METABOLIC SYNDROME LEADING TO HEART DISEASE IN URBANIZED LIFE STYLES

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One of the most popular maxims, we all grew up with is, "Health is Wealth". However, few of us have adopted it given the contemporary backdrop of work and social pressures. Our minds, bodies and hearts are under constant assult, and the growing cases of ill health along with the declining age brackets for stress induced diseases provide ample proof of it.

In this paper, the author has attempted to focus on good health in a contemporary context with an emphasis on women's health. The purpose of the paper depends on how well we relate to the term "Health". To understand it simply, Health is a state of physical, mental and social well-being. It is not merely the absence of disease, as defined by the World Health Organization (WHO). Lifestyle and health are interrelated. For the purpose of this paper, therefore, Health is defined as the extent of an individual's continuing physical, emotional, mental and social ability to cope with their environment.

It has been proven beyond doubt that physical and mental health go hand in hand. The quality of our health directly impacts the quality of our life. A person who does not enjoy a healthy life can hardly contribute anything worthwhile, either to his own well being or to society at large. A sense of well being culminates from the different aspects of health, generating a strong immunity to disease which leads to a positive lifestyle full of use fullness to self, family, society and the Nation at large.

Health is a multidimensional concept because it is shaped by biological, social, economic and cultural factors. It is influenced and shaped by access to basic needs like food, security, safe water supply, housing and sanitation and health services. Within this broader definition of health, individual health is interrelated with social factors. While individual health is important, it is necessary to delineate its linkages with the physical, social and economic environment in which people live.

Our body is really the product of our thoughts. The nature of thoughts and emotions actually determines the physical substance, structure and functions of our bodies. 'Thinking' perfect health is something anybody can do within themselves, no matter what is happening around them but the urbanization and globalization of lifestyles has led to a rise in incidences of lifestyle related diseases in both urban and rural communities.

The burden of communicable diseases is being replaced by non-communicable stress related diseases such as diabetes, cancer and cardiovascular disease. Non-communicable diseases are a major Public health challenge in the 21st century as they have their roots in lifestyle patterns such as sedentary, non-physical activity patterns and adherence to risk behaviors such as smoking, alcohol, and stressful lifestyles.

A report jointly prepared by the World Health Organization and the World Economic Forum of 2008, says that the number of people dying from non–communicable diseases is likely to rise to 47 million a year in the next 25 years. Around 80% of these deaths will occur in low and

middle-income countries like India where infectious diseases, poor maternal, prenatal conditions and nutritional deficiencies are impacted by the ever widening influence of non-communicable diseases. The contribution of diabetes, cancer and cardiovascular disease to overall morbidity, mortality and invalidment is second only to injuries. Environmental measures and medical care have prevented many diseases and improved overall health in recent decades but individuals themselves play asubstantial role in improving their own health by making decisions about diet, use of tobacco and alcohol and other aspects of individual lifestyles.

The following discussion of Metabolic Syndrome is one example of the increasing number of non-communicable diseases:

Metabolic Syndrome

Metabolic syndrome is defined by the adult treatment panel as the presence of any three of the following traits in the same individual:

a) Abdominal obesity (waist circumference) more than 102 cms in men and more than 88 cms in women.
b) Hypertension (blood pressure) more than 130/85 mmhg.
c) Diabetes (fasting blood sugar more than 110 ml/dl).
d) HIGH DENSITY LIPOPROTEIN cholesterol less than 40 mg/dl in men and less than 50 mg/dl in women and high LOW DENSITY LIPOPROTEIN cholesterol levels.
e) High triglyceride levels (more than 150 mg/dl).

Metabolic Syndrome is Associated With

a) Raised C- reactive Protein (CRP), Interleukin 6 (IL-6) and Tumor Necrosis Factor – alpha (TNF) , reflecting inflammation.
b) Raised fibrinogen or plasminogen activator inhibitor – 1, which may result in blood clots.
c) Fatty liver, which may progress to non-alcoholic cirrhosis.
d) Gallstones.
e) Protein in the urine, due to kidney damage.
f) Elevated uric acid levels from dietary sugars, which may lead to gout.
g) Haemochromatosis (iron overload).
h) Obstructive sleep apnea.
i) Polycystic ovary syndrome.
j) Dementia with aging, and cognitive decline in the elderly.

The clinical significance of elevated plasma glucose in an obese person may be indicative of insulin resistance where tissue has a diminished ability to respond to the action of insulin. In a person with a normal metabolism, insulin is released from the beta cells of the Islets of Langerhans in the pancreas. This signals insulin-sensitive tissues, including muscle, adipose tissue, and liver cells, to absorb glucose and maintain the circulating blood glucose at a normal level. In an insulin resistant person, the release of insulin does not trigger the expected insulin response of absorption by muscle, adipose tissue, and liver cells allowing blood glucose levels to rise. To compensate for increased serum glucose levels, the pancreas secretes more insulin. This compensatory mechanism, referred to as hyper-insulinemia, is an attempt by the body to maintain normal glucose levels.

Approximately 50% of people with hypertension have also been found to be insulin-resistance. Exactly how insulin resistance influences Blood Pressure remains unclear, how ever in many previously normotensive individuals, elevated serum glucose levels seem to precede the

development of hypertension. In addition to developing essential hypertension and glucose intolerance, these insulin-resistant patients tend to also develop elevated plasma triglyceride levels and low HDLC. All of these findings are consistent with the diagnosis of metabolic syndrome.

The metabolic syndrome is comprised of a number of other metabolic disturbances that include oxidative stress, low grade inflammation and elevated tissue118-hydroxysterioid dehydrogenases (an enzyme that converts inactive glucocorticoids to active glucocorticoids). These metabolic alterations give rise to atherosclerosis and renal disease, endothelial cell dysfunctionhypertension, insulin resistance and fasting hyperglycemia (high blood sugar levels), dyslipidemia (low levels of HDL and high levels of free fatty acids in blood) and core obesity.

Metabolic syndrome is driven by many positive feedback mechanisms, giving rise to a network of vicious interactions that without treatment, lead to greater and greater disturbances of cell signaling and gene expression, finally leading to life-threatening problems such as heart attack, stroke and renal disease.

Inside the body at the cellular level, oxygen enters through the nose and mouth and travels to the lungs. The lungs are filled with fresh air, which has oxygen, with the molecule of oxygen then passing through the thin walls of the alveoli in the lungs into the blood where it attaches itself to the hemoglobin in the blood and the beating heart pumps newly oxygenated blood to all parts of the body. The hemoglobin then releases the oxygen so that it can enter the cells of the body where it gives energy and life.

Within every cell in the body is a furnace called mitochondria. It burns safely and quietly most of the time but on occasions out flies a cinder that lands on your carpet burning a little hole in it. One cinder by itself does not pose much of a threat, but this sparking and popping continues month after month, year after year eventually causing a raging carpet fire in front of your fireplace.

Similarly, mitochondria within the cell reduces oxygen by the transfer of electrons to create energy into the form of ATP and produces the bi-product water. This process goes on without a hitch at least 98% of the time, but the full complement of four electrons needed to reduce oxygen to water does not always happen as planned and a free radical is produced.

The cinder from the fireplace represents a free radical, and the carpet represents our body. Whichever part of the body receives the most free radical damage is the first to wear out and potentially develop a degenerative disease. If it is your eyes, you could develop macular degeneration or cataract. If it is our joint space, one could develop arthritis or if it is our brain, one could develop Alzheimer's or Parkinson's disease. With the passing of time our bodies can look just like the carpet in front of the fireplace: pretty ratty. Together, we have just imagined the "bright" side of oxygen and the life it brings (like the warmth of the fire), but we cannot deny the rest of the story. This is the part many of us have never heard about: the demise that unruly free radicals, otherwise known as oxidative stress, cause. This oxidative stress is the underlying cause of almost all of these chronic degenerative diseases. If we can decrease oxidative stress we will ameliorate the disorders associated with metabolic syndrome.

Oxidants are produced by the normal metabolism of our cells. The oxidants produced are rendered innocuous by oxidant scavenging pathways. If the production of oxidants exceeds the ability of our cells to scavenge, the oxidants increase with age. A number of components can be damaged by oxidants, which are also produced as a component of many cellular signaling functions to shape the spatial and temporal aspects of signaling. A normally healthy person contains 20,000 receptors per cell, where an obese person has less than 5,000. If the body has less receptors sites then

Glucose touches cell walls and returns back without getting converted into energy, accumulating in the blood increasing blood sugar, which enters the liver and gets converted into fat, making the person obese.

Abdominal obesity is more associated with Metabolic Syndrome and Cardiovascular problems than accumulated fat in the buttocks and thighs; hence the "apple-shaped" body is more likely to develop cardiovascular disease than the "pear-shaped" body. In clinical practice, the waist to hip ratio is used to diagnose abdominal obesity, and appears to be more significant than the body mass index (BMI). Normal BMI for a person should be 18.5 - 25, 25-30 is overweight and above 30 is categorized as obese.

Systematic Approach to a Healthy Life Style.

Yoga and meditationare ideal to manage stress and reduce chronic ailments. Exercise: walking, jogging, swimming, cycling, sports, martial arts etc. also help significantly. Adopting healthy food habits such as a glass of lukewarm water, honey and lemon, amla/lauki juice or coconut water, herbal tea/normal tea, rich whole fiber breakfast cereal, fruit and milk/yoghurt are healthy Life Style changes. Also drinking low fat milk or its alternatives (skimmed milk with not more than 1% or 2% Milk fat). Lunch should include sprouts, salads, fresh green vegetable/chutney, raita/dal, whole wheat/multi-grain chapattis, chana and soya bean with one dark green vegetable and one orange vegetable in your daily diet.

En sure that half of your grain consumption is of the whole grain variety. A Light dinner with vegetable soup is ideal at night as we tend to get sedentary and it becomes difficult for our body to digest extra calories. Take an adequate amount of rest by not compromising on sleep. Non-vegetarians should eat more of fish and chicken without the skin. Avoid fatty meats like bacon, mutton and sausages. Have egg white a sit builds up the protein in the body and flavor food with lemon juice, soya sauce, vinegar or herbs. Limit the use of condiments like mustard, ketchup and salad dressing while observing a fast at least once a week, consuming only fruits throughout the day.

Consume 25-30 grams of dry fruits weekly as they are important in lowering cholesterol. The polyunsaturated fat present in nuts protects the heart and the vitamin E present in walnuts helps prevent diabetes, though the fiber does interfere with the absorption of fat and keeps people from feeling hungry. As the saying goes, ‘Nature Nurtures’ helping user member the goodness which nature has to offer. For example, cinnamon and chromium have been known to regulate blood while traditional Chinese Medicines and many other herbs are used to cure pancreatic and digestive problems.

Or al health affects arterial health, so it is important to floss teeth regularly to maintain good oral hygiene. Reducing abdominal obesity, blood pressure, blood cholesterol levels and weight while drinking water (10-12 glasses) throughout the day starting from today will cleanse your system and also help you get rid of waste materials that otherwise get accumulated in your system. Including a lot of fiber helps you feel full, get rid of carbohydrates as well as bloating as fiber also helps you get rid of water retention. From vegetables, cut down on potatoes, peas, sweet potatoes and increase greenbeans, cabbage, carrots, and leafy veggies. When you crave crispies, have air popped corn/kurmura or crunchyveggie sticks (carrot or cucumber) instead of namkeen/biscuits.

Stay active all day: walk, don’t ride to the market/bus stop/station or office. Stroll on your lunch hour, take the stairs instead of the elevator, stand/squatevery time you take a phone call; do calf raises at your desk, or whilestanding in a queue, and do push-ups and crunches while watching TV. Physical activity shouldn’t stop with your 45-min quota in the morning. If all this fails to

deliver results, get your Thyroid Function checked. Get your thyroid Function checked anyway. Building healthier and happier communities through a systematic approach to a systematic life style is not an impossible dream but just a matter of awareness and perseverance.

Metabolic syndrome is predicted to become a major public health problem in many developed, as well as developing countries. Individual and community-wide efforts to change health behaviors are vital. Given the importance of establishing lifelong healthy lifestyle habits, and the emerging evidence that metabolic syndrome is at least partly hereditary, it is never too early for not only adults, but children as well, to adopt healthy lifestyles habits.

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This paper aims at increasing awareness about lifestyle diseases and exploding common myths relating to these diseases and their correlation to our food habits. While the sum effect of all such diseases is felt in the human heart, this paper goes on to explore the health friendly food and exercise habits that we should imbibe and the life style changes that we should bring about.

This paper specifically targets women as they are the ones who are the building blocks of the family's eating habits and lifestyle. They are fast emerging as the new target group of the categories of diseases discussed in the paper above since they are the target of the ever increasing pressures of the modern personal and professional rolesthey play. Through the mothers, the younger generation of our country, the leaders of tomorrow, will, I hope, absorb the essence and spirit of this subject and the commitment of their parents' generation to bring about sweeping changes in our future society and their life style, by merely observing their mothers. After all, when we educate a woman, we educate a family. So friends, here's to a healthier and happier India!

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