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LEADING HEALTH, POPULATION AND FAMILY WELFARE STORIES OF THE Day

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## WHO guidelines - dementia

## WHO issues guidelines to reduce risk of dementia (The Hindu: 20190517)

https://www.thehindu.com/news/cities/Delhi/who-issues-guidelines-to-reduce-risk-of-dementia/article27154509.ece

Number of people with the illness expected to triple in the next 30 years; advice includes exercise, watch weight, eat healthy, control of BP, cholestrol

In the next 30 years, the number of people with dementia is expected to triple, warns the World Health Organization (WHO). To reduce the risk of the disease, the WHO prescribes getting regular exercise, not smoking, avoiding harmful use of alcohol, controlling weight, eating a healthy diet, and maintaining healthy blood pressure, cholesterol and blood sugar levels.

WHO Director-General Dr. Tedros Adhanom Ghebreyesus, stating that the next three decades will see a jump in the number of people with dementia, said: “We need to do everything we can to reduce our risk of dementia. The scientific evidence gathered for these guidelines confirm what we have suspected for some time that what is good for our heart, is also good for our brain.”

Dementia is an illness characterised by deterioration in cognitive functions beyond what might be expected from normal ageing. It affects memory, thinking, orientation, comprehension, calculation, learning capacity, language and judgment. Dementia results from a variety of diseases and injuries that affect the brain, such as Alzheimer’s disease, or stroke.

Knowledge base

The guidelines provide a knowledge base for healthcare providers to advise patients on what they can do to help prevent cognitive decline and dementia. They will also be useful for

governments, policymakers and planning authorities to guide them in developing policy and designing programmes that encourage healthy lifestyles.

Stating that an essential element of every national dementia plan is support for carers of people with dementia Dr. Dévora Kestel, Director, Department of Mental Health and Substance Abuse,WHO, said, “Dementia carers are very often family members who need to make considerable adjustments in their family and professional lives to care for their loved ones. This is why WHO created iSupport, an online training programme providing carers of people with dementia with advice on overall management of care, dealing with behaviour changes, and how to look after their own health.”

The reduction of risk factors for dementia is one of several areas of action included in the WHO’s global action plan for the public health response to dementia. Other areas include strengthening information systems for dementia; diagnosis, treatment and care; supporting carers of people with dementia; and research and innovation

Rapidly growing

Dementia is a rapidly growing public health problem affecting around 50 million people globally, and major cause of disability and dependency among older people. There are nearly 10 million new cases every year. Additionally, the disease inflicts a heavy economic burden on societies as a whole, with the costs of caring for people with dementia estimated to rise to $2 trillion annually by 2030.

## Teen pregancies

## Teen pregancies linked to poor nutrition in babies (The Hindu: 20190517)

https://www.thehindu.com/sci-tech/health/teen-pregancies-linked-to-poor-nutrition-in-babies/article27154471.ece

Factors such as low education levels in mothers contribute to stunting in children, says study

Teen pregnancies contribute to under-nutrition in babies, according to a study that analysed data from India and appeared in The Lancet Child and Adolescent Health.

The paper recommends policies and programmes to delay marriage, especially in districts where there is a higher prevalence of child marriage.

The paper examined data for 60,096 women from the National Family Health Survey (NFHS-4) to study the extent to which teenage pregnancy contributes to under-nutrition among children. The figures showed that 14,107 women first gave birth during adolescence; 31,475 during young adulthood, and 14,514 during adulthood.

According to the study, children born to adolescent mothers (10-19 years) were 5 percentage points more likely to be stunted (shorter for their age) than those born to young adults (20-24 years) and 11 percentage points more stunted than children born to adult mothers.

Children born to adolescent mothers also had 10 percentage points higher prevalence of low weight as compared to those born to adult mothers.

The study said that lower education levels among adolescent mothers had the strongest impact on stunting levels, followed by socioeconomic status. Teen mothers were also likely to be underweight, exacerbating the stunting among their children.

The research also highlights that while adolescent pregnancy is more likely to occur in high poverty contexts, it could trap mothers in an unending cycle of poverty as “women who bear children early are more likely to discontinue education and, thus, have lower earning potential.”

# Nutrition in adolescents

## Nutrition in adolescents: physiology, metabolism, and nutritional needs (The New York Academy of Science)

https://nyaspubs.onlinelibrary.wiley.com/doi/full/10.1111/nyas.13330

Abstract

Adolescence is the period of development that begins at puberty and ends in early adulthood. Most commonly, adolescence is divided into three developmental periods: early adolescence (10–14 years of age), late adolescence (15–19 years of age), and young adulthood (20–24 years of age). Adolescence is marked by physical and sexual maturation, social and economic independence, development of identity, acquisition of skills needed to carry out adult relationships and roles, and the capacity for abstract reasoning. Adolescence is characterized by a rapid pace of growth that is second only to that of infancy. Nutrition and the adolescent transition are closely intertwined, since eating patterns and behaviors are influenced by many factors, including peer influences, parental modeling, food availability, food preferences, cost, convenience, personal and cultural beliefs, mass media, and body image. Here, we describe the physiology, metabolism, and nutritional requirements for adolescents and pregnant adolescents, as well as nutrition-related behavior and current trends in adolescent nutrition. We conclude with thoughts on the implications for nutrition interventions and priority areas that would require further investigation.

Background

Adolescence is the period of development that begins at puberty and ends at adulthood. The World Health Organization (WHO) defines adolescence as age between 10 and 19 years and youth as between 15 and 24 years, while young people encompass the entire age group of 10- to 24-year-olds.1 The recent Lancet commission on adolescent health and well-being further divided this time in the life cycle into three 5-year age categories: early adolescence (10–14 years), late adolescence (15–19 years), and young adulthood (20–24 years).2 Physiologically, early adolescence is dominated by puberty and sexual development; late adolescence (15–19 years) is also characterized by pubertal maturation but less obviously than early adolescence; and young adulthood (typically 20–24 years) corresponds to the adoption of adult roles and responsibilities.1 In some poorer populations, the initiation of puberty may be delayed and its duration extended, whereas in other poorer populations (e.g., in the United States), the initiation of puberty may be advanced, which appears to be related to body size and body fat mass.3

Epidemiologically, the age group from about 10 to 24 years is a quarter of the global population and, in any population, it is the healthiest of any age group and the group best able to raise the

economic productivity of the resident country. In 2012, there were 1.8 billion adolescents in the world, 90% of whom lived in low- and middle-income countries (LMICs).4 Owing to the success of child survival initiatives over the last few decades, there has been a dramatic rise in the population of adolescents, especially in LMICs, making this the largest generation of young people in history.5

Adolescence is a period of rapid physiological, sexual, neurological, and behavioral changes, and it lays the foundation for adopting adult roles and responsibilities, including the transition to employment and financial independence, as well as the formation of life partnerships.6 Since it is a period of rapid growth, adequate nutrition is crucial for achieving full growth potential, and failure to achieve optimal nutrition may lead to delayed and stunted linear growth and impaired organ remodeling.7 Iron-deficiency anemia is the leading cause of years lived with disability among children and adolescents, affecting an estimated 619 (95% confidence interval (CI), 618–621) million in 2013.8 While undernutrition, including stunting and wasting, is on the decline in children <5 years of age, there are growing concerns about increasing rates of overweight and obesity among children and adolescents. Childhood overweight is associated with multiple immediate and long-term risks, including raised cholesterol, triglycerides, and glucose; type 2 diabetes; high blood pressure; and an elevated risk of developing adult obesity and its associated consequences.9, 10 Many LMICs now bear a double burden of malnutrition,11, 12 with the increasing burden of overweight and obesity along with existing high burden of undernutriton.13, 14

Recently, there has been a growing interest in adolescent nutrition in developing countries as a means to improve the health of women and future generations of children on the basis of the reasoning that interventions targeted at adolescents allow time for the interventions to have the maximum impact on optimizing health in the years ahead, including the health of women during future pregnancies and hence also the related health of the next generation.

## Current trends in adolescent nutrition

Body size during adolescence can be used as a proxy for nutritional status, with overnutrition manifesting as overweight and obesity, while undernutrition can manifest as stunting and/or wasting or as nutrient deficiencies without change in body size (so-called hidden hunger). Recent findings from the global burden of diseases and injuries among children and adolescents suggest that protein-energy malnutrition is among the top 10 causes of death among children and adolescents, accounting for 225,906 deaths in 2013.15 Globally, around 34 deaths per 100,000 children and adolescents are attributed to malnutrition, and this number significantly varies between developing (38.5 per 100,000) and developed countries (0.2 per 100,000).15 Global nutrition trends in adolescents have been discussed in detail in a companion paper,16 but, briefly, overweight and obesity affect one in every three adolescents worldwide.17 In 2011, an estimated 43 million (7%) children younger than 5 years were overweight globally, marking a 54% increase from an estimated 28 million in 1990,2 and most of these overweight children (32 million) lived in LMICs. The prevalence of underweight among adolescent

females aged 13–17 years across the five regions of the world and about 60 countries is generally less than 5%; however, in some LMICs in Africa and Asia, almost 10% or more of younger adolescent girls (13–15 years) are too thin for their age and height.17 Though data on the burden of stunting among adolescent females are limited, it has been estimated that in some countries as many as half of all adolescents are stunted, reflecting persistent and cumulative effects of growth retardation from an early age.18 The extent and severity of wasting among adolescents are less clear compared with the effects in children under 5 years of age.19 Little focus has been given to micronutrient deficiencies among adolescents, despite their increased nutritional vulnerability.20 Deficiencies in multiple micronutrients are of particular importance to adolescent health because of their direct effects, such as iron-deficiency anemia and iodine-deficiency disorders. The largest contributors to micronutrient deficiency burden among female youth globally are iron deficiency and iron deficiency–related anemia, which are responsible for about 700–1200 disability-adjusted life years per 100,000 girls in the 10–14 years age group, 300–900 in 15- to 19-year-olds, and 300–1100 among 20- to 24-year-old females.8

## Physiology

Maturation of the body owing to hormonal changes during adolescence leads to dramatic changes in body composition.21 These differences appear most obviously as the maturation of the sexual organs, but they also manifest in different proportions of lean and fat body mass. While puberty usually takes place between the ages defined during adolescence, it can begin as early as 8 years of age and can extend beyond 19 years of age. Pubertal sex hormones and growth hormones generally increase together and are responsible for the enhanced skeletal growth and sexual maturation. During normal puberty, height and body weight increase (50% of adult body weight is gained during adolescence), bone mass and muscle mass increase, blood volume expands, and the heart, brain, lungs, liver, and kidney all increase in size.22 The high rate of growth during puberty is second to that in infancy, but is greater in duration, and therefore total nutritional requirements during puberty may be greater than during any other period in life. Current evidence suggests that adolescents grow in distinct spurts that occur only rarely (about 5% of the time), as has been established for infants and young children.23 In infants, growth spurts follow periods of sleep;24 thus, one can speculate that adolescent sleeping patterns may accommodate growth and may require adequate energy and nutrient consumption. Adolescent sleep patterns are characterized by a natural propensity to stay up later in the evening and sleep late in the morning, and it has been argued that the chronotype of an adolescent reverses and individuals wake up naturally at an earlier time, marking the end of the adolescent period; this reversal occurs at a younger age in girls than in boys.25 Since sleep and growth are related, it is important that robust nutritional support and opportunities for adequate sleep are considered in the health of adolescent girls and boys, who may be in the workforce and forced to sleep out of synchrony with their natural clocks.

The timing and duration of body composition changes are linked directly to sexual maturation; thus, nutritional requirements depend more on sexual maturity than on chronological age. Tanner stages26 are most commonly used to assess sexual maturation, but other puberty stage classifications also exist. In girls, there are five Tanner stages for breast development (stages B1–B5) and pubic hair development (stages PH1–PH5). The long prepubertal Tanner stage B1 is followed by the initial breast development stage B2 at the onset of puberty, which is usually observed at 10.2 years of age but can range from 8 to 12 years of age. Transition to the next breast stage takes about 12–18 months.27 Pubertal hair stage 3 (PH3) occurs around 11.6 years and ranges from 9.3 to 13.9 years.28 Menarche occurs mostly at stage B4 but can extend into B5 about 2–3 years after the onset of breast development.29 Age of menarche varies between populations, ranging from 11.0 to 14.1 years, with the mean of 12.6 years, and this has decreased significantly over the last century.28 Height velocity peaks at B3 between 11 and 12 years of age.30 Peak weight gain lags behind peak height velocity by 6 months and in most cases reaches 8.3 kg/year. Although height velocity decreases after menarche, final or adult height is usually achieved 1 year after menarche and also includes increased bone mineralization and fat accumulation. However, in low-income settings, the pubertal growth spurt is frequently extended, thus allowing a substantial degree of catch-up in height and weight compared with the international growth reference standards.3

There are five Tanner stages for genital development (stages G1–G5) and pubic hair (stages PH1–PH5) for boys. Stage G1 reflects the prepubertal stage in boys, and puberty begins with an increase in testicular volume (stage G2) at around 11.5 years but can begin as early as 9.5 years and extend to 13.3 years. The increase in testicular volume precedes the development of pubic hair. Peak height velocity occurs around PH4 and G4 at around 14 years of age.27 Boys' height velocity begins 1–2 years after girls, and, as a result, boys' growth in height occurs for a longer period than girls, and final adult height is usually achieved by 17 years of age.28, 30 In boys, peak weight velocity occurs at about the same time as peak height velocity and averages 9 kg/year.31

## Metabolism

Metabolism is directly related to total energy requirements and indirectly to growth and consists of energy cost of growth (ECG), basal metabolic rate (BMR), and activity energy expenditure (AEE). Figure 1 depicts the relationship between ECG, BMR, and AEE. Basal metabolism is the energy required for cellular and tissue maintenance—it increases rapidly to 2 years of age and levels off throughout adolescence32—while ECG is a small component compared with BMR and AEE.33 Excessive total energy intake may lead to overweight and obesity; however, if a decreased total energy intake falls below BMR, then ECG and AEE will be compromised and can lead to growth stunting, pubertal delay, menstrual abnormalities in girls, and interference with bone mass accumulation. The WHO has endorsed the Schofield

equations for estimating BMR that take into account sex, age, and body weight.34, 35 For males 10–18 years of age, BMR (megajoules (MJ)/day) = (0.074 × body weight (kg)) + 2.754 and BMR (kcal/day) = (17.69 × body weight (kg)) + 658. For females 10–18 years of age, BMR (MJ/day) = (0.056 × body weight (kg)) + 2.898 and BMR (kcal/day) = (13.38 × body weight (kg)) + 693.



Figure 1

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Energy requirements of girls and boys from birth to 18 years of age.33

## Nutritional requirements during adolescence

The growth spurt in adolescence requires rapid tissue expansion with special nutrient requirements, including amino acids for growth of striated muscle, as well as calcium and vitamin D to accommodate bone growth. Energy and nutrition requirements must match the needs of the adolescents as they typically engage in physical work or recreational exercise (boys on average more than girls), which benefits striated muscle mass enlargement. Appetite increases during adolescence, and sedentary individuals are more likely to accumulate fat if they have access to high-energy food. Thus, low activity levels among adolescents are a key factor that underlies increases in adolescent obesity across the globe. The caloric requirement of adolescent males is higher than that of adolescent females, owing to greater increases in height, weight, and lean body mass. Dietary recommendations suggest that 50% or more of total daily calories should come from carbohydrates, with no more than 10–25% of calories derived from sugars, such as sucrose and high fructose corn syrup.36 Protein requirements per unit of height are highest for females in the 11- to 14-year age range and for males in the 15- to 18-year age range, corresponding to the usual timing of peak height velocity. Population reference intakes, for example, the dietary reference intakes (DRIs) of the United States, do not list specific requirements for total fat intake, but do make recommendations for the intake of linoleic (n-6) and α-linolenic (n-3) polyunsaturated fatty acids (Table 1).

Table 1. Examples of population reference nutrient intakes: dietary reference intakes (DRIs) and adequate intakes (AIs) for adolescents in the United States50

DRIs and AIs: recommended intakes for adolescents: vitamins and minerals

| | Females | | | Males | | |
|---|---|---|---|---|---|---|
| | 9–13 years | 14–18 years | 19–30 years | 9–13 years | 14–18 years | 19–30 years |
| Energy (kcal/day) | 2071 | 2368 | 2403 | 2279 | 3152 | 3067 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Carbohydrates (g/day) | 130 | 130 | 130 | 130 | 130 | 130 | | |
| Total fiber (g/day) | 26 | 28 | 25 | 31 | 38 | 38 | | |
| n-6 Polyunsaturated fat (g/day) | | | 10 | 11 | 12 | 12 | 16 | 17 |
| n-3 Polyunsaturated fat (g/day) | | | 1.0 | 1.1 | 1.1 | 1.2 | 1.6 | 1.6 |
| Protein (g/day) | 34 | 46 | 46 | 34 | 52 | 56 | | |
| Vitamins | | | | | | | | |
| Vitamin A (μg/day) | 600 | 700 | 700 | 600 | 900 | 900 | | |
| Vitamin C (mg/day) | 45 | 65 | 75 | 45 | 75 | 90 | | |
| Vitamin D (μg/day) | 5 | 5 | 5 | 5 | 5 | 5 | | |
| Vitamin E (mg/day) | 11 | 15 | 15 | 11 | 15 | 15 | | |
| Vitamin K (μg/day) | 60 | 75 | 90 | 60 | 75 | 120 | | |
| Thiamin (mg/day) | 0.9 | 1.0 | 1.1 | 0.9 | 1.2 | 1.2 | | |
| Riboflavin (mg/day) | 0.9 | 1.0 | 1.1 | 0.9 | 1.3 | 1.3 | | |
| Niacin (mg/day) | 12 | 14 | 14 | 12 | 16 | 16 | | |
| Vitamin B6 (μg/day) | 1.0 | 1.2 | 1.3 | 1.0 | 1.3 | 1.3 | | |
| Folate(μg/day) | 300 | 400 | 400 | 300 | 400 | 400 | | |
| Vitamin B12 (μg/day) | 1.8 | 2.4 | 2.4 | 1.8 | 2.4 | 2.4 | | |
| Pantothenic acid (mg/day) | | 4 | 5 | 5 | 4 | 5 | 5 | |
| Biotin (μg/day) | 20 | 25 | 30 | 20 | 25 | 30 | | |
| Choline (mg/day) | 375 | 400 | 425 | 375 | 550 | 550 | | |
| Elements | | | | | | | | |
| Calcium (mg/day) | 1300 | 1300 | 1000 | 1300 | 1300 | 1000 | | |
| Chromium (μg/day) | 21 | 24 | 25 | 25 | 35 | 35 | | |
| Copper (μg/day) | 700 | 890 | 900 | 700 | 890 | 900 | | |
| Fluoride (mg/day) | 2 | 3 | 3 | 2 | 3 | 4 | | |
| Iodine (μg/day) | 120 | 150 | 150 | 120 | 150 | 150 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Iron (mg/day) | 8 | 15 | 18 | 8 | 11 | 8 | |
| Magnesium (mg/day) | 240 | 360 | 310 | 240 | 410 | 400 | |
| Manganese(mg/day) | 1.6 | 1.6 | 1.8 | 1.9 | 2.2 | 2.3 | |
| Molybdenum (μg/day) | | 34 | 43 | 45 | 34 | 43 | 45 |
| Phosphorus (mg/day) | 1250 | 1250 | 700 | 1250 | 1250 | 700 | |
| Selenium (μg/day) | 40 | 55 | 55 | 40 | 55 | 55 | |
| Zinc (mg/day) | 8 | 9 | 8 | 8 | 11 | 11 | |

Note: This table presents RDAs in bold type and AIs in ordinary type. RDAs and AIs may both be used as goals for individual intake. RDAs are set to meet the needs of almost all (97–98%) individuals in a group. The AI is believed to cover needs of all adolescents in the group, but lack of data or uncertainty in the data prevents the ability to specify with confidence the percentage of individuals covered by this intake. The data are derived from reports from the Institute of Medicine, Food and Nutrition Board, Standing Committee on the Scientific Evaluation of Dietary Reference Intakes,© by the National Academy of Sciences, courtesy of the National Academies Press, Washington, DC. (http://www.nap.edu/)

The U.S. DRI for calcium for 9- to 18-year-olds is 1300 mg/day, and the recommended dietary allowance (RDA) for iron is 8 mg/day for 9- to 13-year-olds, 11 mg/day for males aged 14–18, and 15 mg/day for females aged 14–18 years, as the onset of menstruation imposes additional iron needs for girls. The U.S. RDA for zinc for males and females aged 9–13 is 8 mg/day, while for males and females aged 14–18 years the RDAs are 11 and 9 mg/day, respectively. To ensure adequate body stores of vitamin A, boys and girls aged 9–13 years should consume 600 μg/day, females aged 14–18 years should consume 700 μg/day, and males aged 14–18 years should consume 900 μg/day. For the United States, the RDA for vitamin E for 9- to 13-year-olds is 11 mg/day and is 15 mg/day for 14- to 18-year-olds. The U.S. RDA for vitamin C is 45 mg/day for 9- to 13-year-olds, 75 mg/day for males aged 14–18 years, and 65 mg/day for females aged 14–18 years. The U.S. RDA for folate is 300 μg/day for 9- to 13-year-olds and 400 μg/day for 14- to 18-year-olds. Findings from a recent systematic review37 evaluating nutrition interventions for adolescents suggest that micronutrient supplementation among adolescents can significantly decrease anaemia prevalence (relative risk (RR): 0.69; 95% CI: 0.62–0.76).37

## Nutritional requirements for adolescent pregnancy

Sixteen million babies are born annually to adolescent girls 15–19 years of age, which accounts for over 10% of the total births each year. Adolescent fertility is three times higher in LMICs owing to various contextual factors, including traditional marriage practices, poverty, lack of education and employment, restricted access to care, weak health systems, abuse, unplanned

or unwanted pregnancies, and the absence of autonomy or support in their social arrangements. One area of human biology in need of more research is the competition for nutrients between mother and fetus in pregnancies where mothers are still growing. Several studies have shown that adolescent women are able to grow during pregnancy if their nutrition is adequate,38, 39 while others have shown that pregnancy may limit maternal growth.40 Studies in adolescent sheep show that excess calories given during pregnancy will be allocated to the mother's growth over the growth of the fetus;41 the degree to which this is true in humans has not been adequately studied. Existing data suggest that, when energy is constrained, the physiology of younger adolescents invests in growth, while that of older adolescent females privileges reproductively valuable adipose tissue.42

When an adolescent becomes pregnant, there is increased competition for nutrients with the fetus, and pregnant adolescents are at higher risk for becoming stunted43, 44 and at elevated risk of adverse neonatal outcomes, including low birth weight (LBW), preterm delivery, anemia, and postpartum outcomes, like excessive weight retention, owing to a combination of physiological, socioeconomic, and behavioral factors.45, 46 Adolescent girls are two to five times more likely to die from pregnancy-related causes than women aged 20–29 years.47 Girls younger than 19 years of age have a 50% increased risk of stillbirths and neonatal deaths, as well as an increased risk for preterm birth, LBW, and asphyxia. These health risks further increase for girls who become pregnant earlier than 15 years of age and are somewhat reduced for older adolescents aged 18–19 years. Nutrition in pregnant teens is crucial, since their bodies are not physically ready for pregnancy and they tend to give low priority to nutrition despite having enhanced needs for nutrients owing to their pregnant state. Prepregnancy low body mass index (<18.5) significantly increases perinatal risks, including stillbirths, preterm births, and small for gestational age and LBW babies.2 For a lactating mother, her micronutrient status determines the health and development of her breast-fed infant, especially during the first 6 months of life.47, 48 Nutrient needs during pregnancy and lactation are higher relative to other physiological stages in the life cycle and, likewise, the requirements for most micronutrients are also higher. Findings from a recent systematic review suggest that interventions to improve the nutritional status of pregnant women result in a statistically significant improvement in mean birth weight (SMD: 0.25; 95% CI: 0.08–0.41), reduced LBW (birth weight < 2500 g; RR: 0.70; 95% CI: 0.57–0.84), and preterm birth (before 37 weeks; RR: 0.73; 95% CI: 0.57–0.95). The intervention strategies included the provision of micronutrient supplementation, such as calcium and zinc, in addition to the routine iron–folic acid supplementation to adolescent mothers, or engaging them in nutritional education sessions to enable them to improve nutritional intake. Long-term nutritional counseling was frequently employed whereby pregnant adolescents would have access to a nutritionist whom they would consult as part of antenatal care. Table 2 describes the RDAs for prepregnant, pregnant, and lactating women.

Table 2. Examples of population reference nutrient intakes: reference dietary allowances for pregnant adolescents for the United States50

RDA

| Components | Unit | Prepregnancy | Pregnancy | Lactation | | |
|---|---|---|---|---|---|---|
| Macronutrients | | | | | | |
| Protein (g) | g | 60 | 71 | 71 | | |
| Fat (g) | g | ND | ND | ND | | |
| Omega-6 | g | 12 | 13 | 13 | | |
| Omega-3 | g | 1.1 | 1.4 | 1.3 | | |
| Carbohydrates (g) | g | 130 | 175 | 210 | | |
| Micronutrients | | | | | | |
| Vitamin A (retinol) | µg | 700 | 770 | 1300 | | |
| Vitamin B1 (thiamin) | mg | 1.1 | 1.4 | 1.4 | | |
| Vitamin B2 (riboflavin) | mg | 1.1 | 1.4 | 1.6 | | |
| Vitamin B3 (niacin) | mg | 14 | 18 | 17 | | |
| Vitamin B5 (pantothenic acid) | mg | 5 | 6 | 7 | | |
| Vitamin B6 (pyridoxine) | mg | 1.3 | 1.9 | 2.0 | | |
| Vitamin B7 (biotin) | µg | 30 | 30 | 35 | | |
| Vitamin B9 (folate) | µg | 400 | 600 | 500 | | |
| Vitamin B12 (cobalamine) | µg | 2.4 | 2.6 | 2.8 | | |
| Vitamin C (ascorbate) | mg | 75 | 85 | 120 | | |
| Vitamin D (cholecalciferol) | IU | 600 | 600 | 600 | | |
| Vitamin E (tocopherol acetate) | mg | 15 | 15 | 19 | | |
| Vitamin K (phytomenadione) | µg | 90 | 90 | 90 | | |
| Calcium | mg | 1300 | 1300 | 1300 | | |
| Copper | µg | 900 | 1000 | 1300 | | |
| Iodine | µg | 150 | 220 | 290 | | |

| | | | | |
|---|---|---|---|---|
| Iron | mg | 18 | 27 | 10 |
| Magnesium | mg | 360 | 400 | 360 |
| Selenium | µg | 55 | 60 | 70 |
| Zinc | µg | 9 | 12 | 13 |

It has become increasingly clear that several conditions in pregnancy predispose both mother and offspring for later disease, including hypertension, cardiovascular disease, and type 2 diabetes.49 In the general population, it appears that teenagers are less likely to acquire preeclampsia than older pregnant women. However, prepregnancy obesity and excessive weight gain during pregnancy dramatically increase the risk for preeclampsia among adolescents.50, 51 The fact that the prevalence of obesity among adolescent girls is increasing worldwide imposes a need to develop a heightened awareness of the health implications for current and future generations. Thus, prevention of overweight and management of obesity through lifestyle and nutritional programs is urgent and should be a top-priority topic for international bodies.

In a systematic review, Bellamy estimated that the relative risk for a mother who suffered preeclampsia at any age to acquire hypertension within 14 years was 3.7 (95% CI: 2.70–5.05), to acquire ischemic heart disease and stroke within 10 years was 2.16 (95% CI: 1.86–2.52) and 1.81 (95% CI: 1.45–2.27), respectively, and to acquire thromboembolic venous disease within 5 years was 1.79 (95% CI: 1.37–2.33). Thus, one can predict that the global trend for excess weight gain among adolescent girls will lead to elevated rates of diabetes and heart disease among affected women and their offspring. Adolescents who were exposed to maternal preeclampsia as fetuses showed structural and functional changes in their hearts, including greater relative wall thickness and reduced left ventricular end-diastolic volume compared with controls.52 Because at-risk groups of adolescent girls more often have LBW babies and babies born prematurely or suffering neonatal death,53, 54 survivors will have elevated risks for chronic conditions, including hypertension over the life span,55 early-onset renal disease,56 type 2 diabetes,57 mental disorders,58 and many other chronic conditions. 59

## Adolescent behavior and nutrition

Eating patterns and behaviors are influenced by many factors during adolescence, including peer influences, parental modeling, food availability, food preferences, costs, convenience, personal and cultural beliefs, mass media, and body image.60 These could be broadly classified as personal factors, including attitudes, beliefs, food preferences, self-efficacy, and biological changes; environmental factors, including family, friends, peer networks, school, fast food outlets, and social and cultural norms; and macrosystem factors, including food availability, food production, distribution systems, mass media, and advertising (Fig. 2).60, 61 Teens as a group tend to snack and graze, miss meals, eat away from home, consume fast foods, and diet

(especially females) more frequently than younger children.60, 62 Nutrition surveys show that many adolescents have inadequate intakes of vitamins and minerals, which is more pronounced in females than in males.63 Recently, there has been an increase in the trend toward excess consumption of total fat and saturated fat, cholesterol, sodium, and sugar. There appears to be an increasing prevalence of obesity among adolescents worldwide, explained by widespread nutrition transitions to lipid-rich diets and a decrease in physical activity, especially among urban adolescents.62, 63 Other unhealthy behaviors, such as smoking, drinking, and illicit drug use, often begin during adolescence and are closely related to physiological and nutritional aspects.64, 65 Anorexia nervosa (AN) and bulimia nervosa (BN) are two specified eating disorders: about 0.3% of adolescents aged 13–18 years have AN, 0.9% have BN, and 1.6% have a binge-eating disorder.66 AN is relatively more common among young women.67

image

Figure 2

Open in figure viewerPowerPoint

Adolescent transition and nutrition: a complex interaction. Adapted from Ref. 31.

Recent studies into adolescent eating behaviors suggest that personal factors identified during adolescence were found to be predictive of both persistent dieting and disordered eating from adolescence into young adulthood, as well as initiation of these behaviors during young adulthood.63, 68 Body image is important in adolescence, and disturbances are in relation to obesity, dietary disorders, and psychological discontent. Many theories have been proposed to explain body image disturbances and their link with eating disorders, but most researchers appear to agree that the strongest influence in Western societies is the sociocultural factor, the theory best supported by available data.69 A recent systematic review evaluating variations in population-level physical activity in European children and adolescents suggests that the reported levels of physical activity and prevalence of compliance to physical activity recommendations in youth vary widely across European countries owing to variation in physical activity as well as variation in assessment methods and reported outcome variables.70 Over the last decade, many studies have been conducted to evaluate the impact of lifestyle changes, health behavior modifications, and nutrition interventions among children, adolescents, and youth in various population groups.71-76 These include the European Youth Heart Survey (EYHS), the Healthy Lifestyle in Europe by Nutrition in Adolescence (HELENA) study, the Identification and Prevention of Dietary and Lifestyle Induced Health Effects in Children and Infants (IDEFICS) study, the Health Behavior in School Ages Children (HBSC) study, and the Dortmund Nutritional and Anthropometric Longitudinally Designed Study (DONALD). The focus of all these large cohorts has been to study the risk factors associated with noncommunicable diseases in later life and identify the effective integrated lifestyle, nutrition, and behavioral interventions to address these risk factors. More recently,

there has been an epidemiological transition in LMICs, since these countries now bear a double burden of undernutrition and overnutrition.77, 78 However, there is a lack of rigorous nutrition program evaluations and large study cohorts from these countries,79 and most of the large-scale initiatives exist in Brazil, Mexico, and Chile, where there have been efforts to systematically address obesity.79

Beyond the behavioral context, there are other social contexts that directly or indirectly affect adolescent nutrition, growth, and development. These include issues like child labor, food security, poverty, conflicts, and humanitarian emergencies.80 The recent Lancet Series on Adolescent Health suggested that structural factors, such as national wealth, income inequality, and access to education, are the strongest determinants of adolescent health.81 Furthermore, families, peers, institutions (like schools), and the broader social environment are also strong predictors of adolescent health.81 However, these issues are not discussed in detail here since these are out of the scope of the review.

## Future research areas

Adolescents are vulnerable and deserve special attention in nutrition because adult health can be affected by nutrition during adolescence. Adolescence is a time for catch-up growth; the extent to which pubertal growth can contribute to stunting recovery at this time is under much investigation, but studies of children who migrated or were adopted may offer more insight into later linear growth increases.3, 82, 83 It has become increasingly important to target this vulnerable group, as today's adolescents are more exposed to nutritional risks, harmful alcohol consumption, sexually transmitted diseases, and other risks than in the past and face other new challenges, such as social media.84-86 Additionally, wide variations exist between and within regions in adolescent health profiles in relation to the prevalence of risk factors for noncommunicable diseases in adulthood, substance abuse, overweight, and sedentary lifestyles.86 There is a need to better define and measure adolescent health indicators and extend the data coverage for this specific subgroup.86 Future work is needed to better understand the adolescent nutrition needs in varying contexts, its possible prediction by factors in early life, such as imprinting of eating behavior, taste preferences, and food choices, and its relation to physiology of sleep, physical activity, puberty, growth spurt, and adult health (Box 1), without undermining the fact that adolescents should be the focus of future policy and implementation, as investing in this generation can yield dividends for generations to come.

Box 1: High-priority areas of investigation among adolescents

▪

Delineation of nutrition requirements for adolescents (early (12–15) and late (15–19)) across various contexts, including LMICs

▪

Identification of modifiable predictors of adolescent nutritional practice, such as early imprinting of eating behavior and taste and food preferences

▪

The physiology of pregnancy among adolescent girls who have different dietary histories and body composition

▪

Impact of adolescent nutritional practice on subsequent pregnancies, pregnancy outcomes, and offspring health

▪

Relationship of nutrition status and interventions to growth spurt and final height in adolescence

▪

Relationship of nutrition status to puberty onset and development

▪

Relationship of sleep and activity patterns with nutritional status in adolescence

▪

Role of intervening in adolescents for healthy reversal of stunting

▪

Role of nutrition in augmentation of brain development in previously malnourished adolescents

▪

Determining the likelihood of obesity and diabetes and wasting among adolescent girls with different nutritional histories

Acknowledgments

All authors contributed to writing this manuscript. The views presented in this paper are the personal views of the authors, who contributed their time for this project gratis.

## Synthetic Genome

## Scientists Created Bacteria with a Synthetic Genome. Is This Artificial Life? (The New York: Times: 20190517)

https://www.nytimes.com/2019/05/15/science/synthetic-genome-bacteria.html

In a milestone for synthetic biology, colonies of E. coli thrive with DNA constructed from scratch by humans, not nature.

A colored scanning electron micrograph of the bacteria E. coli. Scientists in Britain created bacteria with “recoded” DNA.

A colored scanning electron micrograph of the bacteria E. coli. Scientists in Britain created bacteria with “recoded” DNA. CreditCreditNano Creative/Science Source

Carl Zimmer

By Carl Zimmer

May 15, 2019

Scientists have created a living organism whose DNA is entirely human-made — perhaps a new form of life, experts said, and a milestone in the field of synthetic biology.

Researchers at the Medical Research Council Laboratory of Molecular Biology in Britain reported on Wednesday that they had rewritten the DNA of the bacteria Escherichia coli, fashioning a synthetic genome four times larger and far more complex than any previously created.

The bacteria are alive, though unusually shaped and reproducing slowly. But their cells operate according to a new set of biological rules, producing familiar proteins with a reconstructed genetic code.

The achievement one day may lead to organisms that produce novel medicines or other valuable molecules, as living factories. These synthetic bacteria also may offer clues as to how the genetic code arose in the early history of life.

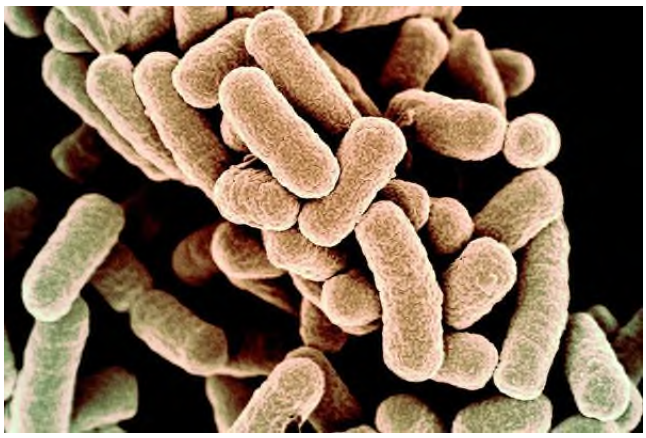
“It’s a landmark,” said Tom Ellis, director of the Center for Synthetic Biology at Imperial College London, who was not involved in the new study. “No one’s done anything like it in terms of size or in terms of number of changes before.”

Each gene in a living genome is detailed in an alphabet of four bases, molecules called adenine, thymine, guanine and cytosine (often described only by their first letters: A, T, G, C). A gene may be made of thousands of bases.

Genes direct cells to choose among 20 amino acids, the building blocks of proteins, the workhorses of every cell. Proteins carry out a vast number of jobs in the body, from ferrying oxygen in the blood to generating force in our muscles.

Nine years ago, researchers built a synthetic genome that was one million base pairs long. The new E. coli genome, reported in the journal Nature, is four million base pairs long and had to be constructed with entirely new methods.

The new study was led by Jason Chin, a molecular biologist at the M.R.C. laboratory, who wanted to understand why all living things encode genetic information in the same baffling way.



## Brain cancer treatment

## Jawless fish may hold key to effective brain cancer treatment (The Tribune: 20190517)

https://www.tribuneindia.com/news/health/jawless-fish-may-hold-key-to-effective-brain-cancer-treatment/773934.html

A chemical found in jawless parasitic fish can be used to deliver anti-cancer drugs directly to brain tumours, as well as lead to more effective treatments for trauma and stroke, a study has found.

The research, published in the journal Science Advances, found that molecules from the immune system of the parasitic sea lamprey may also be combined with a wide array of other therapies, offering hope to treat disorders like multiple sclerosis, Alzheimer's disease or even traumatic injuries.

"We believe it could be applied as a platform technology across multiple conditions," said Eric Shusta, a professor at the University of Wisconsin-Madison in the US.

When injected into the bloodstream, many drugs cannot reach targets in the brain as the blood-brain barrier prevents large molecules from leaving the blood vessels in the brain, researchers said.

In conditions such as brain cancer, stroke, trauma and multiple sclerosis, however, the barrier becomes leaky in and around the disease locations, researchers said.

The study found that leaky barrier offers a unique point of entry, allowing molecules to access the brain and deliver drugs precisely on target.

"Molecules like this normally couldn't ferry cargo into the brain, but anywhere there's a blood-brain barrier disruption, they can deliver drugs right to the site of pathology," Shusta said in a statement.

Researchers said that the technology takes advantage of the fact that many diseases disrupt body's natural defense mechanism—the blood-brain barrier, which lines the blood vessels of the central nervous system, protecting the brain from circulating toxins or pathogens.

They also linked the molecules to a chemotherapy called doxorubicin. The treatment prolonged survival in mouse models of glioblastoma, an incurable cancer.

"This could be a way to hold therapies in place that don't otherwise accumulate well in the brain so they can be more effective," said Ben Umlauf from the University of Wisconsin-Madison.

“There are several disease processes that disrupt the blood-brain barrier and we could conceive of delivering a variety of different therapies with these molecules,” said John Kuo from the University of Texas in the US. PTI

## Brainwaves

## Brainwaves during sleep strengthen memories: Study (The Tribune: 20190517)

https://www.tribuneindia.com/news/health/brainwaves-during-sleep-strengthen-memories-study/773907.html

Brainwaves produced during sleep helps us store new information in our memory, according to a study that explains how bedtime helps boost our learning.

Researchers have known about the close relationship between sleep and memory for decades.

The study, published in the journal NeuroImage, shows how learned information turns into reliable memories during sleep.

Researchers from Concordia University in Canada and University of Liege in Belgium studied how declarative information like facts and faces get stored after they have been learned.

Brainwaves—specifically, ones called sleep spindles, are fast bursts of electrical activity produced by neurons mainly during Stage 2 sleep, prior to deep sleep.

Using medical imaging machines, researchers were able to assess brain activity related to these waves.

"It's hypothesised that sleep spindles play an important role in transferring information from the hippocampus to the neo-cortex," said Thanh Dang-Vu, associate professor at Concordia University.

"This has the effect of increasing the strength of memories," Dang-Vu said in a statement.

To get the images they needed, the team used both electroencephalography (EEG) and functional magnetic resonance imaging (fMRI).

They applied these tools to a group of student volunteers during and after a lab-based face-sequencing task. The students were shown a series of faces and asked to identify the order in which they were shown.

The researchers scanned them while they were learning the faces, while they were asleep and again when they woke up and had to recall the sequences.

They then came back every day for a week and repeated the task without being scanned. After a week had elapsed, they had memorised the task, and were once again scanned during sleep and asked to recall the sequences.

"Our aim was to compare the sleep spindles from the night where the subjects learned the new information to the night where they didn't have any new information to learn but were exposed to the same stimulus with the same faces," Dang-Vu said.

The researchers found that during spindles of the learning night, the regions of the brain that were instrumental in processing faces were reactivated.

They also observed that the regions in the brain involved in memory—especially the hippocampus—were more active during spindles in the subjects who remembered the task better after sleep.

This reactivation during sleep spindles of the regions involved in learning and memory "falls in line with the theory that during sleep, you are strengthening memories by transferring information from the hippocampus to the regions of the cortex that are important for the consolidation of that specific type of information," Dang-Vu said.

Using non-invasive imaging to identify the mechanisms that strengthen memories can lead to improvements in our understanding of how memories work—and can lead to improved interventions for people with sleep or memory issues. — PTI

## Health Care Services

## Glaring irregularities at all govt hospitals' (The JHindustan Times: 20190517)

http://paper.hindustantimes.com/epaper/viewer.aspx

Non-functioning ICU ventilators, alleged pilfering of high-speciality expensive drugs and staff being paid less than minimum wages were some of the irregularities discovered during an inspection of all Delhi government hospitals over two years.

The inspection was conducted on instructions of the state health department between April 2016 and March 2018.

"I had submittd the report to the government, but not much was done. Hence, I have submitted the document to the court now," said Dr Sundeep Miglani, additional director and coordinator of all Delhi government hospitals, who headed the inspections.

One of the major issues highlighted in the report includes anomalies in functioning of pharmacies in government hospitals. For instance, at GTB hospital, the committee found that high-speciality drugs — with their brand names and MRP — were readily sitting on pharmacy shelves, raising suspicions of pilferage.

Such high-speciality drugs, the inspection team found, were used after organ transplant and to treat auto-immune diseases. Many of such department does not exist in GTB hospital.

“These drugs were available in plenty in main medical stores of the hospital. The supply of these drugs were disproportionate to their demand,” the report read, adding that neither a stock register was maintained in the pharmacy nor were the records of batch number, manufacturing and expiry dates of such drugs recorded.

The report also shed light on the lack of equipment at hospitals. For instance, in Babu Jagjivan Ram Memorial Hospital, several crtitical equipment — including an X-ray machine ane ventilators in the ICU — were not working. “Essential instrument for the resuscitation of patients was not available in the hospital,” the report said.

A check at Delhi State Cancer Institution found that the blood banks were non-functional and the high-end blood bank instruments — like deep freezers and blood donor couch — were lying idle. It also added that equipment used to conduct endoscopy, ECG and other tests had very “high end specifications and were very expensive as compared to the best of corporate hospitals”.

The report also stated that the employees of outsourced services, like security and sanitation, were not being paid minimum wages violating rules laid down by the government. It also said that the procedure of appointment of such employees was flawed as tenders were delayed.

“The tender for outsourced workers like the sanitation staff, hospital attendants was given to the lowest bidder, but the bid was low only because the pay promised to the workers was less than minimum wages,” said Dr Miglani.

“What he has done is not known to me,” replied Dr Ashok Kumar, Delhi’s Director General of Health Services. The health secretary could not be reached for a comment.

## Milk

## Milk tops list of unsafe food items in Delhi: Report (The JHindustan Times: 20190517)

https://www.hindustantimes.com/delhi-news/milk-tops-list-of-unsafe-food-items-in-delhi-report/story-AHsK2Q1Y6BAj20Farg5XJJ.html

Milk and milk products accounted for 161 of the failed tests, according to government data. Of these, 21 products were misbranded and 125 were found to be substandard. Fifteen others were unsafe.

As many as 477 of the 2,880 food samples, both packaged and freshly prepared, tested by the Delhi's food safety department between January 2018 and April 2019, failed quality tests.(HT Photo)

Milk and milk products are more likely to be unsafe or substandard than other food products sold in Delhi, according to test reports of food samples analysed by the state's food safety department.

As many as 477 of the 2,880 food samples, both packaged and freshly prepared, tested by the Delhi's food safety department between January 2018 and April 2019, failed quality tests.

A large-scale study by the national food safety regulator done last year found 90% of the milk sold and consumed in India was safe.

Milk and milk products accounted for 161 of the failed tests, according to government data. Of these, 21 products were misbranded and 125 were found to be substandard. Fifteen others were unsafe.

"Usually, milk samples fail to meet standard because the fats or solids-not-fat content is less than the standards mentioned in the act. Sometimes cows produce milk that is not up to the standard. Since it does not have a serious affect of health,we usually do not prosecute small dairy farmers," said an official from Delhi government's health department, on condition of anonymity.

In 2017, the national regulator -- Food Safety and Standards Authority of India (FSSAI) – reduced specifications for the required quantity of fats and 'solids-not-fat' in milk to ensure samples naturally low in these do not fail the test.

"In general, milk may contain adulterants like sugar or glucose, which might not be harmful for health but an adulterant nonetheless. However, in case of unsafe milk, there could be adulterants like soda and hydrogen peroxide, which is harmful to health. Contaminants like mycotoxins and antibiotics can also find their way in the milk, if the fodder or the milk is not handled properly at the farm," said Kuldeep Sharma, founder of Suruchi Consultants, a dairy sector consulting firm.

"To guarantee that you get safe milk, ensure that the package is intact, check the best before date, and see whether it was kept in a refrigerator in the store," he added.

Most of the samples failed tests because of misbranding, which means certain nutritional information was either omitted or printed wrong. Of the 477 failed samples, 144 samples were found to be substandard and 90 unsafe.

“A food is considered to be substandard when the nutritional level is not as per standards, for example, milk with less fat. Misbranded products and substandard products attract fines. But foods that are unsafe can damage health, and the manufacturers are fined and risk imprisonment,” said a senior official from Delhi’s health department.

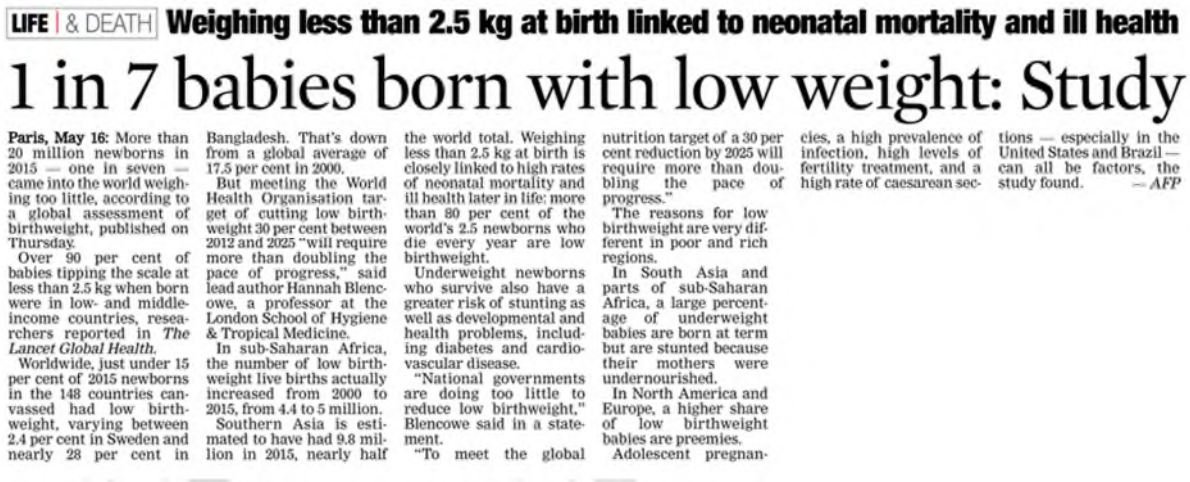
The law allows for six months’ imprisonment and R 1 lakh fine for unsafe foods that have not caused injury. Causing injury can result in a prison term extending to six years and a fine of R 5 lakh. In case of death, the law allows for imprisonment of not less than seven years and a fine of not less than R 10 lakh.

The results show 180 “non-standard” food items fail the tests, of which 59 were unsafe.

“These are food items for which there are no set standards as per the law, but are contaminated, contain restricted chemicals, or have the composition different from what is claimed by the manufacturers,” said the official.

## Low Weight Babies (The Asian Age: 20190517)

http://onlineepaper.asianage.com/articledetailpage.aspx?id=13014727



LIFE & DEATH **Weighing less than 2.5 kg at birth linked to neonatal mortality and ill health**

# 1 in 7 babies born with low weight: Study

**Paris, May 16:** More than 20 million newborns in 2015 — one in seven — came into the world weighing too little, according to a global assessment of birthweight, published on Thursday.

Over 90 per cent of babies tipping the scale at less than 2.5 kg when born were in low- and middle-income countries, researchers reported in *The Lancet Global Health*.

Worldwide, just under 15 per cent of 2015 newborns in the 148 countries canvassed had low birthweight, varying between 2.4 per cent in Sweden and nearly 28 per cent in Bangladesh. That's down from a global average of 17.5 per cent in 2000.

But meeting the World Health Organisation target of cutting low birthweight 30 per cent between 2012 and 2025 "will require more than doubling the pace of progress," said lead author Hannah Blencowe, a professor at the London School of Hygiene & Tropical Medicine.

In sub-Saharan Africa, the number of low birthweight live births actually increased from 2000 to 2015, from 4.4 to 5 million.

Southern Asia is estimated to have had 9.8 million in 2015, nearly half the world total. Weighing less than 2.5 kg at birth is closely linked to high rates of neonatal mortality and ill health later in life: more than 80 per cent of the world's 2.5 newborns who die every year are low birthweight.

Underweight newborns who survive also have a greater risk of stunting as well as developmental and health problems, including diabetes and cardiovascular disease.

"National governments are doing too little to reduce low birthweight," Blencowe said in a statement.

"To meet the global nutrition target of a 30 per cent reduction by 2025 will require more than doubling the pace of progress."

The reasons for low birthweight are very different in poor and rich regions.

In South Asia and parts of sub-Saharan Africa, a large percentage of underweight babies are born at term but are stunted because their mothers were undernourished.

In North America and Europe, a higher share of low birthweight babies are preemies.

Adolescent pregnancies, a high prevalence of infection, high levels of fertility treatment, and a high rate of caesarean sections — especially in the United States and Brazil — can all be factors, the study found. — *AFP*

## Hypertension ((The Asian Age: 20190517)

http://onlineepaper.asianage.com/articledetailpage.aspx?id=13014957

# Hypertension an emerging epidemic in youth: Experts

SHASHI BHUSHAN
NEW DELHI, MAY 16

**On eve of World Hypertension Day, health experts claimed that hypertension in young age is an emerging epidemic**

On eve of World Hypertension Day, health experts claimed that hypertension in the young age is an emerging epidemic. According to doctors, a 36-year-old man who ignored hypertension had to undergo heart surgery to save his life.

Doctors said that Harsh (name changed), a 36-year-old resident of Delhi, was suffering from breathlessness on exertion and shortness of breath for last six months with occasional headache and dizziness. After thorough diagnosis, it was found that his blood pressure was high due to narrowing of "aorta", which was a congenital defect that went unnoticed for so many years due to lack of awareness.

"Blood pressure can be either essential hypertension (without any cause) or secondary hypertension to renovascular disease or other etiologies including narrowing of arteries or blood vessels," said Dr Ajay Kaul of BLK Super Speciality Hospital.

## Kidney transplants

## Here's why many kidney transplants fail (New Kerala: 20190517)

https://www.newkerala.com/news/read/143321/heres-why-many-kidney-transplants-fail.html

Genetic incompatibility may be the reason why many kidney transplants fail, even when donors and recipients are thought to be well-matched, a recent study has observed.

According to the study published in the Journal of Medicine, genomic collision is a genetic incompatibility between the kidney donor and recipient, causing the recipient to mount an immune attack against the donor protein.

The new study could lead to more precise matching between donors and patients, and reduce kidney transplant failures. Also, the same genomic collision may potentially occur in heart, liver, and lung transplants.

A successful organ transplant depends on assuring genetic compatibility between the donor and recipient. This is done by matching the donor and recipient's human cell surface proteins that help the immune system determine which cells are foreign as closely as possible.

However, mismatches can only explain about two-thirds of transplants that fail for immunological reasons.

"The rest of those failures are probably due to less common antigens, or so-called minor histocompatibility antigens. However, the identity of most of these antigens and how they lead to rejection is largely not known," said senior co-author Krzysztof Kiryluk.

The study found that kidney recipients with two copies of a deletion near a gene called LIMS1 had a significantly higher risk of rejection when the donor's kidney had at least one full-sized version of the same gene.

Transplanted organs commonly experience a significant period of low oxygenation, which appears to compound the genomic collision.

The findings may apply to other types of organ transplants since LIMS1 is also expressed in the lung, heart, and liver. Similarly, other genetic incompatibilities may also be contributing to the rejection of these organs.

"This project illustrates how genetic analysis is empowering clinical care by enabling better matching and the antibody test potentially presents a noninvasive method for screening for organ rejection in individuals with an existing transplant," explained another co-author Ali G. Gharavi.

"The LIMS1 gene has gone previously undetected in earlier searches, partly due to the limited sample size of previous studies. We estimate that a traditional genome-wide association study would need to analyze a minimum of 13,000 kidney recipients to find this gene," Kiryluk concluded.

## Chemotherapy effective

## Less chemotherapy effective for older patients with stomach cancer (New Kerala: 20190517)

https://www.newkerala.com/news/read/143236/less-chemotherapy-effective-for-older-patients-with-stomach-cancer.html

For older patients with advanced stomach or oesophageal cancer, less chemotherapy might prove to be more effective with fewer side effects like diarrhoea and lethargy, a new study has revealed.

The study was presented at the ASCO Annual Meeting 2019.

Dr Peter Hall, a co-chief investigator from the Cancer Research UK Edinburgh Centre, said "Increasingly we're realising it's not just age that affects how well someone can tolerate their treatment and we need to do more work to understand how other conditions or aspects of frailty might play a role."

The study involved 514 people with stomach or oesophageal cancer having an average age of 76, while the oldest patient was 96.

Patients went through a careful medical assessment and then went onto chemotherapy with just two drugs. They were then carefully monitored to see how well the cancer was controlled, whether they had symptoms and side-effects.

The findings indicated that medium and lower doses of chemotherapy worked as effective as the full-strength dose in controlling cancer.

But when the researchers looked at the overall effect of the treatment, including quality of life, they reported that it was the lowest dose treatment that came out best.

"These valuable results reduce fears that giving a lower dose chemotherapy regimen is inferior and could make a huge difference for patients with stomach or oesophageal cancer who can't tolerate intensive courses of treatment," said Professor Charles Swanton, chief clinician of Cancer Research UK.

"Older or frail patients are often not considered for new drug trials or standard of care therapy as they're less able to tolerate combination chemotherapy," he added.

Professor Matt Seymour, a co-chief investigator at the University of Leeds said "Doctors often prescribe reduced doses of drugs, or sometimes no chemotherapy at all, based on their clinical experience, but until now there has been little hard evidence to help them in those decisions."

Seymour also added that "Our results provide that evidence, so doctors can confidently give people a lower dose of chemotherapy, sparing them side effects without worrying that it's compromising their chance of survival."

## Life expectancy

## Life expectancy linked to a person's walking speed: Study (New Kerala: 20190517)

https://www.newkerala.com/news/read/143195/life-expectancy-linked-to-a-persons-walking-speed-study.html

People who walk slowly have a lower life expectancy than those who walk fast, a recent study has claimed.

According to the study published in the Journal of Mayo Clinic Proceedings, those with a habitually fast walking pace have a long life expectancy across all levels of weight status - from underweight to morbidly obese. Underweight individuals with a slow walking pace had the lowest life expectancy (an average of 64.8 years for men, 72.4 years for women). The same pattern of results was found for waist circumference measurements.

Professor Tom Yates, the lead author of the study, said, "Our findings could help clarify the relative importance of physical fitness compared to body weight on the life expectancy of individuals. In other words, the findings suggest that perhaps physical fitness is a better indicator of life expectancy than body mass index (BMI) and that encouraging the population to engage in brisk walking may add years to their lives."

Dr Francesco Zaccardi, co-author of the study, said, "Studies published so far have mainly shown the impact of body weight and physical fitness on mortality in terms of relative risk, for example, a 20 per cent relative increase of risk of death for every 5 kilograms per metres squared increase, compared to a reference value of a BMI of 25 kilograms per metres squared (the threshold BMI between normal weight and overweight)."

Last year, Professor Yates and his team showed that middle-aged people who reported that they are slow walkers were at higher risk of heart-related disease compared to the general population.

Life expectancy linked to a person's walking speed: Study

## Strong life purpose

## People with strong life purpose, easily make healthier choices (New Kerala: 20190517)

https://www.newkerala.com/news/read/142645/people-with-strong-life-purpose-easily-make-healthier-choices.html

Everybody wants to stay fit. However, while for some, meeting their fitness goals seem like a cakewalk as they love eating healthy food, many constantly struggle. Ever wonder why?

According to a new study people with stronger life purpose are more likely to accept messages promoting health behaviour change than those with a weaker sense of purpose. The findings suggest that this might be because they experience less decisional conflict while considering health advice.

"Purpose in life has been robustly associated with health in previous studies. But the mechanism through which life purpose may promote healthy living has been unclear," said Yoona Kang, lead author of the study published in the Journal of Health Psychology.

For this study, published in Health Psychology, Kang and her co-authors chose to test out a theory that making health decisions might take less effort for those with a higher sense of purpose in life.

According to Kang, health decisions, even those as simple and mundane as choosing between the elevator and the stairs, involve some amount of decisional conflict.

But what if some people experience less conflict than others when considering these options, perhaps because they have a stronger guiding purpose that helps resolve the conflicts?

To test this idea, the researchers recruited sedentary people who needed to exercise more. Participants completed a survey about their life purpose by indicating the degree to which they agreed or disagreed with statements like "I have a sense of direction and purpose in my life" or "I don't have a good sense of what it is I'm trying to accomplish in life."

Next, they were shown health messages promoting physical activity. Their responses to the messages were monitored by an fMRI scanner, focusing on brain regions that tend to be active when people aren't sure what to choose or when they feel conflicted.

Those participants who reported a stronger sense of life purpose were more likely to agree with the health messages and to have less activity in brain regions associated with conflict-processing. In fact, the researchers were able to predict how likely it was that a person would agree with health messages based on the degree of brain activity in these regions.

"We conduct studies both to understand how different kinds of health messaging can help transform people's behaviours and why some people might be more susceptible than others. This study does a nice job starting to unpack reasons why people who have a higher sense of purpose in life might be more able to take advantage of this messaging when they encounter it," said Emily Falk, director of the Communication Neuroscience Lab.

## Dengue (Hindustan: 20190517)

http://epaper.livehindustan.com/imageview_12513_63898322_4_1_17-05-2019_i_9.pagezoomsinwindows.php

# डेंगू से बचाव का टीका लाने के लिए देशभर में सर्व

**डेंगू का डंक**

**09** मामले दिल्ली में डेंगू के सामने आए हैं इस साल 11 मई तक

**05** मामले चिकनगुनिया के सामने आए हैं इस साल दिल्ली में

### ऐसे पहचानें डेंगू मरीज

- ब्लड प्रेशर गिरने से बेहोशी
- सांस की दर तेजी से बढ़ जाती है
- रक्त की संचार भी कम हो जाता है।
- ध्यान दें कि मरीज हर चार घंटे में पेशाब करता है या नहीं

### 20 देशों में लगाई जाती है वैक्सीन

एम्स के निदेशक रणदीप गुलेरिया ने बताया कि दुनिया के 20 देशों में डेंगू की वैक्सीन इस्तेमाल की जाती है। हालांकि कुछ देशों ने वैक्सीन कार्यक्रम शुरू करने के बाद इसे वापस ले लिया क्योंकि वहां ऐसी आबादी कम थी जो कभी डेंगू से पीड़ित रही हो। ऐसे लोगों पर ही यह वैक्सीन भविष्य में डेंगू से बचाने के लिए असर करती है। भारत में डेंगू की वजह से 2017 में 226 लोगों की मौत हुई थी और एक लाख से अधिक लोग इससे पीड़ित थे।

**नई दिल्ली। हेमवती नंदन राजौरा**

डेंगू के मामलों से बचाव के लिए इंडियन काउंसिल ऑफ मेडिकल रिसर्च डेंगू का टीका लाने के लिए देशभर में शोध कर रहा है।

संक्रामक रोगों पर काम करने वाले एम्स के प्रोफेसर आशुतोष बिश्वास ने गुरुवार को यह जानकारी दी। उन्होंने बताया कि डेंगू से बचाव के लिए वैक्सीन (टीका) किसी देश में तभी लोगों के लिए इस्तेमाल में लाया जा सकता है जब उस देश की लगभग 70 फीसदी आबादी कभी न कभी डेंगू से पीड़ित रही हो। यह वैक्सीन उन्हीं लोगों के शरीर में एंटीबॉडी तैयार कर डेंगू से बचाव करती है जो पहले डेंगू से पीड़ित रहे हैं। आईसीएमआर के डीजी प्रोफेसर बलराम भार्गव का कहना है कि 15 राज्यों में 12 हजार लोगों पर सर्वे किया जा रहा है।

**नुकसान भी :** प्रोफेसर आशुतोष बिस्वास ने बताया कि वैक्सीन उन लोगों को फायदे की बजाय नुकसान पहुंचा सकती है जो कभी डेंगू के शिकार नहीं हुए। यह पहले डेंगू से पीड़ित रहे लोगों के ही भविष्य में डेंगू से बचाव में सहायक है। देशभर में डाटा एकत्र किया जा रहा है कि कितनी फीसदी आबादी को डेंगू हुआ था और उन्हें वैक्सीन लगाई जा सकती है। अगर 70 फीसदी आबादी ऐसी हुई जो डेंगू से पीड़ित रहे हों तो वैक्सीन देश में इस्तेमाल की जा सकती है। आईसीएमआर के वरिष्ठ अधिकारी ने नाम न छापने की शर्त पर बताया कि उपलब्ध वैक्सीन टाइप 4 मामले में ही असरकारक है।

### ये उपाय अपनाएं

1. प्राय : डेंगू का मच्छर दिन के समय काटता है, इसलिए दिन में मच्छरों के काटने से खुद को बचाएं
2. बारिश के दौरान फुल शर्ट ही पहनें। पावों में जूते जरूर पहनें, शरीर को कहीं से भी खुला ना छोड़ें
3. घर के आसपास या घर के अंदर पानी इकट्ठा न होने दें। कूलर, गमले, टायर इत्यादि में जमे पानी को तुरंत बहा दें
4. कूलर में यदि पानी है तो इसमें किरोसिन तेल डालें जिससे कि मच्छर पनप ना पाए
5. मच्छरदानी का उपयोग करें और मच्छरों को दूर करें

## Dengue Corner ((Hindustan: 20190517)

http://epaper.livehindustan.com/imageview_12513_63902376_4_1_17-05-2019_i_9.pagezoomsinwindows.php

# सुविधा : एम्स में मरीजों के लिए डेंगू कॉर्नर शुरू

नई दिल्ली | वरिष्ठ संवाददाता

डेंगू से होने वाली मौत रोकने और बेहतर इलाज के लिए एम्स ने डेंगू कॉर्नर शुरू किया है। राष्ट्रीय डेंगू दिवस पर गुरुवार को एम्स के निदेशक डॉ. रणदीप गुलेरिया ने इसकी घोषणा की।

उन्होंने बताया कि डेंगू कॉर्नर में अलग आइसोलेशन वार्ड के साथ अतिरिक्त बिस्तरों की व्यवस्था की गई है। यहां विशेष तौर पर प्रशिक्षित डॉक्टर और नर्स को तैनात किया गया है। मेडिसन विभाग के प्रोफेसर आशुतोष बिश्वास ने बताया कि जरूरत पड़ने पर बिस्तरों की संख्या बढ़ाई जा सकती है।

## पहल

- अतिरिक्त बिस्तरों के अलावा प्रशिक्षित डॉक्टर तैनात रहेंगे
- एम्स में डेंगू मरीजों की मृत्यु दर 7 से 10%, देश में दो फीसदी से कम

जैसे -जैसे मरीजों की संख्या बढ़ेगी हर वार्ड से डेंगू के मरीजों के लिए दो बिस्तर लिए जाएंगे। उन्होंने कहा, अस्पताल में डेंगू से मौत के मामलों की दर 7 से 10% है जबकि पूरे देश में यह 2% से भी कम है। उन्होंने बताया कि एम्स में डेंगू से हर साल 20 से 30 मरीजों की मौत होती है।

**Health Care (Hindustan: 20190517)**

http://epaper.livehindustan.com/imageview_12519_64354020_4_1_17-05-2019_i_15.pagezoomsinwindows.php

# डॉक्टरी सलाह की न करें अनदेखी

**हाइपरटेंशन से भले ही हम अनजान हों, पर इसके दूसरे नाम हाईबीपी को सब जानते हैं। देश में तीन लाख से ज्यादा लोग हर साल इस कारण जान गंवा रहे हैं। इस समस्या में नियमित जांच व डॉक्टरी निर्देशों का पालन जरूरी है।**

इंडियन मेडिकल एसोसिएशन की मानें तो तीन में से एक हिंदुस्तानी युवा हाइपरटेंशन की गिरफ्त में है। बिगड़ते हालात का अंदाजा इससे लगा सकते हैं 40 फीसदी से अधिक डॉक्टर भी इस बीमारी की जद में हैं। राजधानी दिल्ली व एनसीआर क्षेत्र में हजार लोगों पर किए अध्ययन के अनुसार 31 प्रतिशत लोग हाइपरटेंशन के शिकार हैं। 31 से 50 वर्ष के 56 प्रतिशत लोग हाइपरटेंशन के शिकार हैं। हालांकि साठ साल की उम्र से पहले पुरुषों में उच्च रक्तचाप का खतरा ज्यादा रहता है, पर बाद में स्त्री-पुरुष दोनों में ही खतरे की आशंका बराबर होती है।

साकेत स्थित मैक्स सुपर स्पेशियलिटी हॉस्पिटल में सीनियर कंसल्टेंट और इंटर्वेंशनल न्यूरोलॉजी के प्रमुख डॉ. चंद्रिल चुघ के अनुसार, 'लंबे समय तक रक्तचाप का स्तर ज्यादा रहना हाइपरटेंशन या हाई बीपी कहलाता है। इसे साइलेंट किलर भी कहते हैं, क्योंकि 30 प्रतिशत लोग यह

## लक्षण

● जल्दी-जल्दी सिरदर्द होना, खासतौर से गर्दन सहित सिर के पीछे ● बार-बार मितली आना ● पसीना ज्यादा आना ● नसों में झनझनाहट रहना ● सीने में दर्द, बेचैनी, भारीपन व सांस लेने में परेशानी महसूस करना ● बहुत ज्यादा तनावग्रस्त रहना ● ज्यादा गुस्सा आना ● कमजोरी के साथ चक्कर महसूस होना ● थकान रहना ● तेज चलने में परेशानी होना ● बिना किसी श्रम के दिल की धड़कन तेज हो जाना ● नींद कम आना ● आंखों

**Dengue Vaccine (Navbharat Times: 20190517)**

http://epaper.navbharattimes.com/details/34745-67182-1.html

# आपको डेंगू हो चुका है तभी काम करेगी डेंगू वैक्सीन

## हेल्दी लोगों को इससे नुकसान, 20 देशों ने लिया वापस

■ प्रमुख संवाददाता, नई दिल्ली

**डेंगू के** खिलाफ दुनिया भर में वैक्सीन पर चल रही रिसर्च अभी भी ठोस नतीजे पर नहीं पहुंच पाई है। एम्स के डॉयरेक्टर डॉक्टर रणदीप गुलेरिया का कहना है कि डेंगू वैक्सीन उन्हीं लोगों में कारगर हो रही है, जो पहले से इस वायरस के शिकार हो चुके हैं। जिन लोगों को डेंगू फीवर एक बार भी नहीं हुआ है, उनके लिए यह वैक्सीन खतरनाक हो जाती है। यही वजह है कि 20 देशों ने इस वैक्सीन को वापस ले लिया है।

नैशनल डेंगू डे के मौके पर डॉक्टर रणदीप गुलेरिया ने कहा कि जहां भी इस पर ट्रायल चल रहा है, सेफ्टी और एफिकेसी को ध्यान में रखकर किया जा रहा है। सेफ्टी के मद्देनजर यह देखा जा रहा है कि जो लोग डेंगू वायरस से पीड़ित नहीं हैं, उन्हें वैक्सीन का डोज नुकसान पहुंचा रहा है। इसलिए अभी भी भारत में डेंगू के लिए बचाव ही बेहतर इलाज है, ज्यादा से ज्यादा बचाव पर ध्यान दें और इस वायरस को जानलेवा होने से रोकें।

इस बारे में एम्स के डॉक्टर आशुतोष बिस्वास ने कहा कि डेंगू वैक्सीन तभी कारगर है जब आबादी के 70 पर्सेंट लोग इस वायरस के शिकार हो चुके हों। ऐसे में यह वैक्सीन अभी भारत जैसे देश के लिए सही नहीं है। हेल्दी लोगों पर वैक्सीन के साइड इफेक्ट को देखते हुए जब दुनिया भर में इसे वापस लिया जा रहा है तो भारत में इसे अभी नहीं लाया जा सकता है। भारत सरकार की गाइडलाइंस के अनुसार हमने एम्स में डेंगू कॉर्नर की शुरुआत कर दी है, इसमें डेडिकेट जगह पर, बेड रिजर्व करके, ट्रेंड डॉक्टर व स्टाफ की ड्यूटी लगाई गई है।

### एम्स में ज्यादा मौतों की वजह

डेंगू के बारे में डॉक्टर आशुतोष ने कहा कि जब दूसरे अस्पताल में मरीज सीवियर हो जाते हैं तो वो उन्हें एम्स रेफर कर देते हैं, जिससे यह एम्स के लिए चुनौती बन जाती है। इसकी वजह से एम्स में डेंगू से मौत के मामले बढ़ जाते हैं। इस वजह से एम्स में 7 से 10 पर्सेंट डेथ रेट है जो पूरे देश में 2 पर्सेंट से भी कम है। उन्होंने अपील करते हुए कहा कि डेंगू के इलाज में अलर्ट रहें और समय पर इलाज के लिए पहुंचे, इससे जान जाने का खतरा कम होता है। इस सीजन में अब तक पूरे देश में डेंगू के चार हजार मामले आ चुके हैं, जिसमें से तीन या चार की मौत हुई हैं।