

Nutritional Imbalance Can Affect the Human Body in Different Ways

Research Article

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Abstract

An imbalanced nutrition is a common occurrence today. Fast pace, stress, and little time for meal preparation leads to a lack of necessary substances in the body. In the case of an imbalanced nutrition, the body starts giving clear and loud signals. There are certain types of food that contribute to better physical and mental health. Nutritional imbalance can affect the human body in different ways and generate certain health disorders that can become serious and even cause diseases.

Keywords

food, nutrition, imbalanced nutrition, health.

Introduction

Clinical and pre-clinical research have proven that early-life adversities, together with abuse or neglect, can growth the vulnerability to increase psychopathologies and cognitive decline later in existence [1]. Remarkably, the lasting effects of pressure at some point of this touchy length at the hypothalamic-pituitary-adrenal axis and emotional feature intently resemble the lengthy-time period results of early malnutrition and propose a likely not unusualplace pathway mediating those results. During early-existence, mind improvement is stricken by each exogenous elements, like vitamins and maternal care in addition to through endogenous modulators inclusive of pressure hormones. These factors, whilst in most cases taken into consideration for his or her independent movements, in reality do now no longer act alone however as a substitute in a synergistic way. In order to higher apprehend how the programming through early-existence pressure takes place, it is essential to benefit in addition perception into the precise interaction of those key factors, the feasible not unusualplace pathways in addition to the

underlying molecular mechanisms that mediate their results. We here review evidence that publicity to each early-existence pressure and early-existence below-/malnutrition further lead to existence-lengthy changes at the neuroendocrine pressure system and alter emotional features. We in addition speak how the exclusive key factors of the early-existence surroundings engage and have an effect on each other and subsequent propose a likely position for the early-existence adversity caused changes in metabolic hormones and nutrient availability in shaping later pressure responses and emotional feature in the course of existence, in all likelihood through epigenetic mechanisms. Such know-how will assist to increase intervention strategies, which offers the gain of viewing the synergistic motion of a extra entire set of modifications caused through early-existence adversity.

Global Health

Global health decision makers are at a crossroads [2]. High stage conferences and network stage advocacy

organizations in current years have highlighted the demanding situations that lie ahead: the post-Millennium Development Goals (MDGs) worldwide health agenda, burgeoning non-communicable illnesses, accomplishing familiar health insurance and strengthening fragile health structures in low- and middle-earnings nations. While achieving a consensus on destiny plans to deal with those demanding situations in a rapidly globalizing and interconnected international is some distance from easy, there's wide agreement that reductionist strategies to enhancing worldwide health withinside the final 3 many years that witnessed big growth in health investments in selective interventions were insufficient to deal with gift ills and put together health structures for destiny demanding situations. This unpreparedness is specially genuine with investments in health structures strengthening which have been fragmented and unsystematic—that specialize in one or health system features in isolation—as has been the case with deliberate and sustained responses that underpinned ailment-unique programmes. When addressing health demanding situations, the importance of taking a holistic view is more and more identified and has been proposed as one in all 4 guiding standards for worldwide aim placing after the MDGs.

Health and different social structures were defined as complex adaptive systems (CAS) that modify in dynamic and now and again unpredictable approaches to modifications withinside the system itself or withinside the context wherein it operates. CAS have a myriad of components (together with citizens, sufferers, communities, providers, coverage makers, programme implementers, etc.) which can be continuously interacting and adapting to different thing modifications and modifications withinside the surroundings. The one of a kind capabilities of health and different complicated structures consist of self-organization, steady modifications, comments loops, non-linearity, time lags among inputs and consequences, records dependence and unintentional effects of coverage interventions.

Systems questioning is an technique that describes and considers the traits and results of CAS, and tries to maximize their superb results whilst minimizing unintentional bad results. It is broadly implemented to various sectors, inclusive of engineering, economics, ecology and business, and it's miles an rising technique in health structures research with terrific capability to deal with demanding situations associated with public health.

Systems technology methodologies take into account dynamic relationships among factors starting from cells to people and organizations, and the effect that those relationships have at the whole health gadget. Implications for research, coverage and exercise in public health are substantial. Many structures questioning strategies and methodologies were efficaciously implemented to health and different sectors.

Public health demanding situations and threat elements, inclusive of continual illnesses, infectious illnesses, mental health troubles, weight problems, imbalanced vitamins, smoking, and alcohol and substance abuse, emerge from a complicated gadget of spatio-temporal interactions on the biological, socio-behavioural and monetary scales. Systems questioning educated public health specialists deal with those complicated demanding situations through designing powerful interventions to maximise the superb health consequences, whilst minimizing unintentional bad effects. High-effect prevention and manipulate programmes for polio eradication and smoking cessation are examples of interventions that had been designed through public health specialists, the usage of structures questioning expertise. Public health specialists with structures questioning expertise, complemented with conventional education in reductionist strategies of reading causal-impact relationships, are higher organized in designing public health answers to impact modifications at more than one scales of interplay to improve health consequences.

Nutrient Intake

Adequate meals and nutrient intakes are essential determinants of health, well-being, and survival [3]. The UNICEF conceptual framework highlights the influential position of age-appropriate, nutrient-wealthy meals on maternal and baby vitamins. Poor nutrient intakes predispose kids to severa unfavorable consequences together with elevated dangers of anemia from iron deficiency, micronutrient deficiencies, boom retardation, irritation, infectious ailment, impaired memory, and obese and weight problems. Furthermore, suboptimal diets have reverberating influences on vitamins and health throughout the existence span, representing the main threat component globally for continual ailment, such as coronary heart ailment, stroke, and Type 2 diabetes.

An mixture view of nutritional intakes of key ingredients and vitamins shows that bad-fine diets are familiar. In

2019, facts from the Global Dietary Database display that, on average, adults 20 year and over in maximum nations did now no longer eat the endorsed consumption of key ingredients, no matter earnings stage. There are shortfalls in intakes observed for fruits, vegetables, legumes, nuts, and complete grains, while beef is excessively consumed.

Detailed meals intake facts are essential for tracking development on Sustainable Development Goals and different worldwide targets. However, big facts gaps remain, largely due to the fact accumulating character-stage nutritional consumption is time-consuming, pricey, and offers numerous logistical and sensible demanding situations.

Childhood Obesity

Childhood weight problems has grown to emerge as one of the maximum dramatic capabilities of the worldwide weight problems epidemic, with lengthy-time period effects [4]. The unfold of weight problems has been fueled through modifications in social norms and living environments which have formed character behaviours making them conducive to immoderate and imbalanced vitamins, sedentary life, and in the end weight problems and related illnesses. The STOP task will goal to generate scientifically sound, novel and coverage-applicable proof at the elements which have contributed to the unfold of adolescence weight problems in European nations and at the results of opportunity technological and organisational answers and coverage options to be had to deal with the hassle. STOP will translate the proof collected and generated into signs and measurements, coverage briefs and toolkits and multi-stakeholder frameworks. A unique attention of STOP is knowing the stakeholders' networks and drivers of stakeholders' motion. STOP will establish new approaches for coverage-applicable proof to be generated, made to be had and used withinside the layout and implementation of powerful and sustainable answers for adolescence weight problems on the EU, country wide and nearby tiers. Each of the coverage work programs will:

- Produce proof syntheses and effect simulations for exclusive coverage strategies;
- Assess decided on coverage strategies and movements in kids cohorts and different applicable settings;
- Devise coverage toolkits and coverage steerage to help the adoption and implementation of unique movements through applicable actors;

- Establish a country-primarily based totally European duty and tracking framework in every coverage place.

Traditionally, pediatric malnutrition, like person malnutrition, has been considered thru the prism of frame composition losses primarily based totally on anthropometric evaluation at the side of a documented records of insufficient protein-calorie consumption [5]. Pediatric anthropometric indices consist of weight-for-height (length), height-for-age, midupper arm muscle circumference, and frame mass index-for-age. When more than one size facts factors are to be had, dynamic evaluation gear inclusive of weight benefit/boom velocity (mainly beneficial for little one assessment), deceleration in weight-for-height, and weight loss can assist to set up the degree and period of malnutrition. Other modalities, together with dwindled grip strength, which displays decreased muscle mass and correlates with lack of general frame protein, may be used to evaluate purposeful compromise. When implemented to preferred pediatric populations, mainly in growing nations, quantitative protein-calorie malnutrition (hunger-associated) has been taken into consideration to be correctly and reliably hooked up the usage of those anthropometric evaluation gear, and has been strongly related with an elevated threat of mortality and morbidity, specially associated with infection. In contrast, the stated frequency of malnutrition in pediatric sufferers requiring infection-associated hospitalization degrees widely from much less than 5% to more than 50% in diverse research. As a lot of this inconsistency in stated malnutrition incidence amongst kids (and adults) is idea to be because of loss of standardized definitions and uniform dietary screening practices, an undertaking has been underway for the beyond decade to higher conceptualize malnutrition.

The evolution of this initiative derives from an improved information of the effect that cytokine-caused irritation could have on dietary reputation evaluation and associated scientific consequences, specially in occasions of pre-current bad nutrient consumption-primarily based totally malnutrition, and has brought about a re-assessment of standards for characterizing malnutrition in each person and pediatric sufferers. This represents a extrade in attention in the direction of a broader idea of malnutrition to consist of dietary imbalances created through acute and continual infection in addition to beside the point remedy ensuing in protein undernutrition and caloric overnutrition. This extended idea now includes acute (for example - trauma, sepsis or burns) and continual

(for example - cancer, Crohn ailment or cystic fibrosis) inflammatory situations which, thru cytokine-caused protein catabolism, burn up lean frame mass, sell muscle weak spot and ventilator dependency, reason immune disorder and elevated sepsis threat, postpone wound recuperation, lengthen clinic period of stay, and growth mortality.

Older Adults

Changes in BMI (body mass index) can be an early indication of real or capability dietary troubles in older adults [6]. BMI may be decided the usage of a chart or an online calculation tool. The top used have to mirror the man or woman's modern top, now no longer the peak from a more youthful age normally stated through getting older people and recorded on their charts. If the character seems well-proportioned and BMI falls inside endorsed norms, then the man or woman might be receiving good enough energy. A gradual growth or lower in BMI shows an imbalance among caloric consumption and electricity expenditure. A lower in pastime with static caloric consumption generally outcomes in sluggish growth in BMI, while an growth in pastime with steady caloric consumption generally outcomes in lower in BMI. Nurses have to look at modifications in consumption or pastime that would account for modifications in BMI.

Adequate caloric consumption isn't enough. It is likewise critical that older adults reap good enough quantities of critical vitamins. To decide whether or not those dietary desires are being met, nurses ought to accumulate extra information.

Laboratory values might also additionally assist help different observations. Review the hemoglobin stage, hematocrit stage, RBC matter, blood urea nitrogen (BUN) stage, creatinine stage, albumin stage, and different dietary indices to evaluate for unique dietary deficiencies. These laboratory values do now no longer routinely extrade with getting older.

Hemoglobin is a complicated protein-iron molecule accountable for the delivery of oxygen and carbon dioxide withinside the bloodstream. If good enough iron isn't to be had, the hemoglobin stage and the RBC (red blood cell) matter will fall under the everyday tiers. Low hemoglobin tiers might also additionally end result from anemia or blood loss. Common types of anemia, consist of iron-deficiency anemia and pernicious anemia. Iron deficiency anemia might also additionally end result from blood loss.

In older adults, this hardly ever takes the shape of a big hemorrhage, even though a substantial quantity of blood can be misplaced from common nosebleeds or current surgery. More not unusualplace in older adults is diffused blood loss from bleeding gastric or duodenal ulcers, diverticulitis, tumors, or pathologic lower gastrointestinal tract situations.

A wholesome man or woman's blood glucose stage modifications in the course of the day. It is low at some point of durations of fasting, however rises after a meal after which peaks about 30 to 60 mins after ingesting. Within three hours, it returns to its everyday variety of 70 to one hundred mg/dL. Individuals who've diabetes, are receiving steroid remedy or general parenteral vitamins, or are experiencing excessive tiers of pressure are probably to revel in troubles with manipulate of blood sugar tiers.

Electrolyte imbalances can be a end result of insufficient electrolyte consumption or immoderate loss. Abnormal tiers of calcium, sodium, and potassium are maximum normally observed. Assess the weight-reduction plan to decide whether or not the affected person has good enough consumption of the important electrolytes. Medications which can reason electrolyte depletion have to be taken into consideration. Vomiting, diarrhea, and gastric suction might also additionally make a contribution to electrolyte imbalances.

Characteristics

- Abdominal cramping [7]
- Abdominal pain
- Body weight under best weight range for age and gender
- Capillary fragility
- Constipation
- Delayed wound healing
- Diarrhea
- Excessive hair loss
- Food consumption much less than recommended daily allowance (RDA)
- Hyperactive bowel sounds

Malnutrition

Malnutrition is defined in phrases of dietary imbalance, for that reason sufferers are labeled first as having

both undernutrition or overnutrition [8]. Although undernutrition and malnutrition are regularly used interchangeably and constitute the identical dietary deficit, there are various styles of malnutrition relying at the initial insult. In current years, the position of irritation has been recognized as a key thing of malnutrition. Starvation-associated malnutrition is a end result of continual hunger however lacks an inflammatory thing (e.g., anorexia nervosa); continual ailment-associated malnutrition is a end result of the presence of slight to slight continual irritation (e.g., organ failure or rheumatoid arthritis); and acute ailment/damage-associated malnutrition is attributed to acute and excessive irritation (e.g., burns, trauma, or acute systemic infection). Protein-calorie malnutrition is recognized through a aggregate of scientific elements. Generally, an unexplained involuntary weight reduction and a drop within the serum albumin stage to much less than three.five g/dL can be indicative of a dietary deficit. A lower in serum albumin and prealbumin tiers is likewise understood to be a mirrored image of the inflammatory reaction. Undernutrition in older adults is multifactorial: age-associated organ modifications; psychosocial elements together with depression, social isolation, and poverty; and purposeful decline pose dangers for growing this regularly underrecognized scientific condition. Despite the elevated incidence of malnutrition in older adults, it regularly stays underdiagnosed.

Pregnancy

Assessment starts offevolved with a woman's preconceptual vitamins patterns [9]. From this evaluation, decide whether or not a customer is ingesting wholesome meals reasssets as represented through the meals pyramid and examine any cultural, environmental, or social life that may want to have an effect on ingesting habits. A 24-hour bear in mind records is the high-satisfactory manner to secure important information, verify well-balanced vitamins, and become aware of regions for coaching and learning.

Nursing diagnoses associated with dietary reputation of the pregnant woman take into account the favored health and boom of each the fetus and the woman. Both a girl who's ingesting huge quantities of nutritionally inferior meals and a girl who has a hassle ingesting due to fatigue or nausea and vomiting can be at threat for the identical hassle: fetal boom restriction. Being touchy to a girl's problem approximately preserving her personal look

in mild of her want to benefit enough weight enables her maintain a wholesome angle on "eating for ." Examples of nursing diagnoses are:

- Imbalanced vitamins, much less than frame necessities, associated with elevated physiologic desires
- Imbalanced vitamins, much less than frame necessities, associated with nausea each morning
- Health-seeking behaviors associated with figuring out high-satisfactory meals alternatives in being pregnant
- Imbalanced vitamins, extra than frame necessities, associated with continual bad ingesting habits
- Deficient know-how associated with want for elevated consumption of vitamins and energy at some point of being pregnant

In huge health centers, nutritionists are to be had to fulfill with women prenataally and assist them plan vitamins at some point of being pregnant. In different settings, a nutritionist can be to be had handiest for ladies with unique desires, so the obligation for vitamins recommendation falls immediately on nurses. When assisting a girl set expected consequences for enhancing dietary patterns, be sure to take into account all the cultural and way of life elements that deliver exclusive meanings to meals. Because meals is an pricey commodity, take into account economic assets as well. Teaching approximately lengthy-time period consequences together with constructing iron shops or bone mass is as essential as brief time period desires to devour higher for this week. Eating extra nutritious ingredients for per week will in all likelihood now no longer make an intensive extrade. However, persevering with a wholesome ingesting sample in the course of the being pregnant (and preserving it in the course of existence) will result in essential modifications and assist put together the woman for feeding her own circle of relatives nutritionally for the years to come.

Burn Injury

The basal metabolic charge of a affected person with burns can be multiplied 40% to 100% above the everyday charge, relying on the quantity of TBSA (total body surface area) involved [10]. The metabolic charge is encouraged through the quantity of protein and albumin misplaced thru the wounds; the catabolic reaction related to pressure, injuries, fluid loss, fever, infection, and immobility; sex; and top and weight of the affected person earlier than

the damage. A 10% lack of general frame mass results in immune disorder; 20% results in reduced wound recuperation; 30% results in excessive infections; a 40% loss results in death. Severely burned, catabolic sufferers can lose 25% of general frame mass after acute excessive burn damage.

The aim in vitamins control of a affected person with burns is to offer good enough energy to enhance wound recuperation. To acquire this aim, vitamins help and a discount of electricity call for are imperative. Every attempt have to be made to lessen the launch of catecholamines, which growth metabolic charge. Pain, fear, anxiety, and cold stimulate launch of catecholamine shops. Appropriate interventions for every of those stimuli ought to be performed. Examples of nonpharmacologic interventions consist of early excision and burn wound closure; elevation of the environmental temperature to thermal neutrality ($31.5^{\circ}\text{C} \pm 6.0.7^{\circ}\text{C}$); and excessive-carbohydrate, excessive-protein feeds.

Because of the elevated vitamins desires of sufferers with largesurface-place burns, oral feedings are generally insufficient, and supplemental enteral feedings are important. After burn damage, intestinal mucosal harm and elevated bacterial translocation occur, ensuing in reduced absorption of vitamins. Therefore dietary help have to preferably be initiated inside 24 hours of damage through an enteral route. Enteral feedings can be gastric or postpyloric; each are broadly used. Caloric necessities are calculated on the premise of the dimensions of the burn; the age, top, and weight of the affected person; and pressure elements. The day by day protein requirement might also additionally growth to 2 to 4 instances the everyday 0.eight g/kg of frame weight. Carbohydrates and fats are used for electricity and to spare proteins required for wound recuperation. Daily caloric consumption may be 2 to twenty instances better than everyday. Vitamins and minerals generally are given in doses better than everyday. Serum albumin, prealbumin, iron, zinc, calcium, phosphate, and potassium values are monitored, and dietary supplements are given as needed. Initiating early enteral feedings has proven to relieve malnutrition and pressure reaction, give a boost to immunity, and sell gastrointestinal mobility, thereby promoting wound recuperation.

Diseases

In current years, it has emerge as clean that continual systemic low grade irritation is at the premise of many, if now

no longer all, commonly Western illnesses targeted at the metabolic syndrome [11]. The latter is the aggregate of an immoderate frame weight, impaired glucose homeostasis, high blood pressure and atherogenic dyslipidemia (the "lethal quartet"), that constitutes a threat for diabetes mellitus type 2, cardiovascular disease (CVD), sure cancers (breast, colorectal, pancreas), neurodegenerative illnesses (e.g., Alzheimer's ailment), being pregnant complications (gestational diabetes, preeclampsia), fertility troubles (polycystic ovarian syndrome) and different illnesses. Systemic irritation reasons insulin resistance and a compensatory hyperinsulinemia that strives to maintain glucose homeostasis in balance. Our glucose homeostasis ranks excessive withinside the hierarchy of energy equilibrium, however turns into in the end compromised below non-stop inflammatory situations through glucotoxicity, lipotoxicity, or each, main to the improvement of beta-cell dysfunction and in the end Type 2 diabetes mellitus. Insulin resistance has a terrible name. The final goal of this survival method is, however, deeply anchored in our evolution, at some point of which our mind has grown tremendously. The aim of decreased insulin sensitivity is, amongst others, the reallocation of energy-rich vitamins due to an activated immune system, difficulty of the immune reaction, and the restore of the inflicted harm. To that end, serum lipoproteins undertake a sample that bears resemblance with the "hyperlipidemia of sepsis," accompanied through reputedly inconsistent modifications in serum cholesterol, elevated triglycerides, decreased high-density lipoprotein (HDL) cholesterol, and an growth of "small dense" low-density lipoprotein (LDL) particles, of which the latter 3 represent the triad of atherogenic dyslipidemia that is a part of the metabolic syndrome.

It has emerge as clean that maximum, if now no longer all, commonly Western continual ailments discover their number one reason in an dangerous way of life and that systemic low grade irritation is a not unusual place denominator. From an evolutionary factor of view, the modern battle among surroundings and our Paleolithic genome lines again to our mind boom and the resulting intimate dating among irritation and metabolism. The gift disbalance among inflammatory and anti inflammatory stimuli does now no longer originate from a unmarried reason and may therefore additionally now no longer be solved through a unmarried "magic bullet". Resolution of the battle among surroundings and our historical

genome is probably the handiest powerful way to reach at “wholesome getting older” and to acquire this goal we’d must go back to the way of life of the Paleolithic generation consistent with the lifestyle of the twenty first century.

Wound Healing

Wound recuperation is a complicated and energy-demanding process [12]. The dating among vitamins and wound recuperation has been identified for plenty centuries. Several research have indicated that dietary deficiencies are extra standard amongst sufferers with continual wounds. Malnutrition might also additionally regulate the inflammatory reaction, collagen synthesis, and wound tensile strength, all of which might be essential for wound recuperation. Although the unique position of vitamins and supplementation in wound care stays uncertain, it’s miles important to become aware of and accurate dietary imbalances to keep away from any capability deterioration of the recuperation process. It is additionally essential to apprehend the variations in pathophysiology among acute and continual wounds. A burn, surgical, or a stressful wound isn’t the same as a diabetic foot ulcer, which isn’t the same as a stress ulcer. Chronic wounds are extra standard withinside the getting older population, and sufferers regularly have underlying comorbidities, together with diabetes mellitus, peripheral vascular ailment, connective tissue ailment, or different systemic ailments which can regulate energy metabolism and make a contribution to impaired recuperation. Management strategies to acute wound care won’t apply universally to continual wounds. In this assessment, we speak the to be had facts and feasible roles for vitamins in wound recuperation.

Wound restore is an energy-demanding process. Human energy is derived through breaking chemical bonds of nutrient molecules, especially carbohydrates, lipids, and proteins. Organic acids, polyols (synthetic sweeteners), ethanol, and fibers are extra reassets of energy; nevertheless, energy metabolism is tightly regulated, and different cell types require exclusive fuel molecules. Adequate vitamins is essential to preserve pores and skin and tissue viability, and it’s miles critical for the prevention of infection, which can have deleterious results on wound recuperation. Research at the position of vitamins in wound recuperation has been insufficient, and the bulk of the clinical proof for this subject matter is derived from research associated with pressure ulcers (PUs). Such

research, regardless of methodologic shortcomings, have advised a sturdy correlation among bad dietary reputation and PU improvement. Stages of PU are stricken by the degree of malnutrition. The prevention of malnutrition results in threat discount for PU formation. Older adults who are taken into consideration undernourished, further to a myriad of different elements, are extra at threat for growing PUs and different complicated wounds.

Conclusion

An imbalanced nutrition can lead to malnutrition. Malnutrition can occur even if only one nutrient is lacking in the diet. For this reason, it is best to eat a good variety of foods such as fruits, vegetables, legumes, whole grains, nuts, seeds, low-fat dairy products, lean meats, fish, etc.

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Conflict of interest

Authors declare that there are no conflict of interest.

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