the body's sustenance can be found in vegetables, grains, nuts, soymilk, eggs and dairy.

Vegetarian diets can aid in keeping body weight under control, may provide health benefits in the prevention and treatment of certain diseases and substantially reduce risks of heart disease and osteoporosis. Vegetarians tend to have lower body mass index, lower levels of cholesterol, lower blood pressure, and less incidence of heart disease, hypertension, type 2 diabetes, renal disease, osteoporosis, dementias such as Alzheimer's Disease and other disorders.

Vegans can have particularly low intake of vitamin B and calcium if they do not eat enough items such as collard greens, leafy greens, tempeh and tofu (soy). High levels of dietary fibre, folic acid, vitamins C and E, and magnesium, and low consumption of saturated fat are all considered to be beneficial aspects of a vegetarian diet.

Protein intake in vegetarian diets is only slightly lower than in meat diets and can meet daily requirements for any person, including athletes and bodybuilders.

Vegetarian diets typically contain similar levels of iron to non-vegetarian diets, but this has lower bioavailability than iron from meat sources, and its absorption can sometimes be inhibited by other dietary constituents. Vegetarian foods rich in iron include black beans, cashews, hempseed, kidney beans, lentils, oatmeal, raisins, black-eyed peas, soybeans, many breakfast cereals, sunflower seeds, chickpeas, tomato juice, tempeh, molasses, thyme, and whole-wheat bread.

However the strict vegetarians (vegans) completely denying products of an animal origin, receive food, scarce, first of all concerning proteins, the nonsaturated fat acids, some vitamins, that in due course can lead to a dysbacteriosis, hypovitaminosis and albuminous insufficiency.

Fruitarianism. Commonly the term "fruit" is used when referring to plant fruits that are sweet, fleshy and contain seeds within the plant fruit (for example, plums, apples, and oranges). However, there are other foods that are not typically considered to be fruits in a culinary sense but are botanically, such as berries, bell peppers, tomatoes, cucumbers, nuts and grains.

Some fruitarians will eat only what falls (or would fall) naturally from a plant; that is: foods that can be harvested without killing the plant. These foods consist primarily of culinary fruits, nuts, and seeds.

Some fruitarians believe fruitarianism was the original diet of humankind in the form of Adam and Eve. Some fruitarians say that eating some types of fruit does the parent plant a favor and that fleshy fruit has evolved to be eaten by animals, to achieve seed dispersal.

As a very extreme vegan diet, fruitarianism is highly restrictive, making nutritional adequacy almost impossible. Fruitarian diet can cause deficiencies in calcium, protein, iron, zinc, vitamin D, most B vitamins (especially B12), and essential fatty acids. Additionally, the Health Promotion Program at Columbia reports that food restrictions in general may lead to hunger,

Lack of protein in fleshy fruit can make the lifestyle difficult to sustain, and can lead to the condition of hypoproteinemia or kwashiorkor. Nuts (if included) are a good source of protein.

Raw foodism (or rawism) is a lifestyle promoting the consumption of uncooked, un-processed, and often organic foods as a large percentage of the diet. Raw foodists typically believe that the greater the percentage of raw food in the diet, the greater the health benefits. Raw foodism or a raw diet is usually equated with raw veganism in which only raw plant foods are eaten, but other raw foodists emphasize raw meat and other raw animal products. Depending on the type of lifestyle and results desired, raw food diets may include a selection of raw fruits, vegetables, nuts, seeds (including sprouted whole grains such as gaba rice), eggs, fish (such as sashimi), meat (such as carpaccio), and non-pasteurized/non-homogenized dairy products (such as raw milk, raw milk cheese, and raw milk yogurt). Raw foodists can be divided between those that

advocate raw vegetarianism or raw veganism, and those that advocate a raw omnivorous diet.

Common beliefs held by raw foodists:

- Raw foodists believe that digestive enzymes (such as amylases, proteases, and lipases) aid digestion. Heating food above 104-120 degrees Fahrenheit degrades or destroys these enzymes in food. However, food enzymes are proteins that are mostly denatured in the stomach, and 90% of nutrients are absorbed in the small intestine, after these enzymes have been destroyed.

- Raw foods include bacteria and other micro-organisms that affect the immune system and digestion by populating the digestive tract with beneficial gut flora. These are generally killed by cooking. In addition, many Raw-Foodists, particularly Primal-Dieters, are believers in the hygiene hypothesis, a concept which focuses on the health benefits of exposure to parasites and harmful bacteria which builds natural resistance.

- Raw foods have higher nutrient values than foods which have been cooked. In addition, raw foodists believe processed food and convenience food often contain *excitotoxins* (flavor enhancers) which can cause excitotoxicity. Foods with added chemicals, preservatives, additives, colouring agents/dyes of any kind are frowned upon by raw-foodists.

- Wild foods (particularly edible wild plants) followed by organic whole foods are more nutritious than conventionally domesticated foods or industrially produced foods.

- Cooked foods contain harmful toxins which cause chronic disease and other problems. Heating oils and fats can produce trace amounts of trans fats. Heating sugars with proteins or fats can produce advanced glycation end products.

- Raw foods like fruits and vegetables are high in antioxidants and Raw Foodists believe they can help to stifle signs of aging.

- Eating cooked foods can lead to acidosis.

- Raw Foodists believe that opioid peptides, present in cooked foods, are harmful and highly addictive.

Raw foodism can include any diet of primarily unheated food, or food warmed to a temperature less than 40 °C (104 °F) to 46 °C (115 °F). The most popular raw food diet is a raw vegan diet, but other forms include animal products and/or meat.

Raw veganism

A raw vegan diet consists of unprocessed, raw plant foods that have not been heated above 46 °C (115 °F). “Raw foodists” believe that foods cooked above this temperature have lost much of their nutritional value and are less healthy or even harmful to the body. Typical foods include fruit, vegetables, nuts, seeds and sprouted grains and legumes.

Some raw vegans can be subdivided into fruitarians, juicearians, or sproutarians. Fruitarians eat primarily or exclusively fruits and nuts. Juicearians

process their raw plant foods into juice. Sproutarians adhere to a diet consisting mainly of sprouted seeds.

Raw vegetarianism

Raw Vegetarianism is a diet that excludes meat, (including game and slaughter by-products like gelatin), fish (including shellfish and other sea animals) and poultry, but allows dairy and eggs. Common foods include fruit, vegetables, sprouts, nuts, seeds, grains, legumes, dairy, eggs and honey. There are several variants of this diet.

Raw animal food diets

Included in raw animal food diets are any food that can be eaten raw, such as uncooked, unprocessed meats/offal/eggs, raw dairy, and aged, raw animal foods such as century eggs, rotting (fermenting) meat/fish/shellfish/kefir, as well as, to a much higher extent, vegetables/fruits/nuts/sprouts, but generally not raw grains, raw beans, raw soy, etc., because of digestibility and toxicity issues and also because paleolists tend to reject Neolithic or domesticated foods. Raw foods on such diets have not been heated at temperatures above 104 °F (40 °C). "Raw Animal Foodists" believe that foods cooked above this temperature have lost much of their nutritional value and are harmful to the body. Smoked meats are frowned upon by many Raw-Omnivores. Some make a distinction between hot-smoked and cold-smoked.

Fasting is primarily the act of willingly abstaining from some or all food, drink, or both, for a period of time. A fast may be total or partial concerning that from which one fasts, and may be prolonged or intermittent as to the period of fasting. Fasting practices may preclude sexual activity as well as food, in addition to refraining from eating certain types or groups of foods; for example, one might refrain from eating meat. A complete fast in its traditional definition is abstinence of all food and liquids.

There are several religions in the world that propose fasting: Buddhism, Christianity, Anglicanism, Hinduism, Islam, Jainism, Sikhism.

Benefits include reduced risks of cancer, cardiovascular diseases, diabetes, insulin resistance, immune disorders, and more generally, the slowing of the aging process, and the potential to increase maximum life span stress resistance, increased insulin sensitivity, reduced morbidity, and increased life span.

Fasting leads to lowered blood sugar and blood pressure which can lead to dizziness and blackouts. People who had low blood pressure before the fast can have these problems even on a one-day fast. For most, these problems begin five or more days into a water fast. One way to avoid blackouts is to breathe deeply before standing up, and rise slowly.

Medical application

In a medical context fasting may refer to (1) the metabolic status of a person who has not eaten overnight, and (2) to the metabolic state achieved after complete digestion and absorption of a meal. Several metabolic adjustments

occur during fasting, and many medical diagnostic tests are standardized for fasting conditions. For most ordinary diagnostic purposes a person is assumed to be fasting after 8–12 hours. Many of the metabolic shifts of fasting begin as absorption of a meal is complete (typically 3–5 hours after a meal); "post-absorptive state" is synonymous with this usage, in contrast to the "post-prandial" state of ongoing digestion. A diagnostic fast refers to prolonged fasting (from 8–72 hours depending on age) conducted under medical observation for investigation of a problem, usually hypoglycemia. Finally, extended fasting has been recommended as therapy for various conditions by physicians of most cultures, throughout history, from ancient to modern.

Fasting is often indicated prior to surgery or other procedures that require anesthetics. Because the presence of food in a person's system can cause complications during anesthesia, medical personnel strongly suggest that their patients fast for several hours (or overnight) before the procedure. Additionally, certain medical tests, such as cholesterol testing (lipid panel) or certain blood glucose measurements require fasting for several hours so that a baseline can be established. In the case of cholesterol, the failure to fast for a full 12 hours (including vitamins) will guarantee an elevated triglyceride measurement.

Alternate-day calorie restriction may prolong lifespan and attenuate diseases associated with inflammation, oxidative stress and aging.

Fasting can be dangerous when the body is not able to perform gluconeogenesis. If the body is not in ketosis, then the brain and vital organs (which can burn either glucose or ketones) need 800 calories a day to have ample glucose. If less than 800 calories a day are consumed, the brain and vital organs are deprived of necessary glucose, causing damage and in some cases, death. Ideally these diets should be supervised by health care practitioners with who are experienced with therapeutic fasts. Thus, fasting is only safe when the body enters and remains in ketosis during the fast.

The method of medical starvation is used in treatment of cardiovascular, gastroenteric, allergic diseases, a pathology of breath organs, adiposity, of some mental frustration.

CHAPTER 6. REPRODUCTIVE HEALTH STRENGTHENING

Study questions.

1. *Reproductive health, its value.*
2. *Puberty, adolescent sexuality and sexual education.*
3. *Family planning, contraceptive security, abortion.*
4. *Sexually transmitted infections.*
5. *AIDS and HIV infection: symptoms and prevention.*
6. *Breastfeeding value.*

1. Reproductive health, its value.

Reproductive health, as defined by the World Health Organization, is a state of physical, mental, and social well-being in all matters relating to the reproductive system at all stages of life. Reproductive health implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when, and how often to do so. Implicit in this definition are the rights of men and women to be informed and to have access to safe, effective, affordable, and acceptable methods of family planning of their choice, and the right to appropriate health-care services that enable women to safely go through pregnancy and childbirth.

Reproductive health care is the constellation of information and services designed to help individuals attain and maintain the state of reproductive health by preventing and solving reproductive health problems. Reproductive health care includes a variety of prevention, wellness and family planning services as well as diagnosis and treatment of reproductive health concerns.

Positive reproductive health means that individuals can manage their own sexuality and have unrestricted access to the full range of reproductive health care options. Implicit in this understanding of reproductive health is the right of all women and men to be informed, to have access to safe, effective, affordable, and acceptable methods of family planning of their choice, and to have access to appropriate health care services that enable women to safely go through pregnancy and childbirth.

Reproductive health is a critical component of women's general health. Reproductive health care is a prerequisite for women's social, economic and human development. When women lack access to safe, comprehensive reproductive health care, the consequences can be damaging.

In the International Conference on Population and Development (ICPD) September 1994, 'Reproductive health' is defined as:

“a state of complete physical, mental and social well-being and...not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when

and how often to do so. Implicit in this last condition are the right of men and women to be informed and to have access to safe, effective, affordable and acceptable methods of family planning of their choice, as well as other methods for regulation of fertility which are not against the law, and the right of access to appropriate health-care services that will enable women to go safely through pregnancy and childbirth and provide couples with the best chance of having a healthy infant.”

The Program of Action endorses a new strategy which emphasizes the numerous linkages between population and development and focuses on meeting the needs of individual women and men rather than on achieving demographic targets. The ICPD achieved consensus on four qualitative and quantitative goals for the international community, the final two of which have particular relevance for reproductive health:

- Reduction of maternal mortality.
- Access to reproductive and sexual health services including family planning.

2. Puberty, adolescent sexuality and sexual education.

In humans, **puberty** is the process of physical changes by which a child's body becomes an adult body capable of reproduction. Puberty is initiated by hormone signals from the brain to the gonads (the ovaries and testes). In response, the gonads produce a variety of hormones that stimulate the growth, function, or transformation of brain, bones, muscle, skin, breasts, and reproductive organs. Growth accelerates in the first half of puberty and stops at the completion of puberty. Before puberty, body differences between boys and girls are almost entirely restricted to the genitalia. During puberty, major differences of size, shape, composition, and function develop in many body structures and systems. The most obvious of these are referred to as secondary sex characteristics.

Difference between male and female puberty

Two of the most significant differences between puberty in girls and puberty in boys are the age at which it begins, and the major sex steroids involved.

Although there is a wide range of normal ages, girls typically begin the process of puberty at age 10, boys at age 12. Girls usually complete puberty by ages 15–17, while boys usually complete puberty by ages 17 or 18. Any increase in height beyond these ages is uncommon. Girls attain reproductive maturity about 4 years after the first physical changes of puberty appear. In contrast, boys accelerate more slowly but continue to grow for about 6 years after the first visible pubertal changes.

For boys, an androgen called testosterone is the principal sex hormone. While testosterone produces all boys' changes characterized as virilization, a substantial product of testosterone metabolism in males is estradiol, though

levels rise later and more slowly than in girls. The male "growth spurt" also begins later, accelerates more slowly, and lasts longer before the epiphyses fuse. Although boys are on average 2 cm shorter than girls before puberty begins, adult men are on average about 13 cm (5.2 inches) taller than women. Most of this sex difference in adult heights is attributable to a later onset of the growth spurt and a slower progression to completion, a direct result of the later rise and lower adult male levels of estradiol.

The hormone that dominates female development is an estrogen called estradiol. While estradiol promotes growth of breasts and uterus, it is also the principal hormone driving the pubertal growth spurt and epiphyseal maturation and closure. Estradiol levels rise earlier and reach higher levels in women than in men.

The onset of puberty is associated with high Gonadotropin-releasing hormone pulsing, which precedes the rise in sex hormones, Luteinizing Hormone and Follicle Stimulating Hormone. Exogenous GnRH pulses cause the onset of puberty.

The age at which puberty begins varies between individuals usually, puberty begins between 10-13. The age at which puberty begins is affected by both genetic factors and by environmental factors such as nutritional state and social circumstances.

In a general sense, the conclusion of puberty is reproductive maturity. Criteria for defining the conclusion may differ for different purposes: attainment of the ability to reproduce, achievement of maximal adult height, maximal gonadal size, or adult sex hormone levels. Maximal adult height is achieved at an average age of 15 years for an average girl and 18 years for an average boy. Potential fertility (sometimes termed nubility) usually precedes completion of growth by 1–2 years in girls and 3–4 years in boys.

Adolescent sexuality refers to sexual feelings, behavior and development in adolescents and is a stage of human sexuality. Sexuality is often a vital aspect of teenagers' lives. The sexual behavior of adolescents is, in most cases, influenced by their culture's norms and mores, their sexual orientation, and the issues of social control such as age of consent laws.

In humans, mature sexual desire usually begins to appear with the onset of puberty. Sexual activity in general is associated with a number of risks, including sexually transmitted diseases (including HIV/AIDS) and unwanted pregnancy.

Sex education is a broad term used to describe education about human sexual anatomy, sexual reproduction, sexual intercourse, human sexual behavior, and other aspects of sexuality, such as body image, sexual orientation, dating, and relationships. Common avenues for sex education are parents, caregivers, friends, school programs, religious groups, popular media, and public health campaigns.

Sexual education in different countries vary. A survey by the World Health Organization concerning the habits of European teenagers in 2006 revealed that German teenagers care about contraception.

According to, the Sexuality Information and Education Council of the United States (SIECUS), in most families, parents are the primary sex educators of their adolescents. They found 93% of adults they surveyed support sexuality education in high school and 84% support it in junior high school. In fact, 88% of parents of junior high school students and 80% of parents of high school students believe that sex education in school makes it easier for them to talk to their adolescents about sex. Also, 92% of adolescents report that they want both to talk to their parents about sex and to have comprehensive in-school sex education.

3. Family planning, contraceptive security, abortion.

Maternal health care is a concept that encompasses family planning, preconception, prenatal, and postnatal care. Goals of preconception care include providing education, health promotion, screening and interventions for women of reproductive age to reduce risk factors that might affect future pregnancies. Prenatal care is the comprehensive care that women receive and provide for themselves throughout their pregnancy. Women who begin prenatal care early in their pregnancies have better birth outcomes than women who receive little or no care during their pregnancies. Postnatal care issues include recovery from childbirth, concerns about newborn care, nutrition, breastfeeding, and family planning.

Family planning is the planning of when to have children, and the use of birth control and other techniques to implement such plans. Other techniques commonly used include sexuality education, prevention and management of sexually transmitted infections, pre-conception counseling and management, and infertility management.

Family planning services are defined as "educational, comprehensive medical or social activities which enable individuals, including minors, to determine freely the number and spacing of their children and to select the means by which this may be achieved."

Raising a child requires significant amounts of resources: time, social, financial, environmental. Planning can help assure that resources are available.

Contraceptive security is a situation in which people are able to reliably choose, obtain, and use quality contraceptives for family planning and sexually transmitted disease (including HIV and AIDS) prevention when they want them.

Birth control is a regimen of one or more actions, devices, sexual practices, or medications followed in order to deliberately prevent or reduce the likelihood of pregnancy or childbirth. There are three main routes to preventing or ending pregnancy before birth:

- the prevention of fertilization of the ovum by sperm cells ("contraception");
- the prevention of implantation of the blastocyst ("conragestation");
- the chemical or surgical induction or abortion of the developing embryo or, later, fetus.

In common usage, term "contraception" is often used for both contraception and conragestation.

Physical methods may work in a variety of ways, among them: physically preventing sperm from entering the female reproductive tract; hormonally preventing ovulation from occurring; making the woman's reproductive tract inhospitable to sperm; or surgically altering the male or female reproductive tract to induce sterility. Some methods use more than one mechanism. Physical methods vary in simplicity, convenience and efficacy.

Barrier methods place a physical impediment to the movement of sperm into the female reproductive tract.

The most popular barrier method is the male condom, a latex or polyurethane sheath placed over the penis. The condom is also available in a female version, which is made of polyurethane. The female condom has a flexible ring at each end — one secures behind the pubic bone to hold the condom in place, while the other ring stays outside the vagina.

Cervical barriers are devices that are contained completely within the vagina. The contraceptive sponge has a depression to hold it in place over the cervix. The cervical cap is the smallest cervical barrier.

Spermicide may be placed in the vagina before intercourse and creates a chemical barrier. Spermicide may be used alone, or in combination with a physical barrier.

Hormonal methods. There are various delivery methods for hormonal contraception. Forms of synthetic oestrogens and progestins (synthetic progestogens) combinations commonly used include the combined oral contraceptive pill ("The Pill"), the Patch, and the contraceptive vaginal ring ("NuvaRing").

Other methods contain only a progestin (a synthetic progestogen). These include the progesterone only pill (the POP or 'minipill'), the injectables Depo Provera (a depot formulation of medroxyprogesterone acetate given as an intramuscular injection every three months) and Noristerat (Norethindrone acetate given as an intramuscular injection every 8 weeks), and contraceptive implants. The progestin-only pill must be taken at more precisely remembered times each day than combined pills. The various progestin-only methods may cause irregular bleeding during use.

Emergency contraception. Some combined pills and POPs may be taken in high doses to prevent pregnancy after a birth control failure (such as a condom breaking) or after unprotected sex. Hormonal emergency contraception

is also known as the "morning after pill," although it is licensed for use up to three days after intercourse.

Copper intrauterine devices may also be used as emergency contraception. For this use, they must be inserted within five days of the birth control failure or unprotected intercourse.

Emergency contraception appears to work by suppressing ovulation. However, because it might prevent a fertilized egg from implanting, some people consider it a form of abortion.

Intrauterine methods. These are contraceptive devices which are placed inside the uterus. They are usually shaped like a "T" - the arms of the T help hold the device in place. There are two main types of intrauterine contraceptives: those that contain copper (which has a spermicidal effect), and those that release a progestin (a synthetic progestogen).

Sterilization. Surgical sterilization is available in the form of tubal ligation for women and vasectomy for men. Sterilization should be considered permanent.

Behavioral methods involve regulating the timing or methods of intercourse to prevent the introduction of sperm into the female reproductive tract, either altogether or when an egg may be present.

Fertility awareness. Symptoms-based methods of fertility awareness involve a woman's observation and charting of her body's fertility signs, to determine the fertile and infertile phases of her cycle. If a woman tracks both basal body temperature and another primary sign, the method is referred to as symptothermal. Other bodily cues such as mittelschmerz are considered secondary indicators. During the most fertile period, barrier methods may be avoided, or she may abstain from intercourse.

Coitus interruptus (literally "interrupted sexual intercourse"), also known as the withdrawal method, is the practice of ending sexual intercourse ("pulling out") before ejaculation. The main risk of coitus interruptus is that the man may not perform the maneuver correctly, or may not perform the maneuver in a timely manner.

Lactational. Most breastfeeding women have a period of infertility after the birth of their child. The lactational amenorrhea method, or LAM, gives guidelines for determining the length of a woman's period of breastfeeding infertility.

The most inhumane way of childbirth prevention is **abortion**. It not only is heavy financially and ethically, but also has fatal consequences for reproductive and general health of women.

Spontaneous abortion

Spontaneous abortion (also known as miscarriage) is the expulsion of an embryo or fetus due to accidental trauma or natural causes before approximately the 22nd week of gestation; the definition by gestational age varies by country. Most miscarriages are due to incorrect replication of

chromosomes; they can also be caused by environmental factors. A pregnancy that ends before 37 weeks of gestation resulting in a live-born infant is known as a "premature birth". When a fetus dies in utero after about 22 weeks, or during delivery, it is usually termed "stillborn".

Induced abortion

A pregnancy can be intentionally aborted in many ways. The manner selected depends chiefly upon the gestational age of the embryo or fetus, which increases in size as it ages. Specific procedures may also be selected due to legality, regional availability, and doctor-patient preference. Reasons for procuring induced abortions are typically characterized as either therapeutic or elective. An abortion is medically referred to as therapeutic when it is performed to:

- save the life of the pregnant woman;
- preserve the woman's physical or mental health;
- terminate pregnancy that would result in a child born with a congenital disorder that would be fatal or associated with significant morbidity;
- selectively reduce the number of fetuses to lessen health risks associated with multiple pregnancy.

Abortion methods

"Medical abortions" are non-surgical abortions that use pharmaceutical drugs, and are only effective in the first trimester of pregnancy.

Surgical - In the first 12 weeks, suction-aspiration or vacuum abortion is the most common method. Dilation and curettage, the second most common method of abortion.

Health risks

Early-term surgical abortion is a simple procedure which is safer than childbirth when performed before the 21st week. Abortion methods, like most minimally invasive procedures, carry a small potential for serious complications. The risk of complications can increase depending on how far pregnancy has progressed.

The relationship between induced abortion and mental health is an area of controversy. No scientific research has demonstrated a direct causal relationship between abortion and poor mental health, though some studies have noted that there may be a statistical correlation. Pre-existing factors in a woman's life, such as emotional attachment to the pregnancy, lack of social support, pre-existing psychiatric illness, and conservative views on abortion increase the likelihood of experiencing negative feelings after an abortion.

Some proposed negative psychological effects of abortion have been referred to by pro-life advocates as a separate condition called "post-abortion syndrome." However, the existence of "post-abortion syndrome" is not recognized by any medical or psychological organization, and some physicians and pro-choice advocates have argued that the effort to popularize the idea of a

"post-abortion syndrome" is a tactic used by pro-life advocates for political purposes.

The abortion-breast cancer hypothesis posits that induced abortion increases the risk of developing breast cancer. In early pregnancy, levels of estrogen increase, leading to breast growth in preparation for lactation. The hypothesis proposes that if this process is interrupted by an abortion – before full maturity in the third trimester – then more relatively vulnerable immature cells could be left than there were prior to the pregnancy, resulting in a greater potential risk of breast cancer.

As we see, to prevent a birth of a child it is a lot of ways, but the main criterion for all remains invariable: it should be humane, harmless to health and are effective.

4. Sexually transmitted infections.

Sexually transmitted infections (STIs) are infections that are spread primarily through person-to-person sexual contact. There are more than 30 different sexually transmissible bacteria, viruses and parasites. Several, in particular HIV and syphilis, can also be transmitted from mother to child during pregnancy and childbirth, and through blood products and tissue transfer.

Some of the commonest sexually transmitted pathogens can be divided into those caused by bacteria, viruses and parasites.

1. Common bacterial infections:

a. *Neisseria gonorrhoeae* (causes gonorrhoea or gonococcal infection);

b. *Chlamydia trachomatis* (causes chlamydial infections);

c. *Treponema pallidum* (causes syphilis);

d. *Haemophilus ducreyi* (causes chancroid);

e. *Klebsiella granulomatis* (previously known as *Calymatobacterium granulomatis* causes granuloma inguinale or donovanosis).

2. Common viral infections:

a. Human immunodeficiency virus (causes AIDS);

b. Herpes simplex virus type 2 (causes genital herpes);

c. Human papillomavirus (causes genital warts and certain subtypes lead to cervical cancer in women);

d. Hepatitis B virus (causes hepatitis and chronic cases may lead to cancer of the liver);

e. Cytomegalovirus (causes inflammation in a number of organs including the brain, the eye, and the bowel).

3. Parasitic organisms:

a. *Trichomonas vaginalis* (causes vaginal trichomoniasis);

b. *Candida albicans* (causes vulvovaginitis in women; inflammation of the glans penis and foreskin (balano-posthitis in men).

According to 1999 WHO estimates, 340 million new cases of curable STIs (syphilis, gonorrhoea, chlamydia and trichomoniasis) occur annually throughout the world in adults aged 15-49 years.

In developing countries, STIs and their complications rank in the top five disease categories for which adults seek health care. Infection with STIs can lead to acute symptoms, chronic infection and serious delayed consequences such as infertility, ectopic pregnancy, cervical cancer and the untimely death of infants and adults.

STIs and prevention of serious complications in women

STIs are the main preventable cause of infertility, particularly in women. Between 10% and 40% of women with untreated chlamydial infection develop symptomatic pelvic inflammatory disease. Post-infection tubal damage is responsible for 30% to 40% of cases of female infertility. Furthermore, women who have had pelvic inflammatory disease are 6 to 10 times more likely to develop an ectopic (tubal) pregnancy than those who have not, and 40% to 50% of ectopic pregnancies can be attributed to previous pelvic inflammatory disease. Infection with certain types of the human papillomavirus can lead to the development of genital cancers, particularly cervical cancer in women.

Untreated sexually transmitted infections are associated with congenital and perinatal infections in neonates, particularly in the areas where rates of infection remain high.

In pregnant women with untreated early syphilis, 25% of pregnancies result in stillbirth and 14% in neonatal death – an overall perinatal mortality of about 40%. Syphilis prevalence in pregnant women in Africa, for example, ranges from 4% to 15%. Up to 35% of pregnancies among women with untreated gonococcal infection result in spontaneous abortions and premature deliveries, and up to 10% in perinatal deaths. In the absence of prophylaxis, 30% to 50% of infants born to mothers with untreated gonorrhoea and up to 30% of infants born to mothers with untreated chlamydial infection will develop a serious eye infection (ophthalmia neonatorum), which can lead to blindness if not treated early. It is estimated that, worldwide, between 1000 and 4000 newborn babies become blind every year because of this condition.

Prevention of STIs

The most effective means to avoid becoming infected with or transmitting a sexually transmitted infection is to abstain from sexual intercourse or to have sexual intercourse only within a long-term, mutually monogamous relationship with an uninfected partner. Male latex condoms, when used consistently and correctly, are highly effective in reducing the transmission of sexually transmitted infections, including gonorrhoea, chlamydial infection and trichomoniasis.

The main syndromes of common STIs are:

- Urethral discharge
- Genital ulcers

- Inguinal swellings (bubo, which is a swelling in the groin)
- Scrotal swelling
- Vaginal discharge
- Lower abdominal pain
- Neonatal eye infections (conjunctivitis of the newborn)

Some sexually transmitted infections often exist without symptoms. For example, up to 70% of women and a significant proportion of men with gonococcal and/or chlamydial infections may experience no symptoms at all. Both symptomatic and asymptomatic infections can lead to the development of serious complications, as outline above.

The global strategy for the prevention and control of STIs

The control of STIs remains a priority for WHO. The World Health Assembly endorsed the global strategy for the prevention and control of STIs in May 2006. The strategy urges all countries to control the transmission of STIs by implementing a number of interventions, including the following:

- Prevention by promoting safer sexual behaviours;
- General access to quality condoms at affordable prices;
- Promotion of early recourse to health services by people suffering from STIs and by their partners;
- Inclusion of STI treatment in basic health services;
- Specific services for populations with frequent or unplanned high-risk sexual behaviours - such as sex workers, adolescents, long-distance truck-drivers, military personnel, substance users and prisoners;
- Proper treatment of STIs, i.e. use of correct and effective medicines, treatment of sexual partners, education and advice;
- Screening of clinically asymptomatic patients, where feasible; (e.g. syphilis, chlamydia);
- Provision for counselling and voluntary testing for HIV infection;
- Prevention and care of congenital syphilis and neonatal conjunctivitis; and
- Involvement of all relevant stakeholders, including the private sector and the community, in prevention and care of STIs.

5. AIDS and HIV Infection

AIDS stands for Acquired Immune Deficiency Syndrome. AIDS is a serious condition that weakens the body's immune system, leaving it unable to fight off illness.

AIDS is the last stage in a progression of diseases resulting from a viral infection known as the Human Immunodeficiency Virus (HIV or AIDS virus). The diseases include a number of unusual and severe infections, cancers and debilitating illnesses, resulting in severe weight loss or wasting away, and diseases affecting the brain and central nervous system.

There is no cure for HIV infection or AIDS nor is there a vaccine to prevent HIV infection. However, new medications not only can slow the progression of the infection, but can also markedly suppress the virus, thereby restoring the body's immune function and permitting many HIV-infected individuals to lead a normal, disease-free life.

Causes and Risk Factors of AIDS and HIV Infection

AIDS is transmitted via three main routes:

- The most common mode of transmission is the transfer of body secretions through sexual contact. This is accomplished through exposure of mucous membranes of the rectum, vagina or mouth to blood, semen or vaginal secretions containing the HIV virus.
- Blood or blood products can transmit the virus, most often through the sharing of contaminated syringes and needles.
- HIV can be spread during pregnancy from mother to fetus.

Symptoms of AIDS and HIV Infection

Immediately following infection with HIV, most individuals develop a brief, nonspecific "viral illness" consisting of low grade fever, rash, muscle aches, headache and/or fatigue. Like any other viral illness, these symptoms resolve over a period of five to 10 days. Then for a period of several years (sometimes as long as several decades), people infected with HIV are asymptomatic (no symptoms). However, their immune system is gradually being destroyed by the virus. When this destruction has progressed to a critical point, symptoms of AIDS appear. These symptoms are as follows:

- extreme fatigue
- rapid weight loss from an unknown cause (more than 10 lbs. in two months for no reason)
- appearance of swollen or tender glands in the neck, armpits or groin, for no apparent reason, lasting for more than four weeks
- unexplained shortness of breath, frequently accompanied by a dry cough, not due to allergies or smoking
- persistent diarrhea
- intermittent high fever or soaking night sweats of unknown origin
- a marked change in an illness pattern, either in frequency, severity, or length of sickness
- appearance of one or more purple spots on the surface of the skin, inside the mouth, anus or nasal passages
- whitish coating on the tongue, throat or vagina
- forgetfulness, confusion and other signs of mental deterioration

It can take as short as a year to as long as 10 to 15 years to go from being infected with HIV to "full-blown" AIDS.

Some people infected with HIV may develop a disease that is less serious than AIDS, referred to as AIDS Related Complex (ARC). ARC is a condition

caused by the AIDS virus in which the patient tests positive for AIDS infection and has a specific set of clinical symptoms. However, ARC patients' symptoms are often less severe than those with classic AIDS because the degree of destruction of the immune system has not progressed as far as it has in patients with classic AIDS.

Symptoms of ARC may include loss of appetite, weight loss, fever, night sweats, skin rashes, diarrhea, tiredness, lack of resistance to infection or swollen lymph nodes.

Not everyone who has been infected with HIV develops AIDS. Very rarely, some individuals can be infected with HIV yet maintain normal immune function and general good health even after 20 years of infection.

Prevention of AIDS and HIV Infection

The only way to protect from contracting AIDS sexually is to abstain from sex outside of a mutually faithful relationship with a partner whom the person knows is not infected with the AIDS virus. Otherwise, risks can be minimized if they:

- Don't have sexual contact with anyone who has symptoms of AIDS or who is a member of a high risk group for AIDS.
 - Avoid sexual contact with anyone who has had sex with people at risk of getting AIDS.
 - Don't have sex with prostitutes.
 - Avoid having sex with anyone who has multiple and/or anonymous sexual partners.
 - Don't share toothbrushes, razors or other implements that could become contaminated with the blood of anyone who is or might be infected with the AIDS virus.
 - Use only pure medical instrument, pure syringes and needles).
- The most important is valeological training and education of population.

6. Breastfeeding value.

Breastfeeding is the feeding of an infant or young child with breast milk directly from female human breasts (i.e., via lactation) rather than from a baby bottle or other container.

Human breast milk is the healthiest form of milk for human babies.^[1] There are few exceptions, such as when the mother is taking certain drugs or is infected with tuberculosis or HIV. Breastfeeding promotes health, helps to prevent disease, and reduces health care and feeding costs. Artificial feeding is associated with more deaths from diarrhea in infants in both developing and developed countries.

Emphasizing the value of breastfeeding for both mothers and children, the WHO and the American Academy of Pediatrics (AAP) both recommend exclusive breastfeeding for the first six months of life and then supplemented breastfeeding for at least one year and up to two years or more.

Not all the properties of breast milk are understood, but its nutrient content is relatively stable. Breast milk is made from nutrients in the mother's bloodstream and bodily stores. Breast milk has just the right amount of fat, sugar, water, and protein that is needed for a baby's growth and development. Because breastfeeding uses an average of 500 calories a day it helps the mother lose weight after giving birth.

The composition of breast milk changes depending on how long the baby nurses at each session, as well as on the age of the child. The quality of a mother's breast milk may be compromised by smoking, alcoholic beverages, caffeinated drinks, marijuana and heroin.

Benefits breastfeeding for infants

1. Less necrotizing enterocolitis in premature.
2. Greater immune health.
3. Fewer infections.
4. Less tendency to develop allergic diseases.
5. Protection from sudden infant death syndrome.
6. Higher intelligence.
7. Appears to protect against diabetes.
8. Appears to reduce the risk of extreme obesity in children aged 39 to 42 months.
9. Other long term health effects:
 - a) did not appear to offer protection against allergies;
 - b) lowered the risk of asthma;
 - c) protect against allergies;
 - d) provide improved protection for babies against respiratory and intestinal infections;
 - e) may decrease the risk of cardiovascular disease in later life, as indicated by lower cholesterol and C-reactive protein levels in adult women who had been breastfed as infants.

Breastfeeding benefits for mothers

1. Hormones released during breastfeeding help to strengthen the maternal bond.
2. Breastfeeding releases oxytocin and prolactin, hormones that relax the mother and make her feel more nurturing toward her baby.
3. As the fat accumulated during pregnancy is used to produce milk, extended breastfeeding - at least 6 months - can help mothers lose weight.
4. Lactational amenorrhea has been used as an imperfect form of natural contraception, with a greater than 98% effectiveness during the first six months after birth if specific nursing behaviors are followed.
5. Long-term health effects:
 - a) less risk of breast cancer, ovarian cancer, and endometrial cancer;
 - b) lactation for at least 24 months is associated with a 23% lower risk of coronary heart disease;

- c) mothers who breastfeed longer than eight months benefit from bone re-mineralisation;
- d) breastfeeding diabetic mothers require less insulin;
- e) reduced risk of post-partum bleeding;
- f) women who breast fed for a longer duration have a lower risk for contracting rheumatoid arthritis than women who breast fed for a shorter duration or who had never breast fed.

The vast majority of mothers can and should breastfeed, just as the vast majority of infants can and should be breastfed. Only under exceptional circumstances can a mother's milk be considered unsuitable for her infant. For those few health situations where infants cannot, or should not, be breastfed, the choice of the best alternative – expressed breast milk from an infant's own mother, breast milk from a healthy wet-nurse or a human-milk bank, or a breast-milk substitute fed with a cup, which is a safer method than a feeding bottle and teat – depends on individual circumstances.

The WHO and AAP recommends exclusive breastfeeding for the first six months of life, after which "infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond."

CHAPTER 7. RATIONAL WORK AND REST

Study questions.

1. *Work and its influence on an organism.*
2. *Fatigue and overfatigue at labour activity.*
3. *Features of students work.*
4. *Work and rest regimen.*
5. *Value of biological rhythms for high-grade work and rest.*
6. *Actions for work and rest rationalization.*

1. Work and its influence on an organism.

At the basis of formation and development of person and creation of material assets work lays.

Rationally organized labour process renders favorable effect on:

- Health,
- Physical, intellectual and moral perfection of people.

At physical work:

- in muscles there are biochemical and biophysical processes providing its reduction;
- a pulse rate becomes frequent;
- increases of systolic blood volume;
- blood pressure raises;
- weight of blood circulating in an organism and erythrocytes quantities increases;
- frequency and depth of breath increases;
- there is a braking of stomach secretory and motor functions;
- digestion and adsorption food is slowed down.

At termination of work all changes are gradually restored and settle into norm during rest.

Any mental work is accompanied nervously-emotional strain. Functional changes in a human body during mental work:

- perception, attention, memory become aggravated;
- there is a strengthening of cardiovascular activity, breath, metabolism and energy;
- muscles tone raises;
- brain blood supply increases;
- power exchange of nervous cells raises;
- indicators of brains bioelectric activity change;
- the expense of lipoids amplifies;
- electric activity of muscles amplifies;
- acceleration of catecholamins exchange is observed;
- increase of noradrenaline allocation in sympathetic terminations;

- maintenance in blood of adrenaline and corticosteroids increases.

Long intellectual loading makes oppressing influence on mental activity:

- functions of attention, memory, perception worsen;
- tachycardia, hypertension, electrocardiogram change is observed;
- increase in pulmonary ventilation and oxygen consumption;
- rise of body's temperature and other shifts from vegetative functions.

2. Fatigue and overfatigue at labour activity.

Fatigue - temporary decrease of working capacity. Subjective signs of fatigue:

- weariness with deterioration of state of health;
- attention decrease;
- infringement of movements coordination;
- phenomena of palpitation, dyspnea;
- pains in muscles.

Fatigue is caused by intensive or long activity and comes faster at heavy intensive work. Fatigue - is a reversible physiological state.

Fatigue process is accompanied:

- reduction of impellent reactions speed;
- drowsiness;
- decrease in tone of blood vessels of a brain and heart;
- metabolism increase;
- working capacity and labour productivity decrease.

At intellectual fatigue more expressed functional shifts from central nervous system, higher nervous activity, analyzers and mental activity are noted. Attention frustration, deterioration of memory and thinking is marked, accuracy and co-ordination of movements is weakened.

Constant fatigue, unreducing of working capacity to beginning of new working day can cause **overfatigue** - a pathological state characterized by prof decrease of working capacity.

Overfatigue leads to:

- neurosises;
- occurrence and aggravation of cardiovascular diseases;
- stomach ulcer;
- memory decrease;
- attention easing;
- headaches;
- sleeplessness;
- appetite deterioration;
- reduction of organisms resistibility to influence of environments' factors.

Chronic fatigue syndrome, or CFS, is a complicated disorder characterized by extreme fatigue that may worsen with physical or mental

activity, but doesn't improve with rest. Although there are many theories about what causes this condition - ranging from viral infections to psychological stress - in most cases the cause is still unknown.

Causes of CFS:

- depression;
- iron deficiency anemia;
- low blood sugar (hypoglycemia);
- history of allergies;
- virus infection, such as epstein-barr virus or human herpesvirus 6;
- dysfunction in the immune system;
- changes in the levels of hormones produced in the hypothalamus, pituitary glands or adrenal glands;
- mild, chronic low blood pressure (hypotension);
- an autoimmune process causing inflammation of certain nervous-system pathways;
- a viral infection complicated by a dysfunctional immune response;
- a low blood pressure disorder that triggers the fainting reflex.

Risk Factors for CFS

People of every age, gender, ethnicity and socioeconomic group can have CFS. CFS affects women at four times the rate of men. Research indicates that CFS is most common in people in their 40s and 50s. Although CFS is much less common in children than in adults, children can develop the illness, particularly during the teen years.

Because its symptoms are difficult to measure, CFS wasn't widely accepted as a real medical condition for several years. Today, however, doctors and researchers agree that this chronic condition should be taken seriously.

Although an underlying cause often isn't found, effective treatments for the signs and symptoms of CFS are available. Many people recover from chronic fatigue syndrome over time.

People with chronic fatigue syndrome may experience a variety of signs and symptoms that come and go frequently with no identifiable pattern.

CFS symptoms:

- fatigue;
- loss of memory or concentration;
- sore throat;
- painful and mildly enlarged lymph nodes in your neck or armpits;
- unexplained muscle pain;
- pain that moves from one joint to another without swelling or redness;
- headache of a new type, pattern or severity;
- unrefreshing sleep;
- extreme exhaustion lasting more than 24 hours after physical or mental exercise.

Definition of CFS

In essence, in order to receive a diagnosis of chronic fatigue syndrome, a patient must satisfy two criteria:

1. Have severe chronic fatigue of six months or longer duration with other known medical conditions excluded by clinical diagnosis; and
2. Concurrently have four or more of the following symptoms: substantial impairment in short-term memory or concentration; sore throat; tender lymph nodes; muscle pain; multi-joint pain without swelling or redness; headaches of a new type, pattern or severity; unrefreshing sleep; and post-exertional malaise lasting more than 24 hours.

The symptoms must have persisted or recurred during six or more consecutive months of illness and must not have predated the fatigue.

In addition to the eight primary defining symptoms of CFS, a number of other symptoms have been reported by some CFS patients. The frequencies of occurrence of these symptoms vary from 20% to 50% among CFS patients. They include abdominal pain, alcohol intolerance, bloating, chest pain, chronic cough, diarrhea, dizziness, dry eyes or mouth, earaches, irregular heartbeat, jaw pain, morning stiffness, nausea, night sweats, psychological problems (depression, irritability, anxiety, panic attacks), shortness of breath, skin sensations, tingling sensations, and weight loss.

Fatigue prevention:

1. Rational organization of work and rest (alternation of periods of work and rest, organization of breaks and its correct use).
2. Maintenance of rational working pose with attraction of minimum quantity of muscles.
3. Mechanization and automation of productions.
4. Favorable factors of industrial environment.
5. Scientific organization of work, engineering psychology, industrial design, industrial music, benevolent relations in collective.

3. Features of students work.

Students are special professional group of population characterized by a certain age category (17 till 27 years) and specific working conditions and life.

Correct regimen of students' day - is expediently organized schedule of daily activity corresponding to age abilities, provided automatism of vital processes repeating day by day. Students observing a regimen of day faster are involved in work, quickly fall asleep, get tired less.

At construction of a regimen of day a correct organization of dream, food, kinds of activity and its change, work and rest alternation is considered.

Labour activity of students:

- a) house studies;
- b) studies in an educational institution;

- c) nonlearning studies - reading, studying of foreign languages;
- d) self-service and hygienic actions;
- e) food intake;
- f) employment by physical culture and sports;
- g) walks on fresh air.

Working day lasts for 10-13 h, sleep for 6-8 h. 25 % of students sleep less than 6 h, and 4 % sleep more than 8 h. Two times a year during session intellectual loading of students sharply increases, causing stressful states.

Harmful factors for students:

- compelled pose sitting;
- strain of vision;
- intellectual and emotional strain.

At students there are vegetal-vascular dystonia, caries, chronic otorhinolaryngological diseases, myopia, idiopathic hypertension, illnesses of digestive organs more often is registered.

Adaptation of students is carried out in three stages. The first stage (1 and 2 years) - most difficult as it is preceded by examinations at school, entrance examinations, summer holiday is absent. In a higher educational institution is required big independence, absence of comments to which pupils have got used at school. Difficulties of adaptation arise also owing to big informative loading in conditions of time lack. Usually 30 % of students are not prepared for employment.

The second stage (3 year) - period of full adaptation, progress stable and high.

The third stage (4-6 years) loading increases in connection with family creation, employment in a student's scientific organization, participation in social work.

4. Work and rest regimen.

Rational regimen of work and rest - is such parity and maintenance of work and rest periods at which high efficiency of work is combined with high and steady working capacity of person without signs of excessive fatigue during probably long period.

A main task of scientifically proved rational regimen of work and rest consists in fatigue decrease, attainment of high efficiency of work throughout all working day at minimum pressure of physiological functions and maintenance of health and long work capacity.

Work regimen includes optimum loadings and work rhythm.

General loading is formed at interaction of following components:

- a) subject and tools of work;
- b) workplace organization;
- c) factors of industrial environment;

d) organizational actions.

Working capacity - size of organism's functionality, characterized by quantity and quality of work which are carried out for certain time at as much as possible intensive strain.

Level of person's functionality depends from:

- working conditions;
- states of health;
- age;
- trainings degree;
- motivations to work.

Working capacity state is estimated by physiological indicators of functional condition of central nervous system, nerve-muscular apparatus, cardiovascular, respiratory and other systems providing given concrete activity.

During labour activity functional ability of an organism and labour productivity naturally change throughout a labour shift.

Distinguish 3 phases of working capacity:

1. Increasing working capacity.
2. High steady working capacity.
3. Working capacity decrease.

1 phase:

- increase of lability of physiological systems;
- acceleration and increase of physiological processes volume.

Depending on character of work and specific features of person this period lasts from several minutes to 1.5 h, and at intellectual creative activity - to 2-2.5 h.

For 2 phase combination of high labour indicators to relative stability or even some decrease in intensity of physiological functions is characteristic. Duration of a steady working capacity phase can be 2-2.5 h and more depending from degree nervously-emotional strain, physical gravity and working conditions.

3 phase is accompanied by reduction of functionality of person's basic working bodies. Working capacity falling is shown in:

- deterioration of cardiovascular system state;
- attention decrease;
- occurrence of superfluous movements;
- erroneous reactions;
- delay of speed of the decision of problems.

Dynamics of working capacity repeats and after a lunch break. Thus 1 phase proceeds faster, and 2 phase on level more low and less long, than till a dinner. Before end of work short-term increase of working capacity is observed.

To maintenance of high, steady working capacity promotes:

- periodic alternation of kinds of work (intellectual and physical);
- alternation of kinds of brainwork;

- alternation of kinds of physical work;
- alternation of work and rest which is provided by intrareplaceable regimens of work and rest.

Work and rest regimen is studied:

- a) method of supervision with timing carrying out;
- b) interrogation method;
- c) by comparison with recommended regimens for concrete category of working;
- d) on working capacity;
- e) on labour productivity;
- f) on speed of fatigue approach;
- g) on morbidity;
- h) on health level.

Correctness of work and rest regimen organization is estimated also on basis of complex researches of physiological indicators defining level of person's working capacity, medical indicators, giving chance to judge influence of labour process on workers health, sociological indicators showing relation of workers to regimen of work and rest, economic indicators characterizing dynamics of labour productivity.

5. Value of biological rhythms for high-grade work and rest.

A circadian rhythm is a roughly 24-hour cycle in the biochemical, physiological, or behavioural processes of living entities. The formal study of biological temporal rhythms such as daily, tidal, weekly, seasonal, and annual rhythms, is called chronobiology.

Although circadian rhythms are endogenous, they are adjusted (entrained) to the environment by external cues called zeitgebers, the primary one of which is daylight.

To differentiate genuinely endogenous circadian rhythms from coincidental or apparent ones, three general criteria must be met:

- 1) the rhythms persist in the absence of cues,
- 2) they persist equally precisely over a range of temperatures,
- 3) the rhythms can be adjusted to match the local time:
 - The rhythm persists in constant conditions (for example, constant dark) with a period of about 24 hours. The rationale for this criterion is to distinguish circadian rhythms from those "apparent" rhythms that are merely responses to external periodic cues. A rhythm cannot be declared to be endogenous unless it has been tested in conditions without external periodic input.
 - The rhythm is temperature-compensated, i.e., it maintains the same period over a range of temperatures. The rationale for this criterion is to distinguish circadian rhythms from other biological rhythms arising due to the

circular nature of a reaction pathway. At a low enough or high enough temperature, the period of a circular reaction may reach 24 hours, but it will be merely coincidental.

- The rhythm can be reset by exposure to an external stimulus. The rationale for this criterion is to distinguish circadian rhythms from other imaginable endogenous 24-hour rhythms that are immune to resetting by external cues and, hence, do not serve the purpose of estimating the local time. Travel across time zones illustrates the necessity of the ability to adjust the biological clock so that it can reflect the local time and anticipate what will happen next. Until rhythms are reset, a person usually experiences jet lag.

Biorhythm - is a cyclic alternation of different functional organism's states, its activity, function, ability to react to influences at homeostasis maintenance.

In formation of biorhythms following mechanisms lay:

- congenital, genetically fixed;
- change of day and night, seasonal changes and other environment's factors;
- shift work, lesson time-table, schedule of work and other factors of social environment.

Time during which rhythmic process makes full cycle, is called as **period**, and frequency of such cycles in unit of time - **frequency of biorhythm**.

There are 5 classes of biorhythms:

1. Rhythms of high frequency, from second to 30 minutes (oscillation at molecular level, rhythms of electroencephalogram, heart contraction, breath, intestines peristaltics);
2. Rhythms of average frequency, from 30 minutes to 28 h, including allocation of hormones, protein synthesis;
3. Mesorhythms, (28 h - 7 days);
4. Macrorhythms with periods from 20 days till 1 year;
5. Megarhythms with periods in tens and many tens years.

Physiological rhythms of physical activity (23 days), emotional activity (28 days), intellectual activity (33 days) are established. In first half of cycle a person feels better, than in second. Critical days - time of transition from one phase to another are especially adverse. Mental activity higher in morning and day time.

In daily rhythm allocate three phases characterized by prevalence of specific endocrine and metabolic processes:

1. Restoration phase - first half of night dream (there is a process of long-term storing of information which have been saved up during active period).
2. Phase of preparation for active action - second half of dream and early morning hours.
3. Activity phase - accordingly all period of wakefulness.

Chronotype is an attribute of human beings reflecting whether they are alert and prefer to be active early or late in the day. The continuum is often referred to as "morningness/eveningness" or "larks" (20-25 %) and "owls" (30-40 %) where morning people wake up early and are most alert in the first part of the day, and evening people are most alert in the late evening hours and prefer to go to bed late. Chronotype is also referred to as circadian type, diurnal preference or diurnal variation.

Humans are normally diurnal, active in the daytime. Human activity-rest patterns are endogenously controlled by circadian rhythms.

Normal variation in chronotypes encompasses sleep/wake cycles that are from about two hours earlier to about two hours later than average. Extremes outside of this range can cause a person difficulty in participating in normal work, school, and social activities. If a person's "lark" or (more commonly) "owl" tendencies are strong and intractable to the point of disallowing normal participation in society, the person is considered to have a circadian rhythm sleep disorder.

Most people are neither evening nor morning types but lie somewhere in between ("pigeons" (35-50 %) - highest working capacity at 10-12 h and 16-18 h and lowest in 2-5 h). Estimates vary, but up to half are either morning or evening people. People who share a chronotype, morningness or eveningness, have similar activity-pattern timing: sleep, appetite, exercise, study etc.

The classic phase markers for measuring the timing of a circadian rhythm are:

- melatonin secretion by the pineal gland;
- core body temperature.

More-or-less independent circadian rhythms are found in many organs and cells in the body outside the suprachiasmatic nuclei, the "master clock". These clocks, called peripheral oscillators, are found in the oesophagus, lungs, liver, pancreas, spleen, thymus, and the skin. Furthermore, liver cells, for example, appear to respond to feeding rather than to light. Cells from many parts of the body appear to have freerunning rhythms.

There are many **health problems** associated with disturbances of the human circadian rhythm, such as seasonal affective disorder, delayed sleep phase syndrome and other circadian rhythm disorders. Circadian rhythms also play a part in the reticular activating system, which is crucial for maintaining a state of consciousness. In addition, a reversal in the sleep-wake cycle may be a sign or complication of uremia, azotemia or acute renal failure. Studies have also shown that light has a direct effect on human health because of the way it influences the circadian rhythms.

Seasonal Affective Disorder (SAD), also known as winter depression or winter blues, is a mood disorder in which people who have normal mental health

throughout most of the year experience depressive symptoms in the winter or, less frequently, in the summer, spring or autumn, repeatedly, year after year.

Symptoms of SAD may consist of: difficulty waking up in the morning, morning sickness, tendency to oversleep as well as to overeat, and especially a craving for carbohydrates, which leads to weight gain. Other symptoms include a lack of energy, difficulty concentrating on completing tasks, and withdrawal from friends, family, and social activities. All of this leads to the depression, pessimism, and lack of pleasure which characterize a person suffering from this disorder.

People that experience summer SAD (spring and summer depression) show symptoms of classic depression including insomnia, anxiety, irritability, decreased appetite, weight loss, social withdrawal, and a decreased sex drive. Additionally, many patients are unable to cope with the increased temperatures during spring and summer.

Delayed sleep-phase syndrome (DSPS) is a circadian rhythm sleep disorder, a chronic disorder of the timing of sleep, peak period of alertness, the core body temperature rhythm, hormonal and other daily rhythms relative to societal norms. People with DSPS tend to fall asleep some hours after midnight and have difficulty waking up in the morning.

The syndrome usually develops in early childhood or adolescence. An adolescent version disappears in adolescence or early adulthood; otherwise it is a lifelong condition. Depending on the severity, it can be to a greater or lesser degree treatable. Prevalence among adults, equally distributed among women and men, is approximately 0.15%, or 3 in 2,000.

Some people with the abnormality adapt their lives to the delayed sleep phase, avoiding common business hours (e.g., 9 a.m. to 5 p.m.) as much as possible. They have the disorder, but for them it is not a disability.

Seasonal rhythms:

- in summer decrease of pulse rate in comparison with spring;
- thermolysis higher in summer in comparison with winter, in winter food consumption more than in summer;
- body growth more intensively in spring and in summer, than in winter;
- immunity higher in winter, than in summer;
- gonadotropic hormone it is more in spring;
- maximum working capacity higher in autumn, than in winter. Means, during different seasons person is different.

Human body within days represents various physiological, biochemical and morphological system, therefore without biorhythms working capacity saving will lead to health infringement.

Desynchronization - infringement of natural rhythmicity - can lead to diseases and on the contrary. Heavy desynchronization can lead to person's death.

6. Actions for work and rest rationalization.

Important role in course of work and rest rationalization is played by scientific organization of work, ergonomics, engineering psychology, industrial design, industrial music, benevolent relations in collective, etc.

Scientific organization of work - is a system of organization of manufacture and work which provides high labour productivity level at high working capacity, saving of physical and mental health and longevity of workers.

For scientific organization of work scientific validity, regularity, integrated approach, active participation of workers are characteristic.

Basic directions of scientific organization of work are:

- improvement of organization and service of workplaces;
- rationalization of receptions and work methods;
- rationing of inputs of work on separate operations;
- increase of workers' cultural-technological level;
- preparation of qualified personnel;
- combination of trades and specialties;
- labour discipline improvement;
- increase of creative activity;
- perfection of work organization administrative and support personnel;
- perfection of forms and payment and provision of economic incentives

systems.

Ergonomics study problem of person's interrelation with machine. It develops requirements to designs of machine, machine tools and other equipment which performance provides convenience of their service by person, proves choice of pose working, profitability of movements, reduction of resistance of controls.

In decision of the problem "person - machine" participates **industrial design** which engaged by questions of choice and application of optimum colours for premises and equipment and creation of equipment of beautiful and rational form.

Engineering psychology studying communications of designs of control panels with features of perception and processing of information by operators.

For saving of high working capacity rational organization of workplace and furniture matters. Design of industrial equipment and workplace organization should correspond to anthropometrical dates and psychophysiological possibilities of person.

Elements of rational regimen of work and rest are industrial physical culture (gymnastics, physical pause) and complex of measures on psychophysiological unloading, including functional music. Functional music promotes prevention of development of fatigue, improvement of mood and health working, raises working capacity and labour productivity.

Functional music do not recommend to apply at performance of works demanding considerable concentration of attention, at mental work of a component over 70 % of working hours, at big intensity of carried out works, on changeable workplaces and in adverse sanitary-hygienic conditions.

Last time for removal of psychological strain, prevention of fatigue, working capacity restoration offices of relaxation or room of psychological unloading are successfully used.

CHAPTER 8. BAD HABITS and ITS OVERCOMING

Study questions.

1. *Bad habits and its value.*
2. *Harmful influence of a tobacco smoking and alcohol on a person.*
3. *Harmful influence of opioids, hashish, cocaine, amphetamine on a person.*
4. *Harmful influence of caffeine, sedative, hallucinogens on an organism.*
5. *Harmful influence of volatile solvents on an organism.*
6. *Prevention of bad habits.*

1. Bad habits and its value.

Bad habits lead to diseases, social trouble, has negatively affect labor, sports and creative activity of people.

Most bad habits:

- a) alcohol;
- b) tobacco;
- c) opioid;
- d) cannabioid;
- e) sedative;
- f) stimulators;
- g) hallucinogens;
- h) volatile solvent and other substances leading to mental and behavioral frustration.

Taking any drug can be hazardous, but some people have extreme responses to certain drugs that destroy their lives. The **addiction risk** on drugs is related to four major factors:

- 1) Genetic factors inherited from the parents.
- 2) The childhood experiences (both with the family and peer group).
- 3) The current peer group and life situation.
- 4) The level of addictive and risk potential of the drugs used.

Genetic Factors inherited from the parents. An important way of evaluating the importance of genetic factors in alcoholism and **drug addiction** are the studies of identical twins who were separated at birth and raised apart, each one in a different family and different environment. Due tot the fact that the different environments the twins were raised in couldn't beat the genetic factors leads to the fact that inherited patterns contribute 40 % to the likelihood that a person will develop a **substance dependency**.

The childhood experiences. Growing up in dysfunctional families exposes the individual to conflict and fighting, experiencing disrupted relationships and emotional and physical abuse or neglect. Being exposed to continuous traumatic events, a child is frightened and angry and develops

feelings of guilt. The disruptive childhood experiences teaches the children that the world is unsafe. The constant sense of anxiety often goes away after the first drink or drug use. Suddenly a sense of comfort never experienced before appears. Unfortunately, from here to "I like this stuff, I want more" there is only one step.

The current peer group and life situation. Peer groups strongly influence the individuals through the experimental years of adolescence. Teenage years are a time to explore new behaviors. Living in an atmosphere where all the friends drink or use drugs excessively leads to seeing these behaviors as normal. If the emotional environment is one where heavy drinking and drug using is not common, the probability to develop a style that avoids excessive use is bigger.

The level of addictive and risk potential of the drugs used. No drug is truly safe for everyone, but some people have extreme reactions. A person may smoke marijuana just once and suffer such a severe panic reaction that he or she will never be able to function normally again. Today, it is known it's addictive and among many other health effects, it harms the lungs and makes the immune system less effective. Some drugs are so pleasurable that for some people, it is not safe to try them even once. Using heroin or cocaine, powdered or crack (rock), even one time causes such intense cravings for some individuals that they use it again and again, rapidly becoming addicted.

Narcotics - substances causing a pathological addiction and accustoming.

At not medical consumption narcotics have specific effect on central nervous system in the form of narcotic intoxication, causing in small doses an euphoria condition, and in big - deafenation, narcotic dream.

Narcotic substances:

- opioid (morphinum, codeinum, heroin, etc.);
- cannaboid (hashish, hemp, marihuana, etc.);
- and others.

Narcotism - illness shown by appetite to constant reception of narcotic medical products and narcotic substances, occurrence of dependence from its.

Toxicomania - disease, shown by painful appetite to psychoactive substances which have been not included in the narcotic list.

Medicinal toxic drugs:

- a) tranquilizers;
- b) soporific;
- c) adrenolymimetic drugs;
- d) cholinolytics;
- e) not narcotic analgetics;
- f) psychomotor stimulators;
- g) antihistamine drugs.

Physical weakness, decrease in functional activity of organism's systems are marked at all narcotisms and toxicomania.

Syndrome of the changed reactance is characterized by decrease of organism's sensitivity to drugs and tolerance increase to it.

Insuperable thirst to narcotic for attainment of euphoria and mental comfort is marked at syndrome of **mental dependence**.

At narcotic intoxication change of clearness of consciousness, mood lifting, speech and impellent activity, replaced by melancholy and irritability, shine of eyes, gait and speech infringement is marked.

Syndrome of physical dependence is characterized by insuperable thirst to narcotic.

At physical thirst pallor of a person, expansion of pupils, pulse increase, increase of blood pressure, weakness, pains in joints, mental discomfort and active search of narcotic is marked. Abstinent syndrome proceeds within 1-2 months with preservation of some residual symptoms.

Stages of narcotism and toxicomania

At an initial stage the syndrome of changed reactance and mental dependence develops. An addict or the glue sniffers accept a doses exceeding deadly to healthy person.

Developed stage is characterized by development of syndromes of changed reactance, mental and physical dependence.

Abstinent syndrome - signs of chronic intoxication in form of exhaustion, fast fatigue, psychoses, degradation of person, aggravation of chronic diseases.

In a final stage tolerance and toning action of stupefying substance are reduce, euphoria and abstinent syndrome disappears, intelligence decreases, degradation of person is marked. Patients in this stage do not give in to treatment.

2. Harmful influence of a tobacco smoking and alcohol on a person.

Tobacco use is the leading preventable cause of disease, disability, and death in the United States. Between 1964 and 2004, cigarette smoking caused an estimated 12 million deaths, including 4.1 million deaths from cancer, 5.5 million deaths from cardiovascular diseases, 1.1 million deaths from respiratory diseases, and 94,000 infant deaths related to mothers smoking during pregnancy. According to the Centers for Disease Control and Prevention (CDC), cigarette smoking results in more than 400,000 premature deaths in the United States each year - about 1 in every 5 U.S. deaths.

Smoking - one of worse habits, making negative impact on a human body.

Cigarettes and other forms of tobacco - including cigars, pipe tobacco, snuff, and chewing tobacco - contain the addictive drug nicotine. Nicotine is readily absorbed into the bloodstream when a tobacco product is chewed,

inhaled, or smoked. A typical smoker will take 10 puffs on a cigarette over a period of 5 minutes that the cigarette is lit. Thus, a person who smokes about 1 1/2 packs (30 cigarettes) daily gets 300 "hits" of nicotine each day.

Upon entering the bloodstream, nicotine immediately stimulates the adrenal glands to release the hormone epinephrine (adrenaline). Epinephrine stimulates the central nervous system and increases blood pressure, respiration, and heart rate. Glucose is released into the blood while nicotine suppresses insulin output from the pancreas, which means that smokers have chronically elevated blood sugar levels.

Like cocaine, heroin, and marijuana, nicotine increases levels of the neurotransmitter dopamine, which affects the brain pathways that control reward and pleasure. For many tobacco users, long-term brain changes induced by continued nicotine exposure result in addiction - a condition of compulsive drug seeking and use, even in the face of negative consequences. Studies suggest that additional compounds in tobacco smoke, such as acetaldehyde, may enhance nicotine's effects on the brain. A number of studies indicate that adolescents are especially vulnerable to these effects and may be more likely than adults to develop an addiction to tobacco.

When an addicted user tries to quit, he or she experiences withdrawal symptoms including powerful cravings for tobacco, irritability, difficulty paying attention, sleep disturbances, and increased appetite. Treatments can help smokers manage these symptoms and improve the likelihood of successfully quitting.

Cigarette smoking accounts for about one-third of all cancers, including 90 percent of lung cancer cases. In addition to cancer, smoking causes lung diseases such as chronic bronchitis and emphysema, and increases the risk of heart disease, including stroke, heart attack, vascular disease, and aneurysm. Smoking has also been linked to leukemia, cataracts, and pneumonia. On average, adults who smoke die 14 years earlier than nonsmokers.

Although nicotine is addictive and can be toxic if ingested in high doses, it does not cause cancer - other chemicals are responsible for most of the severe health consequences of tobacco use. Tobacco smoke is a complex mixture of chemicals such as carbon monoxide, tar, formaldehyde, cyanide, and ammonia - many of which are known carcinogens. Carbon monoxide increases the chance of cardiovascular diseases. Tar exposes the user to an increased risk of lung cancer, emphysema, and bronchial disorders. Smokeless tobacco (such as chewing tobacco and snuff) also increases the risk of cancer, especially oral cancers. Deadly dose of nicotine for person is 50 mg. At smoking of one cigarette in an organism 1 mg of nicotine arrives.

Pregnant women who smoke cigarettes run an increased risk of miscarriage, stillborn or premature infants, or infants with low birthweight. Maternal smoking may also be associated with learning and behavioral problems

in children. Smoking more than one pack of cigarettes per day during pregnancy nearly doubles the risk that the affected child will become addicted to tobacco if that child starts smoking.

While we often think of medical consequences that result from direct use of tobacco products, passive or secondary smoke also increases the risk for many diseases. Secondhand smoke, also known as environmental tobacco smoke, consists of exhaled smoke and smoke given off by the burning end of tobacco products. According to CDC, approximately 38,000 deaths per year can be attributed to secondhand smoke. Nonsmokers exposed to secondhand smoke at home or work increase their risk of developing heart disease by 25 to 30 percent and lung cancer by 20 to 30 percent. In addition, secondhand smoke causes respiratory problems in nonsmokers, such as coughing, phlegm, and reduced lung function. Children exposed to secondhand smoke are at an increased risk for sudden infant death syndrome, acute respiratory infections, ear problems, and more severe asthma.

Although quitting can be difficult, the health benefits of smoking cessation are immediate and substantial - including reduced risk for cancers, heart disease, and stroke. A 35-year-old man who quits smoking will, on average, increase his life expectancy by 5 years.

Nicotine actions:

- co-operates with organism's m - and n-cholinoreceptions;
- interferes in innervations of muscles, perception of analyzers, processes of growth, development, puberty and breaks its;
- raises nervous cells;
- promotes breath and palpitation increase;
- to infringement of pulse rate;
- to nausea and vomiting;
- brakes and then will paralyze activity of central and vegetative nervous system;
- causes work capacity decrease;
- causes trembling of hands;
- causes memory easing.

Alcohol is made from rice, oat, millet, sorghum etc. and fermenting material. Because of it raw materials, fermentation process, storing time etc. all a different, there are so many sorts of alcohol, its components also differ greatly. One can classify it in two major sorts, as distilled (like Kaoliang or maize spirit) and undistilled (Shao Hsing Wine, Grapewine) alcohol. Normal alcohols all contain ethanol, distilled ones just in a higher amount than undistilled ones.

Alcohol is characterized as sweet-bitter and hot, toxic. If drunk in small amounts it stimulates blood circulation, reduces haematomae, vitalizes blood, drives out "wind" and dispels "cold" symptoms, transports medicaments and

disperses bad influences. in the clinic approach alcohol is often used to cure "wind", "cold" and pain, neuralgia, cold and painful chest and belly.

The pharmaceutical functions

A. The influence on the central nerve system (CNS)

Ethanol caused «stimulation» is absolutely not a real excitement, it is only a slackening of the brains controlling functions. Big amounts of alcohol taken habitually make their imbiber forgetting his good behavior, modesty and self-control. Furthermore it decreases his sense of distinction, memory, concentration and reasoning. The eyesight (focusing) also often worsens.

B. Influence on the digestion system

Drinking beverages with lower ethanol levels (about 10%) raises the acidic level of the stomachs secretions, therefore ulcer patients should strictly abstain from drinking alcohol. Beverages with an ethanol level of over 20% inhibit the secretion of gastric juices and so weaken the ability to digest animal protein. If the level is over 40% the mucosa of the stomach is irritated, such leading to gastric ulcer when regularly swallowed.

Internally applied ethanol can cause sickness and vomiting because during its oxidation in the body it produces acetaldehyde which has those toxic effects on the central nerve system.

C. Influence on the circulation system

Medium amounts of ethanol widen the smaller blood vessels of the skin, such reddening the skin color and making the imbiber feeling warmer. But it can not serve as a measure against coldness; the skin shrinks normally under low temperature (goose skin) which is its only protective reaction, but alcohol restrains this function and moreover causes a higher loss of warmth by the increased radiation, resulting from the widened blood vessels; in this situation coldness can become a mortal danger.

Medium amounts of ethanol do not obviously influence the heart, but high amounts can paralyze the nerves in the brainstem and so damage the whole blood circulation. According to research reports alcohol abuse easily causes acute and chronic intoxications and a blood-alcohol level of only 0.5‰-2‰ can cause states of drunkenness. If a level of 4‰ is reached, a lethal acute intoxication will follow.

D. The stations of the course in the body

Alcohol is rapidly absorbed in the digestion tract. In general 29% is already absorbed in the stomach and the rest follows in the small intestine. The fastest absorption happens in a completely empty stomach, spirits with low ethanol level even after then those with a high one. The absorbed ethanol will be oxygenated by 90%-98%. Every gram of it produces 7.1 Kcal. (divided into fats and carbohydrates) which are all ready to be used by the body. Adults can oxidize about 10ml/hr., by changing rapidity, independent of the alcohol level in the blood. Drinking bigger amounts of it, causes the absorption speed to be

faster than the oxidation speed, such leading to an intoxication. Unoxidized ethanol can leave the body via lungs by exhaling and the kidneys; it can also be found in sweat, tears, bile, and saliva in small amounts.

E. External application

Ethanol if applied on the skin causes heat radiation, although it feels cold by evaporation. Clinically it is used for patients with high fever. As an antiseptic its strongest effects are above 70%. Below 60% or higher than 80% is less effective.

Rules of drinking alcohol

I. There are many sorts of alcohol, having all different functions. For steeped medicine white, clear alcohol is the best to use with, for higher absorption of medicine rice wine is helpful. Thick, yellow alcohol (like port) tonifies blood and helps against pain; whereas grapevine goes good with a meal, strengthens the heart, raises the spirits. The barley sprouts of beer after fermentation are very nutritive and stabilize stomach and digestion. The way and quantity of drinking differs according to the individual physique.

II. The major rules of drinking alcohol are to drink not too much, not too strong refrain from excessive boozing and from mixing different sorts. If in the daily life people drink some small cups of weak alcohol with some good friends who came, stay and talk- there is nothing wrong with it to raise the spirits in that way, just be careful not to mix different sorts of alcohol, since people become easily drunk by that.

Points of attention after drinking

I. According to ancient sources the best way to rinse the mouth after drinking alcohol is with salty water, in this way preventing damage to the teeth. Especially after consumption of freshly brewed alcohol too much tea should be avoided otherwise the burden to the kidneys may be too much and they may be hurt, causing pain in the waist. Even more severe cases will gradually loose their legs strength and become finally so handicapped that they are unable to walk.

II. After brewing fresh alcohol there still may be some toxic methanol residues, hence it is better to drink aged alcohol.

The harms of drinking too much alcohol

The physicians of the history were all aware of the damage that can result from overdoses of alcohol and continuously kept a steady viewpoint it. They said: "A little is good, but abuse shortens the natural life span, since its toxicity is a rather strong one. In short: Alcohol abuse means short life!" Cao Cao of the Warring States period called alcohol the origin of decadence and debauchery. "Alcohol is like water: It can drown the boat- but it can also make it floating merrily on it."

In the Herbal Materia Medica (Ben cao gang mu) it also is confirmed: "A little alcohol is good for the blood circulation, raises the spirits, improves the mood and drives out depression; albeit vigorous consumption harms nerves and

blood, hurts the stomach, destroys the sperm, causes bad temper and manifold diseases."

Alcoholism - heavy chronic illness, in most cases hard to cure. It develops in case of regular and long use of alcohol and is characterized by special pathological condition of organism - uncontrollable inclination to alcohol, change of degree of its shipping and degradation of person.

In norm at a healthy person in blood contains of ethyl alcohol is $0.05-0.2 \text{ g/dm}^3$.

Easy degree of intoxication - at concentration of alcohol in blood $0.5-1.5 \text{ g/dm}^3$, average $-1.5-2.5 \text{ g/dm}^3$, serious with devocalization and coma - at $3-5 \text{ g/dm}^3$, maintenance of alcohol in blood $6-8 \text{ g/dm}^3$ - lead to dead.

Phases of alcoholism

For an initial phase intoxication with memory loss is characteristic. A person constantly thinks about alcohol, his seems has drunk insufficiently, his keeps consciousness of fault.

In critical phase there is control loss over itself after drink of alcohol. A person aspires to find justification to drunkenness, arrogance, aggression develops, hard drinking begins.

In chronic phase - daily hang-over, disintegration of person. An alcoholic can drink alcohol substitutes, technical liquids, cologne.

Toxicity of alcohol

I. Acute intoxication: in light cases with gradual excitement and vomitus no special treatment is necessary. In severe cases with unconsciousness and sopor (deep sleep) the stomach should be pumped empty and coffeine or other CNS stimulating medicaments administered. Preserving the patients body temperature is also essential.

II. Chronic intoxication: patients with history of chronic alcohol abuse can develop a insensibility against ethanol but only up to a certain limit. Often they can drink 3-4 times more than a normal person of their weight. The reason for this insensibility is generally considered lying in the CNS. In times of abstinence withdrawal phenomena usually don't occur.

Abuse over a long period causes chronic intoxication. Mainly by nervous influence tremors occur, the memory fails, other symptoms are similar to those of acute intoxication, but also acute gastritis, liver cirrhosis, neuritis and neuritis of the optical nerve, and often heart and kidney diseases are likely to occur as well.

Alcoholics often consider alcohol as their main nourishment and don't pay attention to what they eat. For this reason they often suffer from malnutrition and deficiency of vitamins. This all constitutes to their maladies in the area of the nervous system and the sense organs.

3. Harmful influence of opioids, hashish, cocaine, amphetamine on a person.

An **opioid** is a chemical that works by binding to opioid receptors, which are found principally in the central nervous system and the gastrointestinal tract. The receptors in these two organ systems mediate both the beneficial effects and the side effects of opioids. The analgesic effects of opioids are due to decreased perception of pain, decreased reaction to pain as well as increased pain tolerance. The side effects of opioids include sedation, respiratory depression, and constipation. Opioids can cause cough suppression, which can be both an indication for opioid administration or an unintended side effect. Physical dependence can develop with ongoing administration of opioids, leading to a withdrawal syndrome with abrupt discontinuation. Opioids can produce a feeling of euphoria, and this effect, coupled with physical dependence, can lead to recreational use of opioids by many individuals.

Although the term *opiate* is often used as a synonym for opioid, the term is more properly limited to the natural alkaloids found in the resin of the opium poppy and, more loosely, the semi-synthetic opioids derived from them.

The most dangerous opioids are morphinum, codeinum, heroin.

Opioids have long been used to treat acute pain (such as post-operative pain). They have also been found to be invaluable in palliative care to alleviate the severe, chronic, disabling pain of terminal conditions such as cancer, and degenerative conditions such as rheumatoid arthritis.

Common adverse reactions in patients taking opioids for pain relief include: nausea and vomiting, drowsiness, itching, dry mouth, miosis, and constipation

Infrequent adverse reactions in patients taking opioids for pain relief include: dose-related respiratory depression (especially with more potent opioids), confusion, hallucinations, delirium, urticaria, hypothermia, bradycardia/tachycardia, orthostatic hypotension, dizziness, headache, urinary retention, ureteric or biliary spasm, muscle rigidity, myoclonus (with high doses), and flushing (due to histamine release, except fentanyl and remifentanyl).

Addiction is the process whereby physical and/or psychological dependence develops to a drug - including opioids. The withdrawal symptoms can reinforce the addiction, driving the user to continue taking the drug. Psychological addiction is more common in people taking opioids recreationally, it is rare in patients taking opioids for pain relief

Intoxication signs of opioids:

- narrowing of pupils;
- pallor of face skin and body;
- itch of face skin.

1. euphoria phase reminding the alcoholic;

2. somnolent phase, accompanied by short, superficial dream;

3. abstinent phase - begins after drug cancellation in an organism.

The withdrawal symptoms include severe dysphoria, sweating, nausea, rhinorrea, depression, severe fatigue, vomiting and pain.

Hashish actions:

- a) motorial stimulation;
- b) infringement of speeches;
- c) raised mood;
- d) euphoria;
- e) bright visual hallucinations;
- f) sexual excitation.

Patient's appearance: hyperemia of skin, eyes shine, mydriatic pupil, thirst, dryness in mouth, tachycardia, hypertension, breath increase, body's temperature rise, urination increase, discoordination movements, feeling of hunger.

In chronic stage of disease it is formed abstinent, mydriasis, yawning, fever, sweating, slackness, muscular weakness, tachycardia, hands tremor, dream infringement, anxiety.

Cocaine's actions:

- a) euphoria;
- b) mental excitation;
- c) ease of movements;
- d) increase of muscular force;
- e) raised mood;
- f) garrulity.

Through 2-3 h these conditions are replaced by general breakdown, apathy with adynamia, decrease in mood, illusion, hallucination.

It is formed abstinence. There are somatic infringements: mydriatic pupil, dryness in nose, in oral cavity, paresthesia, dizzinesses, appetite worsens.

Cocaine dependence (or addiction) is psychological dependency on the regular use of cocaine. It can result in severe physiological damage, psychosis, schizophrenia, lethargy, depression, or a potentially fatal overdose.

Chronic repeated use is needed to produce cocaine-induced changes in brain reward centers and consequent chronic dysphoria. Dysphoria magnifies craving for cocaine because cocaine reward rapidly, albeit transiently, improves mood. This contributes to continued use and a self-perpetuating, worsening condition, since those addicted usually cannot appreciate that long-term effects are opposite those occurring immediately after use.

The **amphetamine** (Phenaminum) on a chemical structure is close to an epinephrine, but his action essentially differs. At abusing an amphetamine use it in the doses many times over exceeding therapeutic, or enter it or preparations similar to it intravenously. There were indications that therapeutic doses of Phenaminum approximately at 10 % of people rendered paradoxical effect as a

sleepiness, flaccidities, downstrokes of serviceability. Similar reactions at teenagers at abusing the big doses it is not described.

Physical effects of amphetamine can include reduced appetite, increased/distorted sensations, hyperactivity, dilated pupils, flushing, restlessness, dry mouth, erectile dysfunction, headache, tachycardia, increased breathing rate, increased blood pressure, fever, sweating, diarrhea, constipation, blurred vision, impaired speech, dizziness, uncontrollable movements or shaking, insomnia, numbness, palpitations, and arrhythmia. In high doses or chronic use convulsions, dry or itchy skin, acne, pallor can occur.

Young adults who abuse amphetamine may be at greater risk of suffering a heart attack.

Psychological effects can include euphoria, anxiety, increased libido, alertness, concentration, energy, self-esteem, self-confidence, sociability, irritability, aggression, psychosomatic disorders, psychomotor agitation, hubris, excessive feelings of power and superiority, repetitive and obsessive behaviors, paranoia, and with chronic and/or high doses, amphetamine psychosis can occur.

Amphetamine use in adolescence may impair adult working memory.

The amphetamine sharply suppresses appetite and need for dream. After the big doses a day - two can not sleep and not is.

The intoxication (an after-action of amphetamin intoxication) meets very much frequently after reception of the big doses. As his main display the dysphoria serves, depressed by mood, irritability, animosity, feeling of intolerable weariness and exhaustion, sometimes alarm, «internal anxiety» because of which, despite of weariness, without soporific cannot fall asleep.

Withdrawal from chronic use of amphetamine can include anxiety, depression, agitation, fatigue, excessive sleeping, increased appetite, short temper, psychosis and suicidal thoughts.

4. Harmful influence of caffeine, sedative means, hallucinogens on an organism.

A **coffeine** - the stimulating agent most wide-spread in the world. On the average in the USA daily a person consumes about 200 mg of a coffeine that is equivalent to 2 cups of strong coffee. Caffeine stimulates the central nervous system first at the higher levels, resulting in increased alertness and wakefulness, faster and clearer flow of thought, increased focus, and better general body coordination, and later at the spinal cord level at higher doses.

In large amounts, and especially over extended periods of time, caffeine can lead to a condition known as **caffeinism**. Caffeinism usually combines caffeine dependency with a wide range of unpleasant physical and mental conditions including nervousness, irritability, anxiety, tremulousness, muscle twitching (hyperreflexia), insomnia, headaches, respiratory alkalosis, and heart palpitations. Furthermore, because caffeine increases the production of stomach

acid, high usage over time can lead to peptic ulcers, erosive esophagitis, and gastroesophageal reflux disease.

There are four caffeine-induced psychiatric disorders recognized by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition: caffeine intoxication, caffeine-induced anxiety disorder, caffeine-induced sleep disorder, and caffeine-related disorder not otherwise specified.

At abusing plenty of strong coffee are used (sometimes with spoons eat the coffee grounds prepared as kissel) or very strong broth of tea (chifir). In seeds of coffee and leaves of tea contains up to 2 % of a caffeine and his alkaloids. It is considered, that in a cup of strong coffee – 0.1 G of a caffeine. Signs of an intoxication appear at reception from 0.25 G and is higher, but at abusing accept up to 1 G. For example, in a pack of tea in 50 G from which prepares chifir, contains about 1 G of alkaloids of a caffeine.

Caffeine intoxication.

An acute overdose of caffeine, usually in excess of about 300 milligrams, dependent on body weight and level of caffeine tolerance, can result in a state of central nervous system over-stimulation called caffeine intoxication or colloquially the "caffeine jitters". It may include restlessness, nervousness, excitement, insomnia, flushing of the face, increased urination, gastrointestinal disturbance, muscle twitching, a rambling flow of thought and speech, irritability, irregular or rapid heart beat, and psychomotor agitation. In cases of much larger overdoses, mania, depression, lapses in judgment, disorientation, disinhibition, delusions, hallucinations, and psychosis may occur, and rhabdomyolysis (breakdown of skeletal muscle tissue) can be provoked. Duration of the phenomena of an intoxication - from 2-3 till 6-8 o'clock.

At long abusing a caffeine it is marked:

- progressing decrease of working capacity;
- gradual intellectual exhaustion;
- depression;
- dysphoria;
- weight loss;
- pallor of skin and mucosa;
- Crocq's disease;
- frustration of activity of cardiovascular system and gastrointestinal tract.

Barbiturates are drugs that act as central nervous system depressants, and by virtue of this they produce a wide spectrum of effects, from mild sedation to anesthesia. Some are also used as anticonvulsants.

Barbiturates are classified as ultrashort-, short-, intermediate-, and long-acting, depending on how quickly they act and how long their effects last. Abusers tend to prefer short-acting and intermediate-acting barbiturates. The most commonly abused are amobarbital (Amytal), pentobarbital (Nembutal),

and secobarbital (Seconal). A combination of amobarbital and secobarbital (called Tuinal) is also highly abused. Short-acting and intermediate-acting barbiturates are usually prescribed as sedatives and sleeping pills. These pills begin acting fifteen to forty minutes after they are swallowed, and their effects last from five to six hours.

Barbiturates actions:

- a) frustration of movements' coordination;
- b) mydriatic pupil;
- c) decrease of blood pressure;
- d) pulse increase;
- e) occurrence of hypersalivation, sweating.

Barbiturates are habit forming and lead to physical withdrawal symptoms. These can include tremors, anxiety, weakness, restlessness, nausea and vomiting, delirium, tonic-clonic or grand mal seizures, and cardiac arrest. Death can result from seizures or cardiac arrest.

Hallucinogens (nutmeg, ergotamine, etc.) are psychotropic substances of vegetative or synthetic origin which can cause person's mental frustration.

Hallucinogens cause temporary person's mentality frustration at influence of extremely small doses. There are following symptoms: euphoria, consciousness change, frustration of perception, thinking, formation of addiction, narcotic dependence. The big doses of these substances cause lasting frustration of mentality, euphoria, consciousness, perception and thinking are disturbed.

5. Harmful influence of volatile solvents on an organism.

For toxic intoxication by inhalation use hydrocarbons (acetylene, butane, propane, cyclopropanum, toluene, gasoline, perchloromethane, chloroform, freon-12, dichloromethane, penolene 643), oxygen connections (acetone, ethyl acetate, ethoxy ethane, methyl acetate, nitrogen dioxide) and other substances.

The most widespread way of reception of volatile solvents are inhalations from a plastic package in which place cotton wool moistened by volatile solvent.

Toxicomania

First period is characterized by feeling of intoxication reminding alcoholic. A mood is raised, congestion of heat and muscular slackness is felt.

For second period sensations of carelessness, complacency, vivacity are characteristic. Glue sniffers start to laugh and sing. Consciousness is gradually lost, subjects are perceived in deformed form in intensive paints, sensitivity is upset, perception of sounds is deformed, coordination of movements is broken. Speech becomes illegible, not clear.

Third period is characterized by visual and acoustical hallucinations. Perception of the body and environment is broken.

After the termination of toxic vapor inhalation hallucination quickly

Abstinent syndrome at glue sniffings is shown expressed dysphoria with irritability and aggression, headache, sweating, mydriatic pupil, tingling of hand's fingers, convulsive twitching of muscles.

6. Overcoming and prevention of bad habits.

Experts in narcology, psychiatrists, teenage doctors, medical biologists, teachers should:

- to reveal persons with bad habits;
- to reveal persons carried to group of raised risk;
- to study data of objective anamnesis with allowance for social and biological factors of development;
- to spend psychological studying of mental abilities and characterologic reserves of persons with bad habits;
- their age and education;
- character of personal changes;
- to develop and apply preventive actions directed on prevention and coming of bad habits.

Prevention of narcotisms and toxicomania - is system of state, social, genetic and medical actions directed on prevention of these diseases.

Primary prevention

- provides prevention of any illegal reception of any narcotic;
- measures on control over illegal offer of drugs;
- regular education of population about risk of occurrence of harmful consequences after use of narcotics.

Secondary prevention

- is directed on early revealing of illness, improvement of patients, prevention of relapses and complications of intoxication, phase-out of;
- carrying out of conversations;
- lecturing;
- edition of special brochures.

Tertiary prevention

- use of medical ways for purpose of restriction or reduction of disease's consequences or behavior dangerous to associates;
- purpose of such actions - decrease in physical scales of illness and criminal behaviour by means of specific medicines - substitutes of narcotic, reusable syringes, care of patients and consultation.

CHAPTER 9. PERSONAL HYGIENE

Study questions.

- 1. Personal hygiene and reasons for its maintaining.*
- 2. Hygiene of skin.*
- 3. Hygienic requirements to clothes and footwear.*
- 4. Hygiene of oral cavity.*
- 5. Hygiene of sleeping.*
- 6. Hygiene of sense organs.*
- 7. Parasitic diseases prevention.*

1. Personal hygiene and reasons for its maintaining.

Personal hygiene is the healthcare of own-self for which a person himself is responsible. Personal hygiene is not only concerned with matters pertaining to health of a person but also includes certain personal factors conducive to good health. These are habits, constitution, hereditary, idiosyncrasy, temperament, cleanliness, sleep, clothing, exercise, sex, etc. Different cultures and different religions may have different hygiene practices. Hygiene is very personal and individuals have different ideas about what they want to do. When possible, the nurse should help patients to meet their own personal needs rather than carrying out a standard routine.

The habit of maintaining cleanliness is very essential for the upkeep of health and for the normal growth of our body. When a person is ill, it is hard to think about bathing or brushing the teeth or cleaning the nails, breathing or coping with pain seem a lot more important.

Maintaining personal hygiene is necessary for many reasons; these can be personal, social, for health reasons, psychological or simply as a way of life. Essentially keeping a good standard of hygiene helps to prevent the development and spread of infections, illnesses and bad odours.

- **Personal Reasons**

Many people, women in particular, are very conscious of their hygiene needs and practices. This can be a result of being taught of the importance from an early age, from being picked-on at school for head lice or similar, or as a way of making themselves more attractive to the opposite sex.

Self-esteem, confidence and motivation can all be altered by our body image, often reflected on our ability to care for ourselves and keep good hygiene practices.

A bright white smile with clean and healthy teeth can endear people to us, whereas brown, unhealthy teeth can cause embarrassment and can alter our sense of well-being.

Healthy hair, skin and nails are signs of a good well-balanced diet and can give us confidence in everyday life.

- **Social Reasons**

Most people hate to be talked about, especially in a negative manner. By ensuring that our body is clean and well presented, we are more assured of projecting a positive body image that reflects our personalities.

Children should be taught the importance of hygiene and how to achieve good hygiene very early to keep themselves and others healthy and to reduce the risk of being bullied at school.

- **Health Reasons**

If a person is due to go into hospital, sometimes that person becomes very aware of their hygiene. The thought of being vulnerable and exposed to strangers can cause the person to become very strict on their hygiene needs.

If a person have cut yourself, the wound should be cleaned and dressed suitably, this can help reduced the risk of infection and pain.

Conditions such as head lice, athlete's foot etc. should be treated immediately to prevent further infections and spread to others.

Hand washing cannot be emphasised enough as this simple action can prevent a plethora of illnesses and disorders developing. Many people 'forget' to wash their hands after using the toilet or before handling foods; this deed can cause a great deal of illness and even death.

- **Psychological Issues**

By being well presented, clean and tidy, people can feel more confident, especially in social situations. Many job interviews and such like are highly dependent of hygiene as many decisions are made by first impressions within the first few minutes of meeting; these decisions are often made in the sub-conscious. Our chances of succeeding either in work or social settings, or even with the opposite sex can be altered by our maintenance of hygiene.

Maintaining hygiene practices helps to reduce the risks of ill health, but equally important affects how we and others perceive ourselves and can influence our levels of confidence and self-esteem which can affect many aspects of our lives.

2. Hygiene of skin.

Healthy skin is important. It protects the tissues from injury by preventing germs (microorganisms) from entering the body. Skin has around two millions sweat glands, which has atleast three functions, i.e. to keep body temperature normal, to keep the skin permeable and to get rid the body of the waste material and dirt. The skin is an active organ with the function of protection, secretion, sensation, respiration, temperature regulation and excretion. Skin is of immense value as a lot of perspiration and excretion of solids take place through its innumerable minute pores. The amounts of sweat varies from person to person. Emotional stress, worry, fear or excitement can also cause excessive sweating. Certain parts of the body, like armpits give out an unpleasant odours from the secretion of sweat.

When the skin is scratched or broken, micro-organisms can enter and the

person is vulnerable to infection. When the skin is dry or flaky, it may crack. Avoid injuring the skin and improve skin health if possible, through nutrition, lotions and above all, bathing. The cells of the skin requires adequate nutrition and hydration to resist injury and disease. Adequate circulation is essential to maintain cell life. The skin often reflects a change in physical condition by alteration in colour, thickness, texture, turgor, temperature and hydration. As long as the skin remains intact and healthy, its physiological function remains optional.

Skin cleanliness is desirable from the aesthetic as well as hygienic standpoint. It makes bodily comfort and self-respect. Hence, it is most necessary to keep the skin clean from dirt, so that the sweat glands may function properly. The best way to maintain cleanliness is the removal of sebaceous secretions of the skin which is best affected by taking bath regularly by using soap and water, which should be followed by liberal application of some toilet powder containing a deodorant.

Normal Skin Characteristics

Intact, without abrasions, warm, localized changes in texture across surface, good turgor (elastic and firm) and generally smooth and soft, colour variations from body part to body part.

Bathing

Bathing removes micro-organisms from the skin as well as body secretions, gets rid of unpleasant smells, improves blood circulation to the skin and makes the patient feel more relaxed and refreshed. Patients may be bathed every day in the hospital. However, if a patient's skin is dry, bathing may be limited to once or twice a week so that it does not dry out further

Before beginning a bed bath, try to avoid draughts by closing windows or doors, if necessary, and do all you can to give the patient privacy. Have ready a basin of warm water, soap, a cloth for washing and one for rinsing, a bath blanket or sheet and two towels, if available, one to dry the patient with and the other to cover part of the body as you wash. You should change the bath water at least once and preferably twice if enough water is available. The purposes of bathing are as follows:

1. Cleansing removes perspiration, some bacteria, sebum and dead skin cells, which minimizes skin irritation and reduces the chance of infection.
2. Good circulation is promoted through the use of warm water and gentle stroking of the extremities.
3. Bathing promotes relaxation and feeling of being refreshed and comfortable.

Hair Care

Combing, brushing, and shampooing are basic hygiene measures for all people.

A *dry scalp*, *seborrhea sicca*, is a condition of 'dandruff', i.e., epithelial scales are shed in excess. Only soft soap shampoos should be used. A good

home made shampoo consists of 50 parts of soft soap, 15 parts of water, 33 parts of alcohol and 2 parts of oil of lavender.

An *oily scrap*, seborrhea elcosa, is a condition of overactive sebaceous glands. Shampoos should be readily drying, and so spirit is added to them. It is necessary to wash the hair once in a week with soap and water or soap nut solution, prepared by steeping powdered soap nuts for a few hours, in water (preferably hot water). Oil should not be used too frequently. It may however, be used once a week after washing the hair with soap to restore and natural grease. One should always practice to have ownself and as far as possible, avoid going to barber's shop for the purpose to avoid getting danger of infection.

The scalp needs a good blood supply and massaging for a few minutes daily is of great benefit. Hair washing generally depends on its oiliness and the person's preferences.

Care of the hands

Hands should be kept free from the cracks and roughness due to cold wind or constant use of antiseptic solutions. Glycerine (diluted) in account of its action of drawing fluid to it or some skin cream which will prevent evaporation should be used until cracks heal. Scrupulous cleansing of hands with soap and water is very essential to prevent spread of infectious diseases like cholera, typhoid, dysentery, etc. They should invariably be washed before taking meals and during handling or preparing food.

Care of the nails

The cuticle surrounding the nails should be pressed back periodically, say once or twice a week, with a wooden stick. If necessary, the cuticle may be softened to bed by applying the dilute glycerine or liquid paraffin at night before retiring. As a majority of Indians eat their meals with their hands and do not use spoon and forks. They should be very careful about regular cleansing of their nails. The fingers should never be put in the mouth of the nose. The nails should be cut horizontally, because if curved, the skin around them will be pressed over the nails and the pressure of the nails on this enfolding skin will cause symptoms usually attributed to 'ingrowing toe nails'.

Hypertrophied nails: These are hard, horny, thickened growths of nails and are of a yellowish or blackish color. They should be treated as soon as the symptoms start, by soaking in a solution of sodium bicarbonate and careful filing.

Care of the legs and feet

The feet contain many sweat glands, and excessive sweating or hyperhidrosis necessitate, frequent washing and change of soaks. Bromidrosis is excessive sweating with offensive odour, and soreness of feet. The odour is due to decomposition of sweat. For this condition the feet should be washed several times a day in boric acid solution, dried, dabbed with methylated spirit mixed with starch and boric powder. Sock and shoes must be changed each time after use; used stockings washing and shoes be aired. Shoes with cork heels are good and

should be washed with a spirit lotion.

Corns: These are caused by pressure of badly fitting shoes. The epidermis thickens and becomes horny and grows inward to a point. If they occur between the toes, they are kept moist and are called '*softcorns*'.

Callosities: These are formed as a result of pointed shoes. The great toe becomes bent in producing an angle at the junction of metatarsophalangeal joint. The head of the metatarsal is thus a projecting point on the inner border of the foot and is exposed to pressure. A callosity forms on this point of pressure and the bursa underneath becomes chronically inflamed. These conditions may be avoided by wearing suitable shoes.

Arch of the foot: The inner bony arch should be 1 to 1½ inches (25.4-38.1 mm) from the ground. Dropped arch is very painful and is caused for want of tone in the leg muscles with stretching of the supporting tendons and ligaments under the arch. The chief remedies are massage of leg-muscles, a built up sole, raised ¼ to ½ inch (6.1-12.2 mm) on the inner side and provision of arch supports.

The feet carry the greatest load of any part of the body, so obviously they have a tremendous effect on the rest of the body. These must be kept scrupulously clean by daily washing and carefully drying between the toes.

3. Hygienic requirements to clothes and footwear.

Functions of clothing

A baby wearing many items of winter clothing: headband, cap, fur-lined coat, shawl and sweater

One of the primary purposes of clothing is to keep the wearer comfortable. In hot climates clothing provides protection from sunburn or wind damage, while in cold climates its thermal insulation properties are generally more important. Shelter usually reduces the functional need for clothing. For example, coats, hats, gloves, shoes, socks, and other superficial layers would normally be removed when entering or once inside a warm home, particularly if one is residing or sleeping there. Similarly, clothing has seasonal and regional aspects, so that thinner materials and fewer layers of clothing are generally worn in warmer seasons and regions than in colder ones.

Clothing can protect all of us against many things that might injure the uncovered human body. Clothes act as protection from the elements, including rain, snow and wind and other weather conditions, as well as from the sun. Clothes also reduce the level of risk during activity, such as work or sport. Clothing at times is worn as protection from specific environmental hazards, such as insects, noxious chemicals, weapons, and contact with abrasive substances. Conversely, clothing may protect the environment from the clothing *wearer*, as with doctors wearing medical scrubs.

Fabrics of clothes should possess following properties: air permeability, hygroscopy, heat conductivity and gas absorbability.

The moist clothes from silk, chintz even at heat cause phenomena of chill. The flannel or woollen clothes considerably soften these sensations.

Heat conductivity of a fabric depends on pores size in a material. Heat conductivity worn or repeatedly washing fabrics raises, as pores becomes less.

The size of gases absorption depends on humidity and structure of a fabric and character of its processing. The wool absorbs gases more than the cotton fabric, and allocates them more slowly. Sometimes the gases quantity adsorbed by fabrics, is so great, that at their return allocation they can become a poisoning reason.

Requirements to footwear:

- Protection of feet from mechanical influences, blows and unevenness of the ground, cold and blotting;
- Should be soft, easy, comfortable in wearing, correspond to weather and working conditions.

The narrow and close footwear lead to feet deformation, deterioration of blood circulation, strengthened sweating of feet, development of platypodia.

The best material for footwear manufacturing is the natural skin which is air-penetrable enough, steady to soakage, well keeps heat.

In the present stage artificial materials are widely applied. Artificial materials for footwear manufacturing should be porous, vapor permeable, air permeable, water permeable, absorb and give moisture, have small heat conductivity for prevention of organism's overheating in a heat and coolings during cold time; proof to ageing, to action of mould and not allocate chemical substances in the quantities representing potential health hazard.

4. Hygiene of oral cavity.

Mouth care

There are many species of bacteria always present as a rule a healthy mouth is capable of dealing with these. Under conditions of sepsis, however, such as caries teeth, septic tonsils, unhealthy mucous membrane or infected sinuses, the stream of bacteria are constantly pouring into the mouth, find these ideal conditions of growth, helped by remnants of food. The tongue becomes coated and sordes collect around teeth and lips. Such a mouth may give rise to parotitis, otitismedia, infected sinuses, pyorrhoea, digestive troubles, infection of respiratory passages and via general circulation, rheumatic conditions and remote septic foci. The tongue should be cleaned every morning by a tongue cleanser.

Mouth should be well rinsed with some pleasant antiseptic mouthwash, such as glycerine of thymol and a little of it should be used for gargling in the morning and at night after taking the last meal or drink.

You can make a tooth powder by mixing salt and bicarbonate of soda (or ashes) in equal amounts. To make it stick, wet the brush before putting it in the powder.

Oral hygiene

Oral hygiene helps to maintain a healthy state of the mouth, teeth gums and lips. Brushing the teeth removes food particles, plaque, and bacteria, massages the gums, and relieves discomfort resulting from unpleasant odours and tastes. Complete oral hygiene gives a sense of well-being and thus can stimulate appetite.

Care of teeth

A tooth is a hard structure composed of dentine and the enamel covering the dentine although it resembles bone, yet it is much harder. The enamel of teeth is the hardest tissue in the body. Once the enamel of teeth is completely formed, the cells that produced it, disappear.

Thus, it can then no longer receive nourishment from the body. The enamel is therefore incapable of repair. It covers only the exposed surface of the tooth, as within the jaw bone and dentine of the tooth, as within the jaw bone the dentine of the tooth is covered with a cement like material called *cementum*. A proper wholesome diet is necessary not only for building of strong teeth, but also to ward off dental diseases. Milk, eggs, tomatoes, guavas, amlas and other citrus fruits including green leafy vegetables rich in vitamin C content should be included in our daily diet. If the diet happens to be lacking in minerals and vitamin C, children may suffer from structural defects of teeth, gums and bones. Full grown teeth also require balanced nourishment for their maintenance. A set of sound teeth is a valuable asset because it contributes to personal appearance, in addition to providing an efficient chewing apparatus.

Defective teeth make difficult or impossible the proper mastication of food and when teeth are infected, health of the body may become seriously impaired. So it is very essential that the teeth should be regularly and thoroughly cleaned to ensure, good digestion. They should be scrupulously cleaned at least twice a day. The first thing in the morning and last thing at night should be with a brush of moderate stiffness.

Any place between the teeth where food gets lodged habitually and hence it is not removed promptly and regularly is quite sure to decay sooner or later. The teeth rarely decay on a fully exposed surface. If there are cavities in the teeth they should be promptly got filled up. If they are altogether decayed and carious they should be removed at once so that near by teeth will not be decayed. Deposit of tartar upon the teeth should receive due attention and in this case the teeth require scaling or else the roots will become exposed which will eventually make the teeth loose.

Children often suffer from caries either on account of deficiency of vitamin D or due to acid forming bacteria formed on account of fermentation of carbohydrates. Especially amongst children, eating of sweets, chocolates, toffees and chewing gums, etc. are the promoting causes of dental caries or decay of teeth, because starch and sugar undergo fermentation in the mouth and are converted into acids. Acid acts on the enamel of the teeth, exerting a corroding action, destroying it and exposing underlying dentine. The micro-organisms, which are teeming in our mouths subsequently attach the exposed dentine.

Therefore natural fruits in the form of dry fruits such as figs, dates, apricots, pulms, etc. may be given to children, which act as nourishing substitutes for candles. In tropics, one has to be very careful about the occurrence of pyorrhea, alveolaris among adults which is perhaps form the scurvy due to deficiency of vitamin C.

Pyorrhea is essentially a disease, which is characterised by the formation of pus pockets between the teeth surfaces and gums, where germs freely thrive and become a source of danger to the body. Since germs from the pyorrhea may threaten the danger of poisoning even the whole body, these germs from the pyorrhea pockets can reach any part of the body and give rise to conditions like digestive disorders, pain in joints, eye trouble, heart and kidneys diseases. Moreover, apart from these ailments, pyorrhea has its social aspects too. Pockets of pus and germs give rise to foul breath which may lead to avoidance of social relations and loss of friends.

The movement of the brush should not only be from side to side but also from above downwards and inside the teeth. While brushing the teeth, sufficient pressure should be exercised so that bristles of the brush may be forced between the teeth. All the inner, outer and biting surfaces should be brushed alike atleast 5 times. Upper and lower teeth should be brushed downwards and upwards respectively. The chewing and biting surfaces should, however be particularly at night followed by a hot and tepid water gargles will go a long way to prevent caries and pyorrhea. The gum tissues may be benefited by massaging them with a finger tip smeared with tooth paste.

The use of tooth brush is not very sanitary because there is always the difficulty of keeping clean and the same brush is generally used for a considerably long period. If the toothbrush is to be used, it should be kept in boiling water for sometime after use. It should be frequently changed. In India, a green neem or kiker twig, *datum* is used for cleansing teeth, which is very good from hygienic point of view, since it requires chewing and provides massage to the gums. The tongue should be cleaned by a tongue cleanser every morning.

5. Hygiene of sleeping.

Sleep is a naturally recurring state of relatively suspended sensory and motor activity, characterized by total or partial unconsciousness and the inactivity of nearly all voluntary muscles. It is distinguished from quiet wakefulness by a decreased ability to react to stimuli, and it is more easily reversible than hibernation or coma. Sleep is a heightened anabolic state, accentuating the growth and rejuvenation of the immune, nervous, skeletal and muscular systems.

Stages of sleeping

In human sleeping is cut into two broad types: Rapid Eye Movement (REM) and Non-Rapid Eye Movement (NREM or non-REM) sleep. Each type has a distinct set of associated physiological, neurological, and psychological features. The American Academy of Sleep Medicine (AASM) further divides

NREM into three stages: N1, N2, and N3, the last of which is also called delta, or slow-wave, sleep (SWS).

Sleep proceeds in cycles of REM and NREM, the order normally being N1 → N2 → N3 → N2 → REM. There is a greater amount of deep sleep (stage N3) early in the night, while the proportion of REM sleep increases later in the night and just before natural awakening.

NREM sleep

According to the 2007 AASM standards, NREM consists of three stages. There is relatively little dreaming in NREM.

Stage N1 refers to the transition of the brain from alpha waves having a frequency of 8 to 13 Hz (common in the awake state) to theta waves having a frequency of 4 to 7 Hz. This stage is sometimes referred to as somnolence or drowsy sleep. Sudden twitches and hypnic jerks, also known as positive myoclonus, may be associated with the onset of sleep during N1. Some people may also experience hypnagogic hallucinations during this stage, which can be troublesome to them. During N1, the subject loses some muscle tone and most conscious awareness of the external environment.

Stage N2 is characterized by sleep spindles ranging from 11 to 16 Hz (most commonly 12–14 Hz) and K-complexes. During this stage, muscular activity as measured by electromyogram decreases, and conscious awareness of the external environment disappears. This stage occupies 45% to 55% of total sleep in adults.

Stage N3 (deep or slow-wave sleep) is characterized by the presence of a minimum of 20% delta waves ranging from 0.5 to 2 Hz and having a peak-to-peak amplitude > 75 μ V. (electroencephalogram (EEG) standards define delta waves to be from 0 – 4 Hz, as well as the new 2007 AASM guidelines have a range of 0.5 to 2 Hz.) This is the stage in which parasomnias such as night terrors, nocturnal enuresis, sleepwalking, and somniloquy occur. Many illustrations and descriptions still show a stage N3 with 20 - 50 % delta waves and a stage N4 with greater than 50 % delta waves; these have been combined as stage N3.

REM sleep, accounts for 20%–25% of total sleep time in most human adults. The criteria for REM sleep include rapid eye movements as well as a rapid low-voltage EEG. Most memorable dreaming occurs in this stage. At least in mammals, a descending muscular atonia is seen. Such paralysis may be necessary to protect organisms from self-damage through physically acting out scenes from the often-vivid dreams that occur during this stage.

Sleep timing is controlled by the circadian clock, sleep-wake homeostasis, and in humans, within certain bounds, willed behaviour. The circadian clock - an inner timekeeping, temperature-fluctuating, enzyme-controlling device - works in tandem with adenosine, a neurotransmitter that inhibits many of the bodily processes associated with wakefulness.

Lack of sleep can more than double the risk of death from cardiovascular disease, shown to be a risk factor for weight gain, hypertension, and Type 2 diabetes, sometimes leading to mortality. Furthermore, sleep difficulties are closely associated with psychiatric disorders such as depression, alcoholism, and bipolar disorder. Up to 90% of adults with depression are found to have sleep difficulties.

Children need more sleep per day in order to develop and function properly: up to 18 hours for newborn babies, with a declining rate as a child ages.

Age and condition	Average amount of sleep per day
Newborn	up to 18 hours
1-12 months	14-18 hours
1-3 years	12-15 hours
3-5 years	11-13 hours
5-12 years	9-11 hours
Adolescents	9-10 hours
Adults, including elderly	7-8 (+) hours
Pregnant women	8 (+) hours

Sleep debt

Sleep debt is the effect of not getting enough rest and sleep; a large debt causes mental, emotional, and physical fatigue.

Helpful Hints to Help Sleep

Poor sleep habits (referred to as hygiene) are among the most common problems encountered in our society.

Below are some essentials of good sleep habits. Many of these points will seem like common sense. But it is surprising how many of these important points are ignored by people.

1) Personal Habits

- a) Fix a bedtime and an awakening time.
- b) Avoid napping during the day.
- c) Avoid alcohol 4-6 hours before bedtime. Many people believe that alcohol helps them sleep. While alcohol has an immediate sleep-inducing effect, a few hours later as the alcohol levels in your blood start to fall, there is a stimulant or wake-up effect.
- d) Avoid caffeine 4-6 hours before bedtime. This includes caffeinated beverages such as coffee, tea and many sodas, as well as chocolate, so be careful.
- e) Avoid heavy, spicy, or sugary foods 4-6 hours before bedtime. These can affect your ability to stay asleep.

f) Exercise regularly, but not right before bed. Regular exercise, particularly in the afternoon, can help deepen sleep. Strenuous exercise within the 2 hours before bedtime, however, can decrease your ability to fall asleep.

2) Sleeping Environment

a) Use comfortable bedding. Uncomfortable bedding can prevent good sleep. Evaluate whether or not this is a source of your problem, and make appropriate changes.

b) Find a comfortable temperature setting for sleeping and keep the room well ventilated. If your bedroom is too cold or too hot, it can keep you awake. A cool (not cold) bedroom is often the most conducive to sleep.

c) Block out all distracting noise, and eliminate as much light as possible.

d) Reserve the bed for sleep and sex. Don't use the bed as an office, workroom or recreation room. Let your body "know" that the bed is associated with sleeping.

3) Other Factors

a) Several physical factors are known to upset sleep. These include arthritis, acid reflux with heartburn, menstruation, headaches and hot flashes.

b) Psychological and mental health problems like depression, anxiety and stress are often associated with sleeping difficulty. In many cases, difficulty staying asleep may be the only presenting sign of depression. A physician should be consulted about these issues to help determine the problem and the best treatment.

c) Many medications can cause sleeplessness as a side effect. Ask your doctor or pharmacist if medications you are taking can lead to sleeplessness.

6. Hygiene of sense organs.

Care of the eyes

It is highly specialized receptor of the optic nerve. Its mechanism enables the light waves to reach the optic nerve endings producing sight. Tears have considerably bactericidal power and are less injurious to conjunctiva than any other lotion. They are brought about by some emotional crisis, by frustration, anger, sorrow or even by the sudden lifting of some frightening crisis, as for example, when a mother finds her lost child who has not been drowned or kidnapped. Frequent bathing of eyes should not be encouraged. Disinfectant lotions should be used only when prescribed.

Sore eye is an infection disease and fairly widespread in villages all over the country. The infection is present in the discharge of the eyes and is transmitted to the healthy persons through handkerchiefs or towels soiled with discharge by direct contact with the eyes of an infected person. Indirectly the infection is spread through flies.

When the germs of sore eye infect an individual, then transparent

covering of the eye called *conjunctiva* is damaged or it may get hurt by particles of foreign bodies such as dust particles and the eyes may therefore get red and watery. In due course of time a discharge secretes from the eyes, which is infective and is disease producing.

Usually a person's eyes do not require any special care since they are continually cleaned by the fluid in the eyes, and the eyelashes and eyelids stop particles from getting into the eyes. However, a patient who has had an eye injury or surgery, a patient who has an eye infection, or an unconscious patient may need special care of the eyes. With infections or injuries, the eyes tend to drain and the discharge may accumulate and dry on the lashes like a crust. Unconscious patients may not blink and their eyes may become dry and irritated. Discharge from the eyes may also build up.

Eyes of the school children should be periodically examined and defects corrected and treated. Children with such defects as myopia and those whose vision is liable to deteriorate should be kept under constant supervision and suitable work chosen for them.

Many persons wear eye glasses. This represents a large financial investment for them. Therefore, will use care when cleaning glasses and should protect them from breakage or other damage when not worn. Eye glasses should be stored in the case and placed in the drawer of the bedside stand when not in use to avoid accidental damage. Glasses are made of hardened glass or plastic that is impact resistant to prevent shattering but can be easily scratched. Plastic lenses require special cleansing solutions and drying tissues. Warm water is adequate to clean glass lenses, and the use of a soft cloth to dry is best to prevent of the lenses.

Most patients prefer caring for their own contact lenses. A contact lens is a small, round, sometimes coloured disk that fits on the cornea of the eye over the pupil. The lenses need not be reinserted until the patient is more capable of caring for the lenses himself. There is a large variety of products available for lens care.

Each type of lens hard, soft or rigid gas-permeable requires a different cleansing technique. Each set of lenses is stored in a case with solution according to manufacturer's directions.

Care of the ears

Normally, ears need very little cleaning. The child with running ears is in constant danger of deafness or otitis media. Wax in ears, sometimes gives rise to partial deafness, so it should be removed by syringing. If dirt is allowed to collect for some time, it may develop into a large hard plug causing earache, boils and even deafness.

No attempt should be made to remove wax by prodding any sharp pencil, hairpin or any pointed instrument. Similarly, do not let inexperienced people remove wax by unsterilized instruments or forcibly syringe the ear. The best way is to put a drop of warm oil like olive, mustard, coconut oil or glycerine (if available) for a few days. It will soften the hard wax and bring it to the surface,

which can be conveniently removed by a lean cotton swab wrapped on the point of a match stick or through syringing.

Persons should never to use bobby pins, toothpicks or cotton-tipped applicators to clean the external auditory canal. These objects may damage the tympanic membrane (eardrum) or cause wax (cerumen) impacted within the canal.

Care of the nose

The person can usually remove secretions from the nose by gently blowing into a soft tissue. This could be the only daily hygiene necessary. The applicator should not be inserted beyond the cotton tip.

7. Parasitic diseases prevention.

Scabies, also known as sarcoptic mange and colloquially known as the itch, is a contagious ectoparasite skin infection characterized by superficial burrows and intense pruritus (itching). It is caused by the mite *Sarcoptes scabiei*.

The characteristic symptoms of scabies infection include superficial burrows, intense pruritus (itching), a generalized rash and secondary infection. Acropustulosis, or blisters and pustules on the palms and soles of the feet, are characteristic symptoms of scabies in infants. S-shaped tracks in the skin are often accompanied by small, insect-type bites called nodules that may look like pimples. These burrows and nodules are often located in the crevices of the body, such as the webs of fingers, toes, feet, buttocks, elbows, waist area, genital area and axilla, and under the breasts in women.

In individuals never before exposed to scabies, the onset of clinical signs and symptoms is 4–6 weeks after infestation. Some people may not realize that they have it for years; in previously exposed individuals, onset can be as soon as 2–4 days after infestation.

Scabies is highly contagious and can be spread by scratching, picking up the mites under the fingernails and simply touching another person's skin. They can also be spread onto other objects like keyboards, toilets, clothing, towels, bedding, furniture, and anything else onto which the mite may be rubbed off, especially if a person is heavily infested. The parasite can survive up to 14 days away from a host, but often do not survive longer than two or three days away from human skin.

Prevention

There is no vaccine available for scabies, nor are there any proven causative risk factors. Therefore, most strategies focus on preventing re-infection. All family and close contacts should be treated at the same time, even if asymptomatic. Cleaning of environment should occur simultaneously, as there is a risk of reinfection. Therefore it is recommended to wash and hot iron all material (such as clothes, bedding, and towels) that has been in contact with scabies infestation.

Cleaning the environment should include:

- Treatment of furniture and bedding.
- Vacuuming floors, carpets, and rugs.
- Disinfecting floor and bathroom surfaces by mopping.
- Cleaning the shower/bath tub after each use.
- Daily washing of recently worn clothes, towels and bedding in hot water, drying in a hot dryer and steam ironing.

Ascariasis is a human disease caused by the parasitic roundworm *Ascaris lumbricoides*. Perhaps as many as one quarter of the world's people are infected, and ascariasis is particularly prevalent in tropical regions and in areas of poor hygiene. Infection occurs through ingestion of food contaminated with feces containing *Ascaris* eggs. Infections are usually asymptomatic, especially if the number of worms is small. They may however be accompanied by inflammation, fever, and diarrhea, and serious problems may develop if the worms migrate to other parts of the body.

Patients can remain asymptomatic for very long periods of time. As larval stages travel through the body, they may cause visceral damage, peritonitis and inflammation, enlargement of the liver or spleen, toxicity, and pneumonia. A heavy worm infestation may cause nutritional deficiency; other complications, sometimes fatal, include obstruction of the bowel by a bolus of worms (observed particularly in children) and obstruction of the bile or pancreatic duct.

The source of transmission is from soil and vegetation on which fecal matter containing eggs has been deposited. Ingestion of infective eggs from soil contaminated with human feces or transmission and contaminated vegetables and water is the primary route of infection.

Transmission from human to human by direct contact is impossible.

Prevention includes: use of toilet facilities; safe excreta disposal; protection of food from dirt and soil; thorough washing of produce; and hand washing.

Food dropped on the floor should never be eaten without washing or cooking, particularly in endemic areas. Fruits and vegetables should always be washed thoroughly before consumption.

Trichinosis, also called trichinellosis, or trichiniasis, is a parasitic disease caused by eating raw or undercooked pork or wild game infected with the larvae of a species of roundworm *Trichinella spiralis*, commonly called the trichina worm.

The great majority of trichinosis infections have either minor or no symptoms and no complications. There are two main phases for the infection: enteral (affecting the intestines) and parenteral (outside the intestines). The symptoms vary depending on the phase, species of *Trichinella*, amount of encysted larvae ingested, age, gender, and host immunity.

Enteral phase

A large burden of adult worms in the intestines promote symptoms such as nausea, heartburn, dyspepsia, and diarrhea from 2-7 days after infection,

while small worm burdens generally are asymptomatic. Eosinophilia presents early and increases rapidly.

Parenteral phase

The severity of symptoms caused by larval migration from the intestines depends on the amount of larvae produced. As the larvae migrate through tissue and vessels, the body's inflammatory response results in edema, muscle pain, fever, and weakness. A classic sign of trichinosis infection is periorbital edema, swelling around the eyes, which may be caused by vasculitis. Splinter hemorrhages in the nails is also a common symptom.

The most dangerous case is worms entering the central nervous system. They cannot survive there, but they may cause enough damage to produce serious neurological deficits (such as ataxia or respiratory paralysis), and even death. The central nervous system is compromised by trichinosis in 10-24% of reported cases of a rare form of stroke. Trichinosis can be fatal depending on the severity of the infection; death can occur 4–6 weeks after the infection. Death is usually caused by myocarditis, encephalitis, or pneumonia.

Prevention

Laws and rules required of food producers may improve food safety for consumers.

Public education about the dangers of consuming raw and undercooked meat especially pork, may reduce infection rates. Hunters are also an at-risk population due to their contact and consumption of wild game, including bear.

Larvae may be inactivated by the heating, freezing (caution), or irradiation of raw meat. Freezing may only be effective for *T. spiralis*, since some other species, such as *T. nativa*, are freeze resistant and can survive long-term freezing.

Unsafe and unreliable cooking of meat includes the use of microwave ovens, curing, drying, and smoking, as these methods are difficult to standardize and control.

Causal agent of **opisthorchiasis** Trematodes (flukes) *Opisthorchis viverrini* (Southeast Asian liver fluke) and *O. felineus* (cat liver fluke).

Most infections are asymptomatic. In mild cases, manifestations include dyspepsia, abdominal pain, diarrhea or constipation. With infections of longer duration, the symptoms can be more severe, and hepatomegaly and malnutrition may be present. In rare cases, cholangitis, cholecystitis, and cholangiocarcinoma may develop. In addition, infections due to *O. felineus* may present an acute phase resembling Katayama fever (schistosomiasis), with fever, facial edema, lymphadenopathy, arthralgias, rash, and eosinophilia. Chronic forms of *O. felineus* infections present the same manifestations as *O. viverrini*, with in addition involvement of the pancreatic ducts.

Enterobiasis usually occurs through the ingestion of pinworm eggs, either through contaminated hands, food, or less commonly, water. The chief symptom is itching in the anal area.

Pinworms spread through human-to-human transmission, by ingesting (i.e., swallowing) infectious pinworm eggs. The eggs are hardy and can remain viable (i.e., infectious) in a moist environment for up to three weeks. They do not tolerate heat well, but can survive in low temperatures: two-thirds of the eggs are still viable after 18 hours at -8 degrees Celsius (18 °F).

One third of individuals with pinworm infection are totally asymptomatic. The main symptoms are pruritus ani and perineal pruritus, i.e., itching in and around the anus and around the perineum. The itching occurs mainly during the night, and is caused by the female pinworms migrating to lay eggs around the anus. The intensity of the itching varies, and it can be described as tickling, crawling sensations, or even acute pain. The itching leads to continuously scratching the area around the anus, which further results in tearing of the skin and complications such as secondary bacterial infections, including bacterial dermatitis (i.e., skin inflammation) and folliculitis (i.e., hair follicle inflammation). General symptoms are insomnia (i.e., persistent difficulties to sleep) and restlessness. A considerable proportion of children suffer from anorexia (i.e., loss of appetite), weightloss, irritability, emotional instability, and enuresis (i.e., inability to control urination).

Pinworms cannot damage the skin, and they do not normally migrate through tissues. However, in women they may move onto the vulva and into the vagina, from there moving to external orifice of the uterus, and onwards to the uterine cavity, fallopian tubes, ovaries, and peritoneal cavity. This can cause vulvovaginitis, i.e. an inflammation of the vulva and vagina. This causes vaginal discharge and pruritus vulvae, i.e., itchiness of the vulva. The pinworms can also enter the urethra, and presumably, they carry intestinal bacteria with them.

Prevention

Prevention of pinworm infection is dependent on personal hygiene and the cleanliness of the living quarters. Even so, infection may occur in the highest strata of society, where hygiene and nutritional status are typically high.

The rate of reinfection can be reduced through hygienic measures. Hygienic measures are however often recommended, especially in recurring cases. This includes keeping fingernails short, and washing and scrubbing hands and fingers carefully, especially after defecation and before meals. Under ideal conditions, bed covers, sleeping garments, and hand towels should be changed daily. Simple laundering of clothes and linen disinfects them. Children should wear gloves while asleep, and the bedroom floor should be kept clean. Food should be covered to limit contamination with dust-borne parasite eggs. Household detergents have little effect on the viability of pinworm eggs, and cleaning the bathroom with a damp cloth moistened with an antibacterial agent or bleach will merely spread the viable eggs. Similarly, shaking clothes and bed linen will detach and spread the eggs.

CHAPTER 10. POPULATION'S VALEOLOGICAL EDUCATION

Study questions.

1. *Population's valeological education, its purpose, tasks and principles.*
2. *Methods, forms and indicators of valeological education.*
3. *Service of valeological formations of healthy lifestyle.*
4. *Role of medical workers in valeological education.*
5. *Communications in valeological education.*
6. *Government program of populations' healthy lifestyle formation of the Republic of Belarus.*

1. Population's valeological education, its purpose, tasks and principles.

Health education is the profession of educating people about health. Areas within this profession encompass environmental health, physical health, social health, emotional health, intellectual health, and spiritual health. It can be defined as the principle by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance, or restoration of health. The World Health Organization defined Health Education as "comprising of consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health."

A health educator is "a professionally prepared individual who serves in a variety of roles and is specifically trained to use appropriate educational strategies and methods to facilitate the development of policies, procedures, interventions, and systems conducive to the health of individuals, groups, and communities" As a Health Educator you are here to help and enhance the health of others.

Education for health begins with people. It hopes to motivate them with whatever interests they may have in improving their living conditions. Its aim is to develop in them a sense of responsibility for health conditions for themselves as individuals, as members of families, and as communities. In communicable disease control, health education commonly includes an appraisal of what is known by a population about a disease, an assessment of habits and attitudes of the people as they relate to spread and frequency of the disease, and the presentation of specific means to remedy observed deficiencies.

Health education is also an effective tool that helps improve health in developing nations. It not only teaches prevention and basic health knowledge but also conditions ideas that re-shape everyday habits of people with unhealthy lifestyles in developing countries. This type of conditioning not only affects the

immediate recipients of such education but also future generations will benefit from an improved and properly cultivated ideas about health that will eventually be ingrained with widely spread health education. Moreover, besides physical health prevention, health education can also provide more aid and help people deal healthier with situations of extreme stress, anxiety, depression or other emotional disturbances to lessen the impact of these sorts of mental and emotional constituents, which can consequently lead to detrimental physical effects.

Health education consists of some constituent elements: emotional health and a positive self image; appreciation, respect for, and care of the human body and its vital organs; physical fitness; health issues of alcohol, tobacco, drug use and abuse; health misconceptions and myths; effects of exercise on the body systems and on general well being; nutrition and weight control; sexual relationships and sexuality, the scientific, social, and economic aspects of community and ecological health; communicable and degenerative diseases including sexually transmitted diseases; disaster preparedness; safety and driver education; factors in the environment and how those factors affect an individual's or population's Environmental health (ex: air quality, water quality, food sanitation); life skills; choosing professional medical and health services; and choices of health careers.

Valeological education - is the complex educational, training activity directed on formation hygienic health of individuals, social groups, societies as a whole. This one of directions of health maintenance, both on individual, and at public level.

Instructive aspect of valeological education is directed on spread of knowledge, training - on formation of system of knowledge, abilities, skills, concerning health, educational - on formation of belief, opinions, sights, valuable orientations, properties of character, strong-willed qualities.

Valeological education is a part of the state system of public health services. The purpose of valeological education - keeping and strengthening of health, disease prevention, raisening of working capacity and active longevity of population.

Tasks of valeological education:

- distribution medical, valeological and hygienic knowledge;
- development of skills of correct behavior;
- development of belief, sights and properties of character in necessity of correct behavior;
- formation of requirement of careful and creative relation to health;
- formation of a healthy lifestyle;
- attraction of population to rendering of active help to bodies and establishments of public health services.

Principles of valeological education - main position which have been checked up by practice, directing activity in area of valeological education.

Principles of valeological education:

- a) urgency;
- b) scientific character;
- c) availability of valeological information;
- d) positive orientation of valeological information;
- e) unity of theory and practice;
- f) unity of training and education;
- g) differential and individual approach;
- h) illustrativity;
- i) sequence of valeological education;
- j) stimulation of consciousness and activity of population.

The urgency principle focuses on maintenance of individuals, groups of persons, social generality the most important and timely information about health.

The scientific character principle provides realization of theoretical and practical activities in this area on basis of scientifically proved data.

The availability principle of valeological information assumes conformity of maintenance, methods, forms, means to welfare level, interests and requirements of individual, groups of persons, social generality.

The principle of positive orientation is directed on formation of behaviour types and lifestyles focused on positive samples, approved in a society.

The unity of theory and practice principle assumes possibility of use of received knowledge in practice.

The unity of training and education principle provides learning by an individual or group of persons not only information maintenances, but also methods of its processing, relation to it, ways of its use.

The principle of differentiated approach considers activity's realization on valeological education with due regard for characteristic features of populations' target groups on which it is directed.

The individual approach principle provides realization of valeological education with due regard for person's specific features on which it is directed - states of health, characteristic features, temperament, trade, sex, age, conditions of work and life.

The principle of illustrativity provides combination of a theoretical character information statement with examples and demonstrations.

The sequence principle provides allocation of basic stages and their logic continuity in course of realization.

The system principle provides constant, regular character of realization of

valeological education that allows to give knowledge concerning health, in the form of complete system.

The principle of consciousness and activity stimulation in valeological education expresses an orientation on increase of individual's activity, persons groups, social generality in health questions.

Valeological education has state, planned character, its carrying out is a duty of all medical and pedagogical workers.

2. Methods, forms and indicators of valeological education.

In valeological education use following methods of propagation:

- a) oral;
- b) printing;
- c) graphic;
- d) combined.

Combined propagation is the most effective at expense of simultaneous influence on visual both acoustical analyzers and coverage of big number of people.

Methods of valeological education - are ways of education method's realization, allow speaking about by means of what methods receive a real embodiment.

Methods of oral propagation method are lecture, agitation-information performance, conversation, evening of questions and answers, discussion, quiz, conference, courses, instructing.

Printing propagation uses books, booklets, bulletins, magazines, leaflets, slogans, instructions, newspaper, recipe, automatic help informant, electronic informant «Running line», brochures, articles.

Methods of graphic propagation are plane (poster, drawing, scheme, table, plan, drawing, diagramme, cartogram, photo, slide, filmstrip), volume (model, breadboard model, diagramme, phantom, sculpture, stuffed animal), natural (micropreparation, macropreparation, sample) objects.

The combined propagation is carried out through TV, cinema, video, exhibitions, museums, health holidays.

At carrying out of valeological propagation with population in not extreme situations are recommended lecture, performances on radio and TV, educational film, book, brochure, poster, exhibition, and in extreme situations - agitation-information broadcast appeal, TV, release of leaflets, instructions, slogans, newspapers.

Forms of valeological education show, how embodiment of hygienic education methods is carried out. Distinguish following forms of valeological

training and education: individual, group and mass.

Individual forms are represented by dialogue direct or mediated between an expert and a person, on which educational process is directed, provides information transfer or exchange of opinions, allow to consider person's features, both physiological, and socially-psychological character. Individual forms can be carried out in form of individual conversations, individual consultation, individual instructing, individual telephone consultation, personal correspondence.

Group forms - is a dialogue of an expert with group of persons. Efficiency is defined by uniformity of age, professional structure, feedback presence. Group forms can be carried out by means of group conversations, round-table discussions, discussions, clubs of health, videorecording demonstrations, concerning health, game, practical employment, employment on decision of problems, lessons of health, course valeological training.

Mass forms - information allocation simultaneously to big number of persons. Mass forms can be carried out through lectures, forums, broadcasts, telecasts, demonstrations of films concerning health, dramatized representation, mass improving campaign.

Indicators of valeological education can be direct and indirect. Direct indicators are carried out at level of (1) individual and (2) social generality – (1) social norms and values concerning health, level of skills, behaviour concerning health. At level of social generality, level of knowledge concerning health; public behaviour concerning health.

Indirect indicators - characterize processes and phenomena which can be considered as result of valeological cultures display in course of ability to live (for example, at individual level - premises sanitary condition, workplace, surrounding territory, at level of social generality - degree of pollution of reservoirs, soils, air, food products).

3. Service of valeological formations of healthy lifestyle.

For health maintenance and strengthening in the Republic of Belarus is created the Service of healthy lifestyle formation which includes republican, regional and city departments of public health in hygiene, epidemiology and public health centres.

Tasks of healthy lifestyle formation service :

- coordination of various people, establishments and public organizations activity;

- involving of medical workers, experts of interested ministries and departments, public organizations in propaganda, training and educational work on formation of healthy lifestyle.

Questions of population's valeological training and education are included in programs of all cycles of improvement of professional skill and improvement of doctors of all specialties. The valeology course is entered into programs of students' and pupils' training, methodical offices on propagation of medical and hygienic knowledge are created.

The speciality of the doctor-valeologist is included in the nomenclature of medical specialties on formation of healthy lifestyle. Responsibility for condition and quality of work on population's valeological education is assigned to heads of public health services establishments. In duty regulations of each doctor the functional duty include propagation of a healthy lifestyle.

Basic tasks of public health department:

- improvement of quality and efficiency of healthy lifestyle propagation;
- formation of careful relation to health requirement;
- organization and carrying out of mass improving actions.

Department of public health:

- participates in working out and introduction of actions for public health care;
- will organize and carries out training of doctors, teachers and other experts;
- provides an interested organizations and establishments by methodical and popular scientific publication;
- carries out actions for formation of healthy lifestyle through TV, radio and press;
- develops and introduces in practice new methods and propagation means;
- carries out work analysis on population's valeological education;
- participates in working out and realization of complex programs on diseases prevention and health strengthening of population;
- proves choice of perspective directions of preventive medicine;
- will organize and carry out seminars, conferences, meetings on actual questions of hygienic training and education;
- takes part in certification of medical workers.

4. Role of medical workers in valeological education.

Valeological education is obligatory section of each public health care organization service.

Valeological education in hospital promotes increase of medical-improving actions efficiency and gives the information about correct behaviour during treatment and after discharge from a hospital.

Valeological education of healthy people in a polyclinic is directed on preservation and strengthening of their health, propagation of healthy lifestyle. Valeological education of patients has the aim to develop at them skills promoting

prompt convalescence or simplification of a disease current.

Important section of doctors work of preschool and school establishments is valeological education of children and teenagers, formation at them healthy lifestyle. At carrying out of valeological training and education in preschool institutions basic attention is given to formation of conscious hygienic skills.

Valeological education at school closely connected with questions of physical, moral, aesthetic, sexual and labour education. The valeological preparations program provides consecutive extension at schoolboys valeological knowledge and skills on improving value of physical training and tempering, hygiene of brainwork and public useful work, strengthening of individual health, prevention of infectious diseases, development of balanced diet bases, traumatism prevention, valeological aspects of sexual education.

The important tasks of druggist are work carrying out on populations' valeological training and education. Personnel of drugstores should propagate knowledge of medicine and populations' medicinal service, and also knowledge of medicines value in prevention and treatment of illnesses, correct application of medicine, possibility of side effect occurrence, rules of medicines storage in house.

The important feature in populations' valeological education spent by pharmacists, is propagation of selftreatment's harm. Drugstores should propagandize to people necessity of early reference to a doctor for disease timely and correct diagnostics. For poisonings prevention it is necessary to acquaint population with elementary methods of water clearing and disinfecting, storage of food products, insect control. It is necessary to propagandize employment by physical training and sports, to conduct work on diseases prevention.

5. Communications in valeological education.

Last years valeological education is based on communications concept. Character of communications, degree of its efficiency and adequacy of semantic perception define quality of the population's health, level of knowledge and a healthy way of life.

Communications are a form of dialogue, information interchange between people by means of signs and symbols at which the information is transmitted purposefully, and is accepted selectively, and interaction is carried out according to certain rules and norms. Communications are an information transfer from one system to another by means of special material carriers, signals. There are mass, public and interpersonal communications.

The mass communication is the communications based on methods of message transfer usage. With reference to health it is a distribution and interpretation of messages about health, realisation of government programs,

campaigns for advancement of health and a healthy way of life (actions, fair of health, etc.).

Public communications are presentations, reports and other actions on the themes of health addressed to the wide public.

Interpersonal communications are such an interaction, where a sender and an addressee are separate individuals.

Communications **channels** are sense organs through which a person learns about the surrounding validity.

For creation of atmosphere of calmness and trust, contact adjustment in conversation nonverbal and verbal methods are used. Feedback is very important at communicative contact.

6. Government program of population's healthy lifestyle formation of the Republic of Belarus.

General points. According to experts of the World Health Organization the health of each person depends about 50 % on the way of life.

From 90th years in Belarus acute deterioration of a medical-demographic situation is marked in connection with sick rate and death rate growth, decrease in average duration and quality of a life, deterioration of physical development indicators and physical readiness, negative tendencies in a condition of the mental health, essential changes in area of formation and stability of a family, low sanitary-hygienic culture of the population.

Growth of general sick rate of the population in all age groups is observed. There was a growth of the illnesses caused by social factors - tuberculosis, venereal illnesses, narcotism, alcoholism, HIV-infections.

The system of work existing now on valeological training and formation of a healthy way of life of the population is insufficiently effective.

Perfection of system of preparation, retraining and improvement of professional skill of experts of a various profile concerning formation of a healthy way of life, maintenance of scientific and methodical support of activity on formation of a healthy way of life, working out of effective territorial programs on formation of a healthy way of life, improvement of structure and creation of necessary material base of the organizations which are carrying out activity on formation of a healthy way of life, creation of operating system of informing and training of the population to questions of preservation and health strengthening, increase of an overall performance of the establishments which are engaged in formation of a healthy way of life, perfection of system of rendering of the psychological help to the population are planned.

Achievement of tasks in view will be promoted by interdepartmental coordination council on formation of a healthy way of life.

As a result of program realization wide involving of various categories of the population in improving process, health strengthening, labour productivity increase, decrease in prevalence of a tobacco smoking and alcohol consumption, reduction of disease, invalidity and death rate from chronic non-infection diseases on 3-8 %, improvement of quality and life expectancy increase are supposed.

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