Chapter–2

Concept and Approaches of the Study

Food:

Food has been considered as most basic need to a lifeprocess.

Food has been a basic part of our existence. Through the centuries, we have acquired a wealth of information about the use of food to ensure growth of children and youth, to maintain good health through life and to meet special needs of pregnancy and lactation and to use it to recover from illness. A large part of our food heritage is scientifically beneficial and needs to be retained some aspects may need to be modified in the view of the changes in our life style.

Food may be also defined as anything eaten or drunk, which meets the needs for energy, building, regulation and protection of the body. In short, food is the raw material from which our bodies are made. Intake of the right kinds and amounts of food can ensure good nutrition and health, which may be evident in our appearance, efficiency and emotional wellbeing.

Nutrition:

Nutrition includes everything that happens to food from the time it is eaten until it is used for various function in the body. Nutrition is the science of food and its interaction with an organism to promote and maintain health.

ISBN: 978-93-85822-13-1

Thus, nutrition is a combination of process by which all parts of the body receive and utilize materials necessary for the performance of their functions and for the growth and renewal of all components. Nutrition may also define as the processes by which the organism ingests, digests, absorbs, transports and utilizes nutrients and disposes off their end products. In addition, nutrition is concerned with social, economical, cultural and psychological implication of food and eating.

Health:

A health determinant is a force or element that affects health, either positively or negatively. Health is determined by both intrinsic forces, such as genetics, behaviour, culture, habits and lifestyles, and extrinsic forces such as preventative, curative and promotional aspects of the health sector, as well as elements outside the health sector including:

- Economic factors, such as trade
- Social factors, such as poverty
- Environmental factors, such as climate change
- Technological factors, such as information technology.

The most commonly quoted definition of health is that formalized by the World Health Organization (WHO) over half a century ago; “a complete state of physical, mental and social well-being, and not merely the absence of disease or infirmity.”. Several other generally accepted definitions of the noun ‘health’ exist. Bircher defines health as “a dynamic state of well-being characterized by a physical and mental potential, which satisfies the demands of life commensurate with age, culture, and personal

ISBN: 978-93-85822-13-1

responsibility", while Saracchi defines health as "a condition of well being, free of disease or infirmity, and a basic and universal human right". This is a whole of life view and includes the cyclical concept of life-death-life.

Nutritional Status :

Nutritional status is the state of our body as a result of the foods consumed and their use by the body. Nutritional status can be good, fare or poor. It is also defined as a condition of health of the individual as influenced by the utilization of the nutrients. It can be determined only by the correlation of information obtained through a careful medical and dietary history, a thorough physical examination and appropriate laboratory investigation.

Bio-nutrition :

It is the new food science that amalgamates and harmoniously blends the basis of the optimal nutrition and diet therapy with the locally available organic resources to cater to "holistic health". It is a far more comprehensive coverage that provides for the diverse essential needs like :

- Growth needs of the body
- Maintenance requirements
- Total well being or physical fitness
- Preventive treatment by boosting body resistance through improved immune system.
- Curative treatment in the case of some chronic maladies like cancers, diabetes and vitamin deficiency.

ISBN: 978-93-85822-13-1

Bionutrition aims at broad basing the role of nutrition to cover all the health contingencies and then build up organically the inner reserves to combat disease leading to 'assured good health'.

Nutrition security:

Nutrition security is an access to all the nutrients in optimum quantity for all people at all times to sustain a healthy and active life.

Food bank :

It is facility that collects and distributes food donation to authorized organizations that feed the hungry.

Malnutrition:

Malnutrition has been defined as a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients. It comprises four forms :

i. **Under nutrition** is the condition which results when insufficient food is eaten over an extended period of time.
ii. **Over nutrition** is the pathological state resulting from the consumption of excessive quantity of food over an extended period of time.
iii. **Imbalanced nutrition** is the pathological state resulting from a disproportion among essential nutrients with or without the absolute deficiency of any nutrient.
iv. **Specific deficiency** is the pathological state resulting from a relative or absolute lack of an individual nutrient.

ISBN: 978-93-85822-13-1

Nutritional status: Nutritional status is a major determinant of the health and well-being among children and there is no debate on the importance of the study of child nutritional status according to spatial and temporal dimension. Malnutrition continues to be a major public health problem throughout the developing world, particularly in South Asia and sub-Saharan Africa.

Children constitute the most vulnerable segment of any community. Their nutritional status is a sensitive indicator of community health and nutrition. Globally it is estimated that among preschool age children in developing countries nearly 183 million are underweight, 226 million are stunted and 67 million are wasted. About 70% of the World's stunted children aged under five years live in Asia. Since independence one of the greatest problems facing India is malnutrition among under five years old children. India has the highest occurrence of childhood malnutrition in the world. As per the report of National Nutrition Monitoring Bureau and National Institute of Nutrition nearly 43.8% children suffer from moderate degrees of protein energy malnutrition in the form of marasmus and kwashiorkor, 8.7% suffer from extreme forms of malnutrition and only 9.9% of the children are normal. Therefore, childhood under nutrition is a serious health problem in India including West Bengal.

Dietary requirement:

The school age period has been the latent time of growth. After preschool stage the growth is steady and slow. The growth rate characteristic of infants and preschool does not continue during the school age years but

ISBN: 978-93-85822-13-1

children of school age are continuously undergoing changes in the body. This continues from the age of 6 to 12 years. In the later part of this period girls grow faster than boys.

The slowed rate of growth during this period results in a gradual decline in the food requirement / units of body weight. Nutritional requirement of boy and girls are similar till the first 9 years of age of life. After that a variation can be seen in requirements of some nutrient. The special nutrient requirement of school going children includes the following:

"7-9 years children"

Nutrient	Amount/Day
Energy	1690kcl
Protein	29.5g
Visible fat	30g
Calcium	600mg
Iron	16mg
Beta-carotene	4800µg
Thiamine	.8mg
Riboflavin	1.0mg
Niacin	13mg
Pyridoxine	1.6mg
Vitamin C	40mg
Dietary folate	120µg
Vitamin B12	.2-1.0µg
Calcium	800mg

RDA 2010[10]

Important nutrient for healthy growth and development

Through the school years children will have periods of rapid growth and big appetite. The essential nutrient that takes important part on children growth are following:

ISBN: 978-93-85822-13-1

Carbohydrates and Fats: It provides energy for growth and physical activity. Children need fuel for their bodies to grow and meet their energy needs. Food such as grain, fruit, vegetable provide that energy, in additional to vitamin, mineral and fiber for good health.

It's important to choose healthy fats, such those found in nuts, seeds and oils, and to limit saturated and transfats.

Protein: Protein builds, maintain, repair body tissue and specially imp for growth. It's important to encourage children to eat protein rich food like milk, other dairy products, nuts& seeds.

Vitamins & Minerals: Vitamin A, C & folate comes from many foods are essential for fighting infections, skin and growth. B Vitamins are comes from grain, dairy products, meat and meat products and promote healthy growth in many ways.

Calcium from milk, dairy products and some dark green leafy vegetables are usually sufficient in young children's diet. It require for building strong bone and teeth & prevent rickets, osteoporosis.

Iron is imp for blood haemoglobin formation which carries oxygen to tissue, take a imp part on growth and prevent anaemia. Beef, ham, chicken, fish, meat, beans, dark green vegetables, enriches bread and cereals are good source of dietary iron. Vitamin C is essential for better absorption of iron which present on citric fruits.

ISBN: 978-93-85822-13-1

Healthy food idea for children from each of the 5 food groups:

Cereal grains products	Pulses & Legumes	Milk & meat products	Fruits & Vegetables	Fats & Sugars
Rice,Wheat,Ragi, Bajra, Maize, Jowar,Barly, Rice flakes, Wheat flour	Bengal gram, Black gram, Green gram, red gram, Lentil, Cowpea, Peas, Rajmah, Soya bean, Beans.	Milk, Curd, Skimmed milk, Cheese, Chicken, Liver, Fish, Egg, Meat.	F: Mango, Guava, Tomato, Papaya, Orange, Lime, Water melon. V: All green leafy vegetable and other like Brinjal, Ladies finger, Beans, Capsicum,Onion, Cauliflower.	F: Butter, Ghee, Cooking oils. S:Jaggery, sugar.

Other dietary guide lines:

- Nutritional requirement should meet their increasing activity and growth and special requirement because of sickness or injury.
- Children are generally restless and do not like to spend too much time at the table for eating. So menus have to provide dishes that are quick to eat and yet satisfying nutritionally.
- Children also tend to be bored with food easily. So menus need to provide variety in colour, texture, taste, and flavour.
- The climatic and weather conditions are important consideration too. In hot weather extra liquids and salts are to be given because children do not generally like to drink plain water.

ISBN: 978-93-85822-13-1

- Children have varying appetites and often prefer snacky meals at frequent intervals to few large ones.
- New foods are likely to be accepted if it is given in a form which can be easily handled and they should be offered at regular intervals until the child learns to accept it.
- The young child should be encouraged to eat with the rest of the family members as he is ready to take the family meals and also because the interactions between the family members are a part of normal development.
- If the child does not like salads, they can be incorporated, in recipes like sandwiches.
- Snacks and food eaten on returning from school make negative or positive contribution to diets. Fruits and dry fruits can be served as snack item.

Hygiene (which comes from a Greek word, hygieia) is a set of practice performed for the preservation of health. Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. It is the basic concept of cleaning, grooming and it is the first step to good health. Besides that it is consider as one of the most important part of our daily lives at home and at workplace which help us to protect ourselves and keep us with good health.

Some regular hygiene practice may be considered good habits by a society while the neglect of hygiene can be considered disgusting, disrespectful or even threatening. The focus is mainly on personal hygiene that looks at cleanliness of the hair, body, hands, fingers, feet and clothing, and

ISBN: 978-93-85822-13-1

menstrual hygiene. Improvements in personal knowledge, skill and practice that modify an individual's behaviour towards healthy practice are the focus of hygiene promotion. Safe hygiene practice includes a broad range of healthy behaviours, such as hand washing before eating, after changing the pad, after cleaning the waste management and safe faeces disposal. The aims of the hygiene education and promotion is to transfer knowledge and understanding of hygiene and associated health risks in order to help people change their behaviours to use better hygiene practices.

Concept of Hygiene

Hygiene is an old concept related to medicine, as well as to personal and professional care practices related to most aspects of living. In medicine and in home (domestic) and everyday life settings, hygiene practices are employed as preventative measures to reduce the incidence and spreading of disease. In the manufacture of food, pharmaceutical, cosmetic and other products, good hygiene is a key part of quality assurance i.e. ensuring that the product complies with microbial specifications appropriate to its use. The terms cleanliness (or cleaning) and hygiene are often used interchangeably, which can cause confusion. In general, hygiene mostly means practices that prevent spread of disease-causing organisms. Since cleaning processes (e.g., hand washing) remove infectious microbes as well as dirt and soil, they are often the means to achieve hygiene. Other uses of the term appear in phrases including: body hygiene, personal hygiene, sleep hygiene, mental hygiene, dental hygiene, and occupational hygiene, used in connection with public health. Hygiene is also the name of a branch of

ISBN: 978-93-85822-13-1

science that deals with the promotion and preservation of health, also called hygienic. Hygiene practices vary widely, and what is considered acceptable in one culture might not be acceptable in another.

Personal hygiene

Personal hygiene includes different habits i.e., washing hands and brushing teeth which keep bacteria, viruses and fungal far away from our bodies. Moreover these habits will help us to protect our mental health and activity. Also good personal hygiene will help us to keep feeling good about ourselves. Since those who do not take care of their personal hygiene i.e., dirty clothes, body odor and bad breath will suffer from discrimination and this will mainly leads to mental problems. But the most important point in this subject, is that all people has their own hygiene but some people do it better than others, this will mainly depends on each person culture, society and family norm.

Medical Personal Hygiene

In medical sector this term includes personal attention to prevent the spread of germs and diseases, and this can be take place by using of personal protective equipments barrier over the skin these equipments includes gloves, boots and coverall. Also, good hand washing, scrubbing and skin care can prevent work exposures to disease and help in removing chemicals, germs and contamination. Moreover this term i.e., medical hygiene also pertains to the hygiene practices associated with the administration of medicine, and medical care, these practices will lead to the prevention or minimization of diseases and their spreading. In order to reach to the

ISBN: 978-93-85822-13-1

required point of minimization of diseases and their spreading, there are some important points to do that:

1. Use of protective clothing and barriers, such as masks, gowns, caps, eyewear and gloves.
2. Disinfection of reusable materials or things (i.e. linen, pads, uniforms).
3. Isolation of infectious persons or materials.
4. Sterilization of instruments used in surgical operations.
5. Safe disposal of medical waste. (1)

Home and everyday life hygiene

Home hygiene pertains to the hygiene practices that prevent or minimize disease and the spreading of disease in home (domestic) and in everyday life settings such as social settings, public transport, the work place, public places etc.

Hygiene in home and everyday life settings plays an important part in preventing spread of infectious diseases. It includes procedures used in a variety of domestic situations such as hand hygiene, respiratory hygiene, food and water hygiene, general home hygiene (hygiene of environmental sites and surfaces), care of domestic animals, and home healthcare (the care of those who are at greater risk of infection).

At present, these components of hygiene tend to be regarded as separate issues, although all are based on the same underlying microbiological principles. The simple principle is that, if the chain of infection is broken, infection cannot spread. In response to the need for effective codes of hygiene in home and everyday life settings the International Scientific

ISBN: 978-93-85822-13-1

Forum on Home Hygiene has developed a risk-based approach (based on Hazard Analysis Critical Control Point (HACCP), which has come to be known as "targeted hygiene". Targeted hygiene is based on identifying the routes of spread of pathogens in the home, and applying hygiene procedures at critical points at appropriate times to break the chain of infection.

The main sources of infection in the home are people (who are carriers or are infected), foods (particularly raw foods) and water, and domestic animals (in western countries more than 50% of homes have one or more pets). Additionally, sites that accumulate stagnant water—such as sinks, toilets, waste pipes, cleaning tools, face cloths—readily support microbial growth, and can become secondary reservoirs of infection, though species are mostly those that threaten "at risk" groups. Germs (potentially infectious bacteria, viruses etc.) are constantly shed from these sources via mucous membranes, faeces, vomit, skin scales, etc. Thus, when circumstances combine, people become exposed, either directly or via food or water, and can develop an infection. The main "highways" for spread of germs [6] in the home are the hands, hand and food contact surfaces, and cleaning cloths and utensils. Germs can also spread via clothing and household linens, such as towels. Utilities such as toilets and wash basins, for example, were invented for dealing safely with human waste, but still have risks associated with them, which may become critical at certain times, e.g., when someone has sickness or diarrhea. Safe disposal of human waste is a fundamental need; poor sanitation is a primary cause of diarrhea disease in low income communities. Respiratory viruses and fungal spores are also spread via the air.

ISBN: 978-93-85822-13-1

Good home hygiene means targeting hygiene procedures at critical points, at appropriate times, to break the chain of infection i.e. to eliminate germs before they can spread further.[6] Because the "infectious dose" for some pathogens can be very small (10-100 viable units, or even less for some viruses), and infection can result from direct transfer from surfaces via hands or food to the mouth, nasal mucosa or the eye, 'hygienic cleaning' procedures should be sufficient to eliminate pathogens from critical surfaces. Hygienic cleaning can be done by:

- Mechanical removal (i.e. cleaning) using a soap or detergent. To be effective as a hygiene measure, this process must be followed by thorough rinsing under running water to remove germs from the surface.
- Using a process or product that inactivates the pathogens in situ. Germ kill is achieved using a "micro-biocidal" product i.e. a disinfectant or antibacterial product or waterless hand sanitizer, or by application of heat.
- In some cases combined germ removal with kill is used, e.g. laundering of clothing and household linens such as towels and bed linen.

Hand washing

Proper hand washing is one of the most effective ways of preventing the spread of diarrhoeal diseases. Pathogens cannot be seen on hands, and water alone is not always sufficient to remove them. Soap and wood ash are both cleansing and disinfecting agents when used with water and can be used to kill pathogens on hands and utensils. The most important times that hands should be washed with soap and water are:

ISBN: 978-93-85822-13-1

- After defecating.
- After cleaning a child who has defecated.
- Before eating or handling food.

It is important that hygiene education programmes do more than simply tell people that if they do not wash their hands they will become sick because of pathogens they cannot see. Education programmes should try different methods to maximize community participation in the programmes and to encourage people to promote good hygiene. To encourage hand washing to become part of the daily routine, suitable facilities must be located near to places such as latrines and kitchens, where they will be needed. If running water is available, the facilities should include a tap and a sink as well as soap. Hands may also be washed at a tap stand. If running water is not available, oil can or bucket fitted with a tap is a simple way of providing hand washing facilities.

In situations where hand washing with soap is not an option (e.g. when in a public place with no access to wash facilities), a waterless hand sanitizer such as an alcohol hand gel can be used.

The World Health Organization recommends hand washing with ash if soap is not available in emergencies, schools without access to soap and other difficult situations like post-emergencies where use of (clean) sand is recommended too. Use of ash is common and has in experiments been shown at least as effective as soap for removing bacteria.

ISBN: 978-93-85822-13-1

Bathing

Regular bathing and laundering are important for cleanliness and good personal appearance. They also prevent hygiene-related diseases such as scabies, ringworm, trachoma, conjunctivitis and louse-borne typhus. Educational and promotional activities can encourage bathing and laundering, but increasing the number of washing facilities and locating them conveniently may be more effective. Bathing with soap is an important means of preventing the transmission of trachoma—an illness that can cause blindness and other eyesight problems. If a child has trachoma, a special towel or tissue should be used to wipe or dry the child's face; the towel should never be used for other children because of the risk of transmitting the disease. Ideally, programmes that promote bathing should be combined with a programme to reduce the numbers of flies, which spread trachoma and other diseases, and to improve sanitation. For people to bathe thoroughly they must use sufficient water, but it may be difficult to promote the use of more water for washing if water supplies are distant and water must be collected by hand. Moreover, many traditional bathing practices do not use water efficiently and ensuring cleanliness may be difficult. By modifying existing practices, such as by encouraging the use of water containers with taps, it may be possible to improve the efficiency of water use. Community shower units, with separate facilities for men and women, can also become income-generating enterprises in larger villages, but the facilities require careful maintenance and must be conveniently located. Operators should also allay concerns about voyeurism, which may

ISBN: 978-93-85822-13-1

be particularly important to women. Such problems are best resolved through discussion within the community.

Respiratory hygiene

Correct respiratory and hand hygiene when coughing and sneezing reduces the spread of germs particularly during the cold and flu season.

- Carry tissues and use them to catch coughs and sneezes
- Dispose of tissues as soon as possible
- Clean your hands by hand washing or using an alcohol hand sanitizer.

Laundering

To promote laundering of clothes and bedding, laundry slabs or sinks can be constructed near water points. They should be large enough to wash bedding and other bulky items and be situated so that water drains away from the laundry area and away from the water source. Locating laundry places in natural water bodies, streams and irrigation canals is best avoided if possible, since this practice can contribute to the transmission of schistosomiasis.

Food hygiene at home

Food hygiene is concerned with the hygiene practices that prevent food poisoning. The five key principles of food hygiene, according to WHO, are:

1. Prevent contaminating food with mixing chemicals spreading from people, pets, and pests.
2. Separate raw and cooked foods to prevent contaminating the cooked foods.

ISBN: 978-93-85822-13-1

3. Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
4. Store food at the proper temperature.
5. Use safe water and raw materials

Hygiene in the kitchen, bathroom and toilet

Routine cleaning of (hand, food and drinking water) sites and surfaces (such as toilet seats and flush handles, door and tap handles, work surfaces, bath and basin surfaces) in the kitchen, bathroom and toilet reduces the risk of spread of germs. The infection risk from the toilet itself is not high, provided it is properly maintained, although some splashing and aerosol formation can occur during flushing, particularly where someone in the family has diarrhea. Germs can survive in the scum or scale left behind on baths and wash basins after washing and bathing.

Water left stagnant in the pipes of showers can be contaminated with germs that become airborne when the shower is turned on. If a shower has not been used for some time, it should be left to run at a hot temperature for a few minutes before use.

Thorough cleaning is important in preventing the spread of fungal infections. Molds can live on wall and floor tiles and on shower curtains. Mold can be responsible for infections, cause allergic responses, deteriorate/damage surfaces and cause unpleasant odors. Primary sites of fungal growth are inanimate surfaces, including carpets and soft furnishings. Air-borne fungi are usually associated with damp conditions, poor ventilation or closed air systems.

ISBN: 978-93-85822-13-1

Cleaning of toilets and hand wash facilities is important to prevent odors and make them socially acceptable. Social acceptance is an important part of encouraging people to use toilets and wash their hands.

Menstrual hygiene

Menstruation is a phenomenon unique to the females.The first menstruation (menarche) occurs between 11 and 15 years with a mean of 13 years. Menstruation is still regarded as something unclean or dirty in Indian society. Adolescent menstrual hygiene and self care is a critical issue that determines the health status of the adolescent and the eventual practices that are inculcated into adult life.Poor hygiene and inadequate self-care practices are major determinants of morbidity and other complications among this age group.Globally, it has been observed that different forms of beliefs and perception of menstruation exist which either negate or promote the adolescent females health. Studies have shown that superstitions, illogical beliefs and misinterpretation are more common than accurate in understanding of the process of menstruation, menstrual hygiene and self care practices.These practices reflect the perception of menstrual blood loss as an ‘impure’ state and not as a normal human physiological phenomenon.Prevalence of sanitary napkin use remains low in India in both rural and urban communities.In several cultures, various restrictions are imposed on women and girls during their menstruation period, thus resulting in poor personal hygiene and unsafe sanitary conditions leading to gynaecological problems. Menstrual practices are clouded by taboos and social cultural restrictions even today, resulting in adolescent girls

ISBN: 978-93-85822-13-1

remaining ignorant of the scientific facts and hygienic health practices, necessary for maintaining positive reproductive health

Menstrual hygiene too has formed an important issue of concern amongst adolescent girls. Poureslami & Ostai-Ashtiani, 2002 reported in a study among female adolescents of Tehran suburbs; where only 1/3rd of the study participants practiced personal hygiene, such as taking a bath, and used hygienic materials (i.e., sterile pads) during menstruation. It has been identified that good hygiene practises, such as use of sanitary pads and adequate washing of the genital area, is important and essential during menstruation. Women and girls of reproductive age need access to clean and soft absorbent sanitary products, which in the long run protect their health.

Household water treatment and safe storage

Household water treatment and safe storage ensure drinking water is safe for consumption. Drinking water quality remains a significant problem, not only in developing countries. Water quality interventions can reduce diarrheal disease in communities where water quality is poor or in emergency situations where there is a breakdown in water supply. Since water can become contaminated during storage at home (e.g. by contact with contaminated hands or using dirty storage vessels), safe storage of water in the home is also important.

Methods for treatment of drinking water include:

a) Chemical disinfection using chlorine or iodine
b) Boiling

ISBN: 978-93-85822-13-1

c) Filtration using ceramic filters
d) Solar disinfection - Solar disinfection is an effective method, especially when no chemical disinfectants are available.
e) UV irradiation - community or household UV systems may be batch or flow-though. The lamps can be suspended above the water channel or submerged in the water flow.
f) Combined flocculation/disinfection systems – available as sachets of powder that act by coagulating and flocculating sediments in water followed by release of chlorine.
g) Multi barrier methods – Some systems use two or more of the above treatments in combination or in succession to optimize efficacy.

Home hygiene in low-income communities

In the developing world, for decades, universal access to water and sanitation has been seen as the essential step in reducing the preventable ID burden, but it is now clear that this is best achieved by programs that integrate hygiene promotion with improvements in water quality and availability, and sanitation. About 2 million people die every year due to diarrheal diseases; most of them are children less than 5 years of age. The most affected are the populations in developing countries, living in extreme conditions of poverty, normally peri-urban dwellers or rural inhabitants. Providing access to sufficient quantities of safe water, the provision of facilities for a sanitary disposal of excreta, and introducing sound hygiene behaviours are of capital importance to reduce the burden of disease caused by these risk factors.

ISBN: 978-93-85822-13-1

Research shows that, if widely practiced, hand washing with soap could reduce diarrhea by almost fifty percent and respiratory infections by nearly twenty-five percent hand washing with soap also reduces the incidence of skin diseases, eye infections like trachoma and intestinal worms, especially ascariasis and trichuriasis.

Other hygiene practices, such as safe disposal of waste, surface hygiene, and care of domestic animals, are also important in low income communities to break the chain of infection transmission.

Disinfectants and antibacterial in home hygiene

Chemical disinfectants are products that kill germs (harmful bacteria, viruses and fungi). All disinfectants kill bacteria (called bactericidal). Some also kill fungi (fungicidal), bacterial spores (sporicidal) and/or viruses (virucidal). Some antibacterial products kill bacteria while others may contain a concentration of active ingredient that only prevent them multiplying.

The term sanitizer has been used to define substances that both clean and disinfect. More recently this term has been applied to alcohol-based products that disinfect the hands (alcohol hand sanitizers). Alcohol hand sanitizers however are not considered to be effective on soiled hands.

The term biocide is a broad term for a substance that kills, inactivates or otherwise controls living organisms. It includes antiseptics and disinfectants, which combat micro-organisms, and also includes pesticides.

ISBN: 978-93-85822-13-1

Community hygiene

Some health measures can be undertaken only by the community as a whole; these include water source protection, proper disposal of solid waste and excreta, wastewater drainage, controlling animal rearing and market hygiene. Some of these issues have been described in earlier sections.

Individual community members play an important role in community hygiene, and have a responsibility to their neighbors and to the community to promote good health and a clean environment. For example, everyone in the village must keep their houses and compounds clean, because one dirty house can affect many conscientious neighbors and contribute to the spread of disease. Community leaders can promote cleanliness in the home by regularly checking on village households and by using by-laws to encourage household maintenance.

Sanitation

The World health Organization States that:

Sanitation generally refers to the provision of facilities and services for the safe disposal of human urine and faeces. Inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities. The word 'sanitation' also refers to the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal.

The term sanitation is applied to a wide range of subject such as:

ISBN: 978-93-85822-13-1

- Improved sanitation – refers to the management of human feces at the household level. This terminology is the indicator used to describe the target of the Millennium Development Goal on sanitation, by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation.
- On-site sanitation – the collection and treatment of waste is done where it is deposited. Examples are the use of pit latrines, septic tanks and lmhoff tanks.
- Food sanitation – refers to the hygienic measures for ensuring food safety.
- Environmental sanitation – the control of environmental factors that form links in disease transmission. Subsets of this category are solid waste management, water and wastewater treatment, industrial waste treatment and noise and pollution control.
- Ecological sanitation – an approach that tries to emulate nature through the recycling of nutrients and water from human and animal wastes in a hygienically safe manner.

Health impact of hygiene and sanitation

For any social and economic development, adequate sanitation in conjunction with good hygiene and safe water are essential to good health. (31)

1) Lack of proper sanitation causes diseases. Most of diseases resulting from sanitation have a direct relation to poverty. The lack of clean water and poor sanitation has caused many diseases and the spread of

ISBN: 978-93-85822-13-1

diseases. Sanitation is very important in order to keep good health. One of the most significant diseases that arise from poor sanitation is diarrhoea. Deaths resulting from diarrhea are estimated to be between 1.6 and 2.5 million deaths every year.

2) The most affected are young children below the ages of five. Other diseases that are caused by poor sanitation include schistosomiasis, trachoma and soil transmitted helminthiases.
3) Poor sanitation accounted for almost 50% of underweight child since it has a direct link to diarrhoea. Children suffering for diarrhea are more vulnerable to became underweight.
4) Acute respiratory infections occur in people who are malnourished, which has a direct link to diarrhoea. Sanitation is a serious issue that is affecting most parts of the world especially the developing countries. On a global scale, the most affected are children who in most cases lose their lives due to diseases caused by poor sanitation.

Sanitation and public health

The importance of the isolation of waste lies in the effort to prevent diseases which can be transmitted through human waste, which afflict both developed countries as well as developing countries to differing degrees. It is estimated that up to 5 million people die each year from preventable water born diseases as a result of inadequate sanitation and hygiene practice. The effects of sanitation have impacted the society of people throughout history. Sanitation is necessity of healthy life.

ISBN: 978-93-85822-13-1

- Relevant diseases and conditions caused by lack of sanitation and hygiene include:
    1. Waterborne diseases, which can contaminate drinking water
    2. Diseases transmitted by the fecal-oral route
    3. Anaemia, malnutrition
    4. Ascariasis (a type of intestinal worm infection)
    5. Campylobacteriosis
    6. Cholera
    7. Cyanobacteria toxins
    8. Dengue
    9. Hepatitis
    10. Japanese encephalitis (JE)
    11. Leptospirosis
    12. Malaria
    13. Ringworm or Tinea (a type of intestinal worm infection)
    14. Scabies
    15. Schistosomiasis
    16. Trachoma
    17. Typhoid and paratyphoid enteric fevers

Malnutrition can result in reduced productivity, slow recovery from illnesses and increased susceptibility to infections in both men and women. Low body mass index (BMI), short stature, anaemia, or other micronutrient deficiencies, has a greater risk of obstructed labour, having a baby with a low birth weight, having adverse pregnancy outcomes, death due to postpartum haemorrhage, producing lower quality breast milk and illness

ISBN: 978-93-85822-13-1

for woman and her baby are the major indication of poor nutritional status of a woman.

Malnutrition is one of the most destructive problems worldwide and is closely linked with poverty. Especially During childhood and in reproductive years Indian women have a high mortality rates. The health of Indian women is intrinsically linked with their status in society and economic condition of the Reports from the Centers for Disease Control and Prevention (CDC) found that the rates of obesity, heart disease, and cancer have seen within the 18-24 year-old age group. These diseases found to the leading causes of death in the developing countries, are mostly diet-related and preventable. But in recent years the developing counties have also faced this situation. The most important time to develop healthy eating habits is at the college-level age but successful interventions to promote change in dietary habits at this age are difficult because most students do not physically experience the ill-health effects of a poor diet at this age, and therefore, have a low-perceived threat and susceptibility to these diseases.

Malnutrition is also related to the hygienic behavior of the person. Poor hygiene and inadequate self-care practices are major determinants of morbidity and other complications among this age. Poor personal hygiene and unsafe sanitary conditions leading to gynecological problems, dysmenorrheal, leucorrhoea and other problems such as diarrheal diseases, schistosomiasis, trachoma, ascariasis, trichuriasis, and hookworm disease Good hygiene practice such as regular tooth brushing, bathing, washing hand with soap, use of sanitary napkin, proper maintenance of food greatly influence the person health.

ISBN: 978-93-85822-13-1

1. Materials and Methods

Sample Collection

This is a cross-sectional descriptive study, carried out from November 2014-April 2015 with objectives to rule out the problems related to menstruation and malnutrition. Study was conducted in Barrackpore Rastraguru Surendranath College, North 24 Parganas. North 24 Parganas is 9 meters above sea-level. The study was performed on a total of 100 students who agreed to participate in the research.

Procedures

The data was collected by personal interviews on a pre-tested, semi-structured questionnaire. The confidentiality of information was assured and their verbal consent was taken before initiating the data collection. All subjects were told that participation in the investigation was strictly voluntary, and that the data collected would not be used for anything except for research study, and they were given the questionnaire and inventory to complete. The duration for completing the questionnaire and inventory was between 30 and 40 minutes per subject. The principal investigator met daily with the data collectors to ensure the quality of data collected.

Preparation of the questionnaires

The questionnaire, prepared with reference to previous studies. This was formulated to cover areas such as understanding of symptoms of premenstrual, symptoms during the menstruation and biological variation affected them.

ISBN: 978-93-85822-13-1

Back ground information about the respondents include: age, education, religion, weight, height, waist circumference, hip circumference, waist to hip ratio, blood pressure, pulse rate, Hb, socioeconomic status, father's and mother's occupation, number of total family members, number of earning members in family, dietary habits, physical exercise and family history of menstrual problems. Questions related to menstruation, menarcheal age, elucidated variation in menstrual patterns like regularity of cycle, length of cycle, duration of bleeding period, blood loss per cycle, (in this study abnormal menstruation was defined as subject with length of cycle is <20 or >35 days; duration of flow <2 or >7 days and loss of blood per cycle >100ml), history of dysmenorrhea, pre-menstrual symptom and absenteeism from college. They were advised not to write their name on the questionnaire and were told that, there responses would remain confidential. A normal menstrual cycle lasts from 21 to 35 days; with 2 to 6 days of flow and average blood loose 20 to 60 ml. In this study dysmenorrhea was defined as having painful menstruation during the previous three months.

Results

Anthropometric variables:

The mean±SD of age, weight and height of the student the study group is 20.98±1.31 year (95% CI 20.71-21.24), 55.79±7.72 kg (95% CI 54.24-57.35) and 154.45±7.99 cm (95% CI 152.84-156.06) respectively. BMI of the studied women ranged between 22.74-24.36 kg/m^2 the mean±SD being 23.55±4.02 kg/m2. The NC, CF, MUAC, WC and HC were 31.34±2.15 cm, 34.71±4.89 cm, 25.98±3.20cm, 84.88±9.32 cm and 96.12±8.07 cm

ISBN: 978-93-85822-13-1

respectively. The WHR was 0.88±0.06. Systolic blood pressure (SBP), diastolic blood pressure (DBP), pulse and haemoglobin (Hb) of the participants is 119.4±8.83 (mmHg), 79.64±7.10 (mmHg), 74.84±6.72 (per min), 12.19±9.67 (per 100 dl) respectively.

Nutrients intake:

The mean±SD of second class protein and first class protein of the student the study group is 44.96±8.89 gm and 23.35±11.65 gm. The total protein is 68.32±15.29 gm ranging from 65.23-71.40 gm. The mean±SD of fat, carbohydrate, energy is 45.12±43.52 gm, 344.43±46.88 gm, and 1984.33±187.18 kcal. The Calcium, Phosphorus and iron intake is 667.19±369.97 gm (95% CI 592.63-741.76), 23.74±12.05 gm (95% CI 1224.10-1352.39), and 1288.25±318.28 gm (95% CI 21.31-26.17) respectively. The vitamin A, thiamine, riboflavin, niacin, folic acid, vitamin C is 135.73±92.75 mg (95% CI 1052.74-1627.17), 1.42±.31mg (95% CI 117.04-154.42), 85±.26 mg (95% CI.79-.90), 16.72±3.06 mg(95% CI 16.10-17.33), 143.63±50.97 mg (95% CI133.35-153.90), 1339.96±1425.07 mg (95% CI 1.36-1.49) respectively. The copper, zinc, and cyanocobalamin is 1.68±0.46 µg, 3.80±9.78 µg, and 6.87±1.30µg respectively.

Socio-economical status:

31.3% students are in upper socio- economical group (26,000-29,000). 18.2%, 17.2%, 21.2%, 12.10% students are belonging to upper middle (16,000-25,000), lower middle (11,000-15,000), upper lower (5,000-10,000), lower (<5,000) socio- economical status respectively. (Table 3)

ISBN: 978-93-85822-13-1

Body Mass Index (BMI) and waist to hip ratio: According the BMI a large no of student about 64.6% (n=9) students are normal weight, 9.1% (n=9) students are under weight and 26.3% (n=26) students are overweight. According to WHR about 26.3% students are normal and 64.6% students are obese.

Table 1: Comparative prevalence of CED (%) of women's of different zones & states of India with the present study (IIPS and Macro International, 2007)

Eco-Zones of India	States	CED (%)	Overall CED (%)
Northern	Punjab	18.9	29.05
	Utarkhand	30.0	
	Haryana	31.3	
	Uttar Pradesh	36.0	
North-Eastern	Assam	36.5	36.50
Central	Madhya Pradesh	41.7	42.55
	Chattisgarh	43.4	
Eastern	West Bengal	39.1	42.15
	Orissa	41.4	
	Jharkhand	43.0	
	Bihar	45.1	
Western	Maharastra	36.2	36.40
	Gujarat	36.3	
	Rajasthan	36.7	
Southern	Kerela	18.0	28.85
	Tamil Nadu	28.4	
	Andhra Pradesh	33.5	
	Karnatka	35.5	
India			35.60
Eastern (Present Study)	West Bengal (24 Pargana)	9.10	

ISBN: 978-93-85822-13-1

Anaemia, Painful menstruation, Regularity, leucorrhoea, Etching problem:

- In this study it is seen that about 35.40% (n=35) students have mild anaemia, 24.20% (n=24) have moderate anaemia, and 40.4 % (n=40) are non anaemic.
- 51.50% (n=51) students have painful menstruation, 82.8% (n=82) have regular menstruation and 17.2% (n=17) have irregular menstruation.
- About 83.8% (n=83) students have leucorrhoea and 53.5% (n= 53) patients have etching problem.

Dysmenorrhoea:

This table shows that the obese students have 2.716 times higher risk of suffering from menstrual pain (dysmenorrhoea). It may be due to the obese patients have high leptin level and the elevated adipose tissue/fat change the normal fat utilisation of the body and this also responsible for hormonal changes in the body.

It is also found that anaemic patients have higher risk of dysmenorrhoea. It also shows that malnourished subjects and obese subjects have 1.419, and 1.523 times higher risk of suffering from menstrual pain (dysmenorrhoea).

Regularity:

This table shows that the obese students have 1.455 times higher risk of suffering from irregular menstruation. It is also found that anaemic patients have higher risk of irregularity. It also shows that malnourished subjects and obese subjects have 0.552 and 1.020 time higher risk of suffering from irregular menstruation

ISBN: 978-93-85822-13-1

Leucorrhoea:

This table shows that the obese students have 1.833 times higher risk of suffering from leucorrhoea. It is also found that anaemic patients have higher risk of leucorrhoea. It also shows that malnourished subjects and obese subjects have 0.355 and 0.727 times higher risk of suffering from leucorrhoea.

Discussion

Malnutrition is one of the most devastating problems worldwide and is inextricably linked with poverty (Rouse, 2003). The scale of under nutrition has also been studied among other populations and age groups, such as pregnant and lactating women. The problems arise from cultural, political and economic realities that must be addressed in tandem. Malnutrition among women has long been recognized as a serious problem in India, but national-level data on levels and causes of malnutrition have been scarce (IIPS, 2007).

India is one of the few countries in the world where women and men have nearly the same life expectancy at birth. The fact that the typical female advantage in life expectancy is not seen in India suggests there are systematic problems with women's health. Indian women have high mortality rates, particularly during childhood and in their reproductive years. The health of Indian women is intrinsically linked to their status in society (Mandal et al., 2011).

Malnutrition in women can result in reduced productivity, slow recovery from illnesses, increased susceptibility to infections, and a heightened risk

ISBN: 978-93-85822-13-1

of adverse pregnancy outcomes. A woman's nutritional status has important implications for her health as well as the health of her children. A woman with poor nutritional status, as indicated by a low body mass index (BMI), short stature, anaemia, or other micronutrient deficiencies, has a greater risk of obstructed labour, having a baby with a low birth weight, having adverse pregnancy outcomes, producing lower quality breast milk, death due to postpartum haemorrhage, and illness for herself and her baby (Rouse, 2003).

Women's height can be used to identify women at risk of having a difficult delivery, since small stature is often related to small pelvic size. The risk of having a baby with a low birth weight is also higher for mothers who are short (Rouse, 2003).

Women are generally vulnerable to undernutrition especially during pregnancy and lactation where the food and nutrient requirements are more during that period. The demographic consequences of the lower status in women has formed expression in various forms such as female infanticide, higher death rate for women compared to men, lower sex ratio, lower literacy rate in female, lower level of employment of women in the nonagricultural sector as compared to men etc (Mandal et al., 2011).

Recent study (NFHS-III, 2007) has reported the prevalence of chronic energy deficiency (CED) of different states of India. Comparative statement of the prevalence of CED and undernutrition based on body mass index (BMI, kg/m2) of adult women of 18 states of 6 different zones of India along with the present study revealed considerable state wise differences (Table 9). This showed that the female student of this region was in better

ISBN: 978-93-85822-13-1

condition while comparing the other region of India. But the prevalence of overweight in this group was 26.3%. This indicate that the population is suffering from double burden of malnutrition both under and overnutrition. The overall prevalence of malnutrition was 35.4% which is much higher in any population.

This study also indicated that 59.60% of the participants were suffering from anaemia. This is an alarming situation and any community. The gynecological disorders included in this study were dysmenorrhoea (51.50%), cyclical irregularities (17.2%) and leucorrhoea (83.8%). This study found that the main responsible factors for these disorders were obesity, family income and poor hygienic condition of the participants.

Highlights of the of the NNMB surveys carried out so far include coverage of rural, tribal and urban communities for the assessment of diet and nutritional status, repeat surveys carried out in the rural areas at three points of time viz., 1975-79, 1988-90 and 1996-97 covering the same villages that were covered initially, so that the data at 3 different time points was made available to study the time trends. Similar repeat surveys were carried out in the tribal communities during 1985-87 and 1998-1999. Some of the special surveys that were carried out by NNMB include diet and nutrition assessment of adolescent groups and the elderly, assessment of micronutrient deficiency disorders such as iron deficiency anaemia, vitamin A deficiency, and iodine deficiency disorders by covering statistically adequate samples, and evaluation of National Nutritional Programmes.

Following are the salient observations, made in the recent survey carried out by NNMB during 2001-02. The data pooled for the States, revealed that

ISBN: 978-93-85822-13-1

about 11% of the households covered belonged to Scheduled castes (SC), 22% belonged to Scheduled Tribes (ST), while 32% belonged to backward communities (BC). About a third (30%) of the households were residing in the "Kutcha" houses, while about 10% were residing in the "Pucca" houses. In about of the HH's. The major occupation in about 40% of the households was agriculture labour (18%) or other labour (22%). Only about 55% were cultivators having varying extent of agricultural land, of whom, a majority were marginal farmers having less than 2.5 acres. The average per capita income was less than 300 Rs. per month in about 43% of the households, while only 12% had more than Rs.900 per month. The adult female literacy rate was 47%, with about 30% having studied up to 1st to 8th standard. The major source of drinking water was taps in about 40% of the HH's, while about 26% were dependent on bore wells and about 32% on open wells.

The diet survey reveled that among 1-6 year children, except for roots and tubers, the consumption of various food like cereals and pulses was less than RDA. The intake of protective foods like green leaf vegetables, milk & milk products, income elastic foods like fats and oils and meat/fish/eggs was very low, often less than 20%-30% of recommended Dietary Intakes (RDI) levels. The intake among the adults was relatively better where the requirement of cereals were met but that of pulses were still inadequate both in males and females. The median intakes of all the nutrients were below the recommended levels among both in 1-3 year, and 4-6 year children, while the intake of micronutrients like vitamin A, riboflavin and iron was grossly inadequate. In case of adults, the intakes were relatively better with respect to protein, energy, calcium, thiamine and niacin, while that of other

ISBN: 978-93-85822-13-1

micronutrients was poor. Distribution of individuals according to protein-calorie adequacy status of individuals, revealed that while only 30% of children were having protein-calorie adequacy, their proportion among adults was about 80-90%. It may be mentioned here that there was no 'gender bias' with regard to food intake, in any of the age groups.

Distribution of preschool children according to weight by age using NCHS reference values, by Gomez classification revealed that only about 9% were normal, 6% were suffering from severe undernutrition, while a majority (75%) had mild to moderate undernutrition. Nutritional grading of children according to Standard Deviation (SD) classification revealed that nearly 62% of both boys and girls of 1-5 years were having underweight (weight for age < median-2 SD of NCHS). Similarly, about 50% of boys and girls had various degrees of stunting, while about 23% were having wasting. No gender differentials were observed in the prevalence of undernutrition. Distribution of adults according to body mass index (BMI), showed that the prevalence of chronic energy deficiency (BMI less than 18.5) was about 37% in case of males, and 39% in case of females. The extent of overweight/obesity was about of 6-8%, with marginally higher prevalence among females.

The prevalence of undernutrition was relatively higher among low socioeconomic category of households such as those belonging to SC and ST communities, those residing in 'Kutcha' houses, those from lower income groups, and in households where in the adult female was illiterate. Study of intra-family distribution of dietary energy revealed that the proportion of households where in the adult male and female were meeting

ISBN: 978-93-85822-13-1

the energy requirements, with the children not meeting the same was maximum in case of pre-school children (43%), which tended to decrease with in crease in the age group of children to 27% in school age children and 13% in adolescents, indicating that the preschool child is at the most disadvantageous position. What is disturbing is, that the proportion of such HH's wherein adults meet the dietary energy but the preschool child is not meeting the same is increasing over the past three decades, from about 25% during 1975-79 to 43% in 1997. This indicates that though there is improvement in the intake of dietary energy among adults, it is not reflected among young children. This reflects lack of knowledge among the women about proper child feeding practices and highlights the need for intensified nutrition education. Comparison of data food and nutrient intakes over a period of three decades revealed that the intakes remained more or less similar, with no significant quantitative and qualitative changes.

The distance charts of heights and weights over a period of 3 decades, showed an increase of 2-3 cm in height and 2-3 kg in weight among both males and females of different age groups. A significant decrease in the extent of severe undernutrition was observed among preschool children, from about 15% in 1975-79 to about 6% in 1997. There was marginal increase in the proportion of 'normals', from 6% to 9% while the prevalence of moderate undernutrition remained same. Similarly, the prevalence of stunting has come down from 64% in 1991 to 49% currently. Over the period, the proportion of adults with normal BMI increased from 42% to 50%, with concomitant decline in the prevalence of CED, from 55 to 45%.

ISBN: 978-93-85822-13-1

The prevalence of overweight, though of low magnitude, tended to double, from 2.3 to 4.1%.

The prevalence of florid forms of protein energy age malnutrition (PEM) like marasmus among preschool children decreased from 1.3% to 0.1% over the period, while that of kwashiorkor was conspicuously absent. The prevalence of clinical forms of other nutrient deficiencies such as angular stomatitis indicative of B-complex vitamin deficiencies decreased from 6% to 2%. Though the overall prevalence of Bitot spots decreased from about 2% to about 0.7%, it remained more than 0.5% in all the States barring Kerala and Orissa, a cut off-level suggested by WHO, to indicate public health significance of the problem. The prevalence was observed to be relatively more among those children belonging to SC/ST communities, those belonging to households engaged in labour activities, and families where the adult woman is illiterate.

The Micronutrient Deficiencies survey carried out in eight States during 2003 revealed that the overall prevalence of anemia, as assessed by estimation of hemoglobin from finger prick blood samples by cyanmethemoglobin method, ranged from about 70% to 80% in various age, sex and physiological groups. The prevalence of moderate to severe anemia was observed to be maximum in pregnant women of more than 6 months gestation (49%) followed by pre-school children (44%), lactating women (34%) and adolescent girls (22%). The proportion of households consuming salt having adequate amount of iodine (^{3} 15 ppm) ranged from about 50%-54% in the states of West Bengal and Kerala to about 30% in

ISBN: 978-93-85822-13-1

the states of Andhra Pradesh, Maharashtra, and Tamil Nadu and 25% in Karnataka, Orissa, with least being in Madhya Pradesh (10%).

Thus, the data collected by NNMB over a period of time has shown that in spite of phenomenal increase in food production through 'green', 'white' and 'yellow' revolutions, the problem of undernutrition in India continues to be a public health problem. Though severe forms of undernutrition is decreasing considerably, significantly higher proportion of populations suffer from mild to moderate forms of undernutrition. The increase in population size, low literacy level, recurrent drought conditions, increasing unemployment, decreasing household food security status could be contributing to the dilution of the effects of development trickling down to the grass root level. Therefore, there is need to strengthen the existing nutritional and other developmental programmes such as supplementary feeding, micronutrient supplementation, rural employment generation, public distribution system etc. There is need to improve health and nutrition education activities in the communities, through various media. Health and nutrition education has to be included in the educational curriculum. There is need to establish National Nutrition Surveillance system through existing ICDS infrastructure at various levels, right from household to district or State level, to assess the nutritional problems, analyze the underlying causes and initiate appropriate actions to mitigate the same.

References

[1] Subhangini A Joshi.Nutrition And Dietetics.

[2] *B. Srilakshmi. Dietetics*

ISBN: 978-93-85822-13-1

[3] Mandal S, Sinha NK, Samanta P, Das S, Bose K (2011). Anthropometric assessment of nutritional status among college women of Midnapore, West Bengal, India. International Journal of Life Science and Pharma Research. 1(1):L81-7.

[4] McCaleb, A., Cull, V.V. (2000). Socio-cultural influences and self care practices of middle adolescents. J. Pediatr. Nurs., l5(1):30-35.

[5] Prüss A, Kay D, Fewtrell L, Bartram J. Estimating the burden of disease from water, sanitation, and hygiene at a global level. Env Health Perspectives. 2002; 110: 537-42.

[6] Rajaretnam, T., Hallad, J.S.(2010). “Menarche, menstrual problems and reproductive tract infections among adolescents in the rural and urban areas of northern Karnataka in India”, European population Conference 1- 4, Vienna Austria.

[7] Rani A, Sharma MK, Singh A. Practices and perceptions of adolescent girls regarding the impact of dysmenorrhea on their routine life: a comparative study in the urban, rural, and slum areas of Chandigarh. Int J Adolesc Med Health. 2015; 27(1): 1-105.

[8] Rani MA, Sathiyasekaran BWC. Personal hygiene practice of school going adolescents- a cross sectional study in Chennai. Indian J Commun Health. 2013; 25 No 2.

[9] Rouse DJ (2003). Potential Cost-Effectiveness of Nutrition Interventions to Prevent Adverse Pregnancy Outcomes in the Developing World. Journal of Nutrition. 2003; 133: 1640S-44S.

ISBN: 978-93-85822-13-1

[10] Rouse DJ. Potential Cost-Effectiveness of Nutrition Interventions to Prevent Adverse Pregnancy Outcomes in the Developing World. Journal of Nutrition. 2003; 133: 1640S-44S.

The World Bank. Improving Women's Health in India, Washington, District, Northern Ethiopia: a cross-sectional study. BMC Public Health. 2014; 14

Nutrition and health are the driving forces for achieving development, growth and prosperity. Nutrition provides the building-blocks for achieving health and health lays the foundation for any prosperous society.

In ushering growth in agriculture and rural reconstruction, the basic elements are capable body and motivated mind. While 77% of populace right now could access only Rs.20 per day per capita, the crises of malnutrition of child and bleak performance of youths in economic, social and cultural spheres of country become inevitable. The per capita vegetables consumption and animal protein intake is one of the lowest in the world; nevertheless, we are the highest producer of milk and second highest producer of vegetables in the world.

Hunger is gradually looming over the rosy expectation of a happy India. In 2008-09, population growth has superseded agricultural growth. We are now seriously thinking for a second green revolution. Augmenting agricultural growth is going to become a serious challenge because of the depleting natural resources and increasing pollution in soil and water, the two most important ingredients for agriculture and the civilization too.

Broken health and depressed minds is the barrier to development. But we have to assess, elucidate and estimate the contributory factors towards food

ISBN: 978-93-85822-13-1

intake, calorie intake and ultimately a normative health status of children of our society. School going children, the tomorrow's citizen and harbinger of development, are being increasingly suffered with the problem of malnutrition recurring health hazards and endemic hunger. These all have derelict impact on their educational performance and also on their future productive role and contribution in the society.

Basic concept of Health:

Health is defined in the World Health Organisation's Constitution as "a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity". Thus health "is a positive concept emphasising social and personal resources as well as physical capabilities".

A healthy person therefore needs to maintain healthy habits such as taking regular exercises and adequate rest, adopting a high level of personal hygiene, eating a nutritionally balanced diet, abstaining from the abuse of drugs and alcohol, taking care of one's mental well-being and developing social skills to interact in a positive manner within society. To be healthy is to be in a state of homeostasis (balance) with one's surroundings. To avail oneself to the advances of medical treatments and preventive measures such as immunizations further booster one's health. (Chiu, 2002).

Basic concept of Nutrition:

1. Nutrition is the food you eat and how the body uses it. We eat food to live, to grow, to keep healthy and well, and to get energy for work and play.
2. Food is made up of different nutrients needed for growth and health.

ISBN: 978-93-85822-13-1

- All nutrients needed by the body are available through food.
- Many kinds and combinations of food can lead to a well-balanced diet.
- No food, by itself, has all the nutrients needed for full growth and health.
- Each nutrient has specific uses in the body.
- Most nutrients do their best work in the body when teamed with other nutrients.

3. All persons, throughout life, have need for the same nutrients, but in varying amounts.
    - The amounts of nutrients needed are influenced by age, sex, size, activity, and the state of health.
    - Suggestions for the kinds and amounts of food needed are made by trained scientists.
4. The way food is handled influences the amount of nutrients in food, its safety, appearance, and taste.
    - Handling means everything that happens to food while it is being grown, processed, stored, and prepared for eating.

Measuring Nutrition

- Health or nutritional status of a child is usually assessed in three ways: through measurement of growth and body composition (anthropometric indicators); through analysis of the biochemical content of blood and urine (biochemical indicators); and through clinical examination of external physical signs of nutrient

ISBN: 978-93-85822-13-1

deficiencies (clinical indicators). Among the three method of assessment, anthropometric measurement is a common and easy way to assess health and nutrition status. The other two methods are less practical because of the logistical difficulties and because data collection and analysis is expensive and time consuming.

- The following explanation focuses on the anthropometric indicators of nutritional status. Anthropometric information is useful because it provides: 1) a practical way of describing the problem; 2) the best general proxy measure of human welfare of the poorest, reflecting dietary inadequacies, infectious diseases and other environmental health risks; 3) strong and feasible predictors, at individual and community levels, of subsequent ill health, functional impairment and/or mortality; 4) an appropriate indicator of the success or failure of interventions directed toward the many economic and environmental factors underlying nutrition deprivation (UN-ACC/SCN, 1992).

Food crises and Hunger in India:

Nearly 21.1% of the entire rural population and 15% of the urban population of India exists in this difficult physical and financial predicament. Despite its economic successes**, India leads the world in hunger**. According to the 2008 Global Hunger Index, which is calculated by the International Food Policy Research Institute (IFPRI), India has over 200 million people who are food insecure - in other words, who are not sure where their next meal is coming from. India is the second most

ISBN: 978-93-85822-13-1

populated country in the world. With a population of 1.173m, the hungry make up 19% or one in five of the country (Ramakrishnan, 2009). The percentage is probably better than it was fifty years ago, but the absolute number is growing.30% of babies in India are born underweight. Malnutrition accounts for nearly 50% of child deaths in India. 70% of children (under 5 years old) suffer from anaemia and more than 80% don't get vitamins supplement. Statistics show that 2.1 million children under 5 years old die of malnutrition yearly. 43% of Indian's children under 5 are underweight (BMI<18.5), the highest in the world as of 2008. (Sinha, 2009).

From a nation dependent on food imports to feed its entire population, India today is not only self-sufficient in grain production, but also has a substantial reserve. The progress made by agriculture in the last four decades has been one of the biggest success stories of free India. Agriculture and allied activities constitute the single largest contributor to the Gross Domestic Product, almost 33% of it. Agriculture is the means of livelihood of about two-thirds of the work force in the country. It is true that the country now produces enough food to feed its entire population. However this upbeat version of the food situation in India neglects the reality of widespread chronic malnutrition in the country. The country is the second largest food producer in the world, yet over 300 million people go without two square meals a day. Ironically, food worth Rs.58, 000 crore-by the Government's own admission-is wasted every year. The reason is that the country processes just 2% of the produce from its $182 billion food industry.

ISBN: 978-93-85822-13-1

The Global Hunger Index (GHI) is a tool for regularly tracking the state of global hunger and malnutrition developed by International Food policy Research Institute (IFPRI) shows that India has made a slow progress towards ensuring food security. India could feed its entire population, but still India had among the highest numbers of hungry children in the world and placed in 66th position out of 88 countries in the GHI 2008. Nearly half of the population still suffers from chronic hunger and under-nutrition (Hazra, 2009).

The results of the Indian State Hunger Index 2008(constructed in a similar fashion as the GHI) highlight the continued overall severity of the hunger situation in India, while revealing the variation in hunger across states within India. It is indeed alarming that not a single state in India is either low or moderate in terms of its index score; most states have a serious hunger problem, and one state, Madhya Pradesh, has an extremely alarming hunger problem.

Useful facts and figures on World hunger:

GLOBAL HUNGER

- 1.02 billion people do not have enough to eat - more than the populations of USA, Canada and the European Union;
  (Source: FAO news release, 19 June 2009)
- The number of undernourished people in the world increased by 75 million in 2007 and 40 million in 2008, largely due to higher food prices;
  (Source: FAO news release, 9 Dec 2008)

ISBN: 978-93-85822-13-1

- 907 million people in developing countries alone are hungry;
  (Source: The State of Food Insecurity in the World, FAO, 2008)
- Asia and the Pacific region is home to over half the world's population and nearly two thirds of the world's hungry people;
  (Source: The State of Food Insecurity in the World, FAO, 2008)
- More than 60 percent of chronically hungry people are women;
  (Source: The State of Food Insecurity in the World, FAO, 2006)
- 65 percent of the world's hungry live in only seven countries: India, China, the Democratic Republic of Congo, Bangladesh, Indonesia, Pakistan and Ethiopia.

(Source: The State of Food Insecurity in the World, FAO, 2008)

CHILD HUNGER

- Every six seconds a child dies because of hunger and related causes;
  (Source: State of Food Insecurity in the World, FAO, 2004)
- More than 70 percent of the world's 146 million underweight children under age five years live in just 10 countries, with more than 50 per cent located in South Asia alone.
  (Source: Progress for Children: A Report Card on Nutrition, UNICEF, 2006)
- 10.9 million children under five die in developing countries each year. Malnutrition and hunger-related diseases cause 60 percent of the deaths.
  (Source: The State of the World's Children, UNICEF, 2007)

ISBN: 978-93-85822-13-1

- The cost of under nutrition to national economic development is estimated at US$20-30 billion per annum;
  (Source: Progress for Children: A Report Card on Nutrition, UNICEF, 2006)
- One out of four children - roughly 146 million - in developing countries are underweight. *(Source: The State of the World's Children, UNICEF, 2007)*
- Every year WFP feeds more than 20 million children in school feeding programmes in some 70 countries. In 2008, WFP fed a record 23 million children (Source: WFP School Feeding Unit).

ISBN: 978-93-85822-13-1