International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

Effect of Lifestyle on Prevention of Non Communicable Diseases

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Abstract: ***Non communicable diseases (NCDs) are usually caused by genetic or lifestyle factors. NCDs has four types – cardiovascular diseases, cancers, diabetes and chronic respiratory diseases – account for almost two-thirds of all deaths globally, with 80 per cent of these occurring in low- and middle-income countries. The most obvious change among the global health transitions has been the rising burden of non- communicable diseases [NCDs] in the developing world and leading cause of death. Of the 57 million global deaths in 2008, 36 million (63%) were due to NCDs. Poor dietary quality (in particular, high salt intake, high saturated and trans-fatty acid intake, and low fruit and vegetable consumption) and insufficient physical activity are key risk factors for NCD development and mortality worldwide. Indeed, India appears to be the most affected as there is a rising trend in the prevalence of NCDs, particularly diabetes, coronary artery disease and hypertension. India currently leads the world with 35 million people with diabetes and these numbers are expected to reach 80 million by 2030. Strong evidence shows that sedentary lifestyle increases the risk of many adverse health conditions, including major non-communicable diseases such as coronary heart disease, type 2 diabetes, and breast and colon cancers, and shortens life expectancy. Despite evidence indicating that proper levels of physical activity are associated with a 30% reduction in the risk of ischemic heart disease, a 27% reduction in the risk of diabetes, and a 21%–25% reduction in the risk of breast and colon cancer, approximately 3.2 million deaths each year are attributable to insufficient physical activity. Health information and communication strategies, fiscal measures, and regulatory measures for marketing or provision of nutrition information to children that promotes healthy eating and physical activity were found to yield substantial and cost-effective health gains.***

Keywords: NCDs, lifestyle, mortality, physical activity, nutrition information

1. Overview

A recent World Health Organization (WHO) document states that 388 million people globally, will die from non communicable diseases (NCDs) diseases like diabetes and heart disease in the next decade. It is also estimated that approximately 246 million people, or 5.9%, in the age group 29-79 have diabetes worldwide in 2007 of which 80% would be living in developing countries. Today, India is already home to over 40 million people with diabetes and this number is expected to increase to 70 million by 2025 and therefore India is referred to as the "diabetic capital" of the world.

Non-communicable diseases currently represent 43% of the global burden of disease and are expected to account for 60% of the disease burden and 73% of all deaths in the world by 2020. Most of this increase will reflect non-communicable disease epidemics in developing countries resulting from the epidemiological transition, recent changes in diet and social environment, and the adoption of lifestyles resembling those of developed societies. In developing countries, lifestyle-related chronic diseases, particularly cardiovascular disease, heavily burden the health-care system. It has been estimated that an unhealthy diet and physical inactivity alone accounted for approximately 20% of the deaths among adults in the United States of America in 2000, and the figures could be even higher in developing countries. Cross-sectional and prospective studies have shown that the prevalence and incidence of many chronic conditions, including obesity, atherosclerosis, coronary heart disease and certain cancers, are increased by unhealthy lifestyles, particularly an unhealthy diet, physical inactivity, smoking and stress. Therefore, lifestyle modification, long considered the cornerstone of interventions, is extremely important in reducing the burden of chronic diseases.

The most obvious change among the global health transitions has been the rising burden of non- communicable diseases [NCDs] in the developing world and leading cause of death. Of the 57 million global deaths in 2008, 36 million (63%) were due to NCDs. Poor dietary quality (in particular, high salt intake, high saturated and trans-fatty acid intake, and low fruit and vegetable consumption) and insufficient physical activity are key risk factors for NCD development and mortality worldwide. Indeed, India appears to be the most affected as there is a rising trend in the prevalence of NCDs, particularly diabetes, coronary artery disease and hypertension. India currently leads the world with 35 million people with diabetes and these numbers are expected to reach 80 million by 2030.

Several intervention trials have reported the effects of lifestyle intervention programmes among high-risk populations. Some have recently shown a 58% decrease in the incidence of diabetes in individuals with impaired glucose tolerance. Others have reported the beneficial effects of lifestyle modification on blood pressure control. Lifestyle interventions seem to be at least as effective as drugs.

2. Non Communicable Diseases

Non communicable diseases (NCDs), also known as chronic diseases or lifestyle-related diseases (LRDs) are not passed from person to person. They are of long duration and generally slow progression. The four main types of non communicable diseases are cardiovascular diseases (like

heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes.

NCDs already disproportionately affect low- and middle-income countries where nearly 80% of NCD deaths – 29 million – occur. They are the leading causes of death in all regions except Africa, but current projections indicate that by 2020 the largest increases in NCD deaths will occur in Africa. In African nation's deaths from, NCDs are projected to exceed the combined deaths of communicable and nutritional diseases and maternal and perinatal deaths as the most common causes of death by 2030.

3. Who is at risk of such diseases

All age groups and all regions are affected by NCDs. NCDs are often associated with older age groups, but evidence shows that more than 9 million of all deaths attributed to non communicable diseases (NCDs) occur before the age of 60. Of these "premature" deaths, 90% occurred in low- and middle-income countries. Children, adults and the elderly are all vulnerable to the risk factors that contribute to non communicable diseases, whether from unhealthy diets, physical inactivity, exposure to tobacco smoke or the effects of the harmful use of alcohol.

These diseases are driven by forces that include ageing, rapid unplanned urbanization, and the globalization of unhealthy lifestyles. For example, globalization of unhealthy lifestyles like unhealthy diets may show up in individuals as raised blood pressure, increased blood glucose, elevated blood lipids, overweight and obesity. These are called 'intermediate risk factors' which can lead to cardiovascular disease, a NCD.

1) Lifestyle as a risk factor of NCDs

Tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol increase the risk of or cause most NCDs. These behaviours lead to four key metabolic/physiological changes that increase the risk of NCDs: raised blood pressure, overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidemia (high levels of fat in the blood). In terms of attributable deaths, the leading NCD risk factor globally is elevated blood pressure (to which 16.5% of global deaths are attributed) (1) followed by tobacco use (9%), raised blood glucose (6%), physical inactivity (6%) and overweight and obesity (5%). Low- and middle-income countries are witnessing the fastest rise in overweight young children.

2) Physical inactivity

Physical inactivity can have serious implications for people's health. Approximately 2 million deaths per year are attributed to physical inactivity, prompting WHO to issue a warning that a sedentary lifestyle could very well be among the 10 leading causes of death and disability in the world. Sedentary lifestyles increase all causes of mortality, double the risk of cardiovascular diseases, diabetes, and obesity, and increase the risks of colon cancer, high blood pressure, osteoporosis, lipid disorders, depression and anxiety. According to WHO, 60 to 85% of people in the world—from both developed and developing countries—lead sedentary lifestyles, making it one of the more serious yet insufficiently addressed public health problems of our time. It is estimated that nearly two-thirds of children are also insufficiently active, with serious implications for their future health.

Physical inactivity, along increasing tobacco use and poor diet and nutrition, are increasingly becoming part of today's lifestyle leading to the rapid rise of diseases such as cardiovascular diseases, diabetes, or obesity. Chronic diseases caused by these risk factors are now the leading causes of death in every part of world except sub-Saharan Africa, where infectious diseases such as AIDS are still the leading problem. These chronic diseases are, for the most part, entirely preventable. Countries and people could save precious lives and health care resources by investing in preventing these diseases. It is one consequence of the economic transition in India and other developing countries. Increasing physical activity has been shown to reduce cardiovascular risk factors as well as the risk for diabetes. About 3.2 million deaths annually can be attributed to insufficient physical activity.

3) Smoking

The hazardous effects of smoking on mortality from cancers and cardiovascular and respiratory diseases have been known for decades. Effects on other globally important diseases such as diabetes and tuberculosis have also been shown. In parallel, evidence of the hazards of smoking in Asian countries has established that it is a global problem. Moreover, exposure of pregnant women, children, and non pregnant adults to secondhand smoke at home and in public places is associated with adverse birth outcomes, childhood respiratory diseases, and many of the same diseases that are associated with active smoking. Tobacco accounts for almost 6 million deaths every year (including over 600 000 deaths from exposure to second-hand smoke), and is projected to increase to 8 million by 2030.

4) Alcohol consumption

Alcohol consumption is associated with numerous diseases and injuries. Moderate alcohol consumption has been inversely associated with the risk of cardiovascular diseases and diabetes, although the benefits may be greater for persons with existing cardiovascular risk factors than for those without such risk factors. Epidemiologic studies that have measured both the amount and patterns of alcohol consumption have shown that heavy episodic (or binge) drinking not only substantially raises the risk of injuries but can also increase the risk of or exacerbate cardiovascular disease and liver disease. Half of the 2.3 million annual deaths from harmful drinking are from NCDs.

5) Excess weight and obesity

Numerous observational studies in Western and Asian populations have associated different measures of adiposity and excess body weight with increased total mortality and increased risks of disease or death from diabetes, ischemic heart disease and ischemic stroke, cancers, chronic kidney disease, and osteoarthritis. The risks of diabetes and ischemic heart disease increase monotonically with an increase in the body-mass index (BMI, the weight in

kilograms divided by the square of the height in meters), starting at a BMI in the low 20s. In contrast, the association with hemorrhagic stroke, which is more common in Asian populations than in other populations, has been observed only at a BMI of 25 or higher. Currently, excess weight is responsible for about 3.4 million annual deaths and 3.8% of the global burden of disease, with diseases that have low mortality and long periods of disability, such as diabetes and musculoskeletal diseases, accounting for a proportion of this burden.

6) Diet and nutrition

Centuries after the effects of specific dietary intakes on conditions such as scurvy were discovered, nutritional epidemiology has established the associations of specific foods and nutrients or overall dietary patterns with cancers, cardiovascular diseases, and diabetes and with intermediate outcomes such as weight gain, increased blood pressure, and insulin resistance and hyperglycemia. The large body of observational studies is increasingly complemented by well-designed randomized trials that have, for example, shown the benefits of lower salt intake, the replacement of saturated fats with polyunsaturated fats, and healthy dietary patterns. Low dietary intakes of fruits, vegetables, whole grains, or nuts and seeds or a high dietary intake of salt are individually responsible for 1.5% to more than 4% of the global disease burden.

4. Prevention and Control of NCDs

To lessen the impact of NCDs on individuals and society, a comprehensive approach is needed that requires all sectors, including health, finance, foreign affairs, education, agriculture, planning and others, to work together to reduce the risks associated with NCDs, as well as promote the interventions to prevent and control them. An important way to reduce NCDs is to focus on lessening the risk factors associated with these diseases. Low-cost solutions exist to reduce the common modifiable risk factors (mainly tobacco use, unhealthy diet and physical inactivity, and the harmful use of alcohol) and map the epidemic of NCDs and their risk factors.

5. Management of NCDs

In the management of NCDs like diabetes or hypertension, lifestyle (i.e.: nondrug) measures are of paramount importance for therapy to be successful. These nondrug measures include regular physical activity (exercise), healthy diet, stress management, avoidance of tobacco products, moderation in alcohol intake and most importantly increased awareness about the condition. It would be fair to state that unless compliance to the nondrug measures is ensured, management of diseases like diabetes and hypertension would be extremely difficult. A study in UK revealed that though most of them were aware of the benefits of nondrug measures, they seldom spent time on assessing patient's physical activity, diet and stress levels or even educating the patient about the same.

6. Some relevant aspects in the management of NCDs include:

- Energy expenditure through physical activity is an important part of the energy balance equation that determines body weight. A decrease in energy expenditure through decreased physical activity is likely to be one of the major factors contributing to the global epidemic of overweight and obesity.
- Physical activity has great influence on body composition ---on the amount of fat, muscle and bone tissue.
- To a large extent, physical activity and nutrients share the same metabolic pathways and can interact in various ways that influence the risk and pathogenesis of several chronic diseases.
- Cardiovascular fitness and physical activity have been shown to reduce significantly the effects of overweight and obesity on health.
- Physical activity and food intake are both specific and mutually interacting behaviours that are and can be influenced partly by the same measures and policies.
- Lack of physical activity is already a global health hazard and is a prevalent and rapidly increasing problem in both developed and developing countries, particularly among poor people in large cities.
- In order to achieve the best results in preventing chronic diseases, the strategies and policies that are applied must fully recognize the essential role of diet, nutrition and physical activity.

References

[1] World Health Organization (2005). Report on preventing chronic diseases - a vital investment. WHO. Geneva.
[2] Sicree R, Shaw J, Zimmet P. (2006) Diabetes and impaired glucose tolerance. In: Diabetes Atlas. International Diabetes Federation. 3rd edition, Gan D, (Ed.) Belgium: International Diabetes Federation; 15-103.
[3] Mohan V, Shanthirani CS, Deepa M, Datta M, Williams OD, Deepa R. Community Empowernment – (2006) a successful model for prevention of non communicable Diseases in India - the Chennai Urban Population Study (CUPS 17). J Assoc Physicians India; 54:858-62.
[4] Yach D, Stuckler D, Brownell KD. (2006) Epidemiologic and economic consequences of the global epidemics of obesity and diabetes. Nat Med;12:62-6.
[5] Burr B, Nagi D. The role of the diabetes team in promoting physical activity. In: Exercise and Sports in Diabetes. Burr B, Nagi D (Eds.), John Wiley and Sons, UK 1999:173-80.
[6] Yach D, Hawkes C, Gould CL, Hofman KJ: (2004) The global burden of chronic diseases: overcoming impediments to prevention and control. *JAMA*, 291(21):2616-2622.
[7] WHO: (2005) *Preventing Chronic Diseases: a Vital Investment: WHO Global Report* Geneva: World Health Organization;.

[8] Abegunde DO, Mathers CD, Adam T, Ortegon M, Strong K: (2007) The burden and costs of chronic diseases in low-income and middle- income countries. *Lancet*, 370(9603):1929-1938.
[9] Murray CJ, Lopez AD: (1997) Alternative projections of mortality and disability by cause 1990–2020: Global Burden of Disease Study. *Lancet*, 349(9064):1498-1504.
[10] Omran AR. The epidemiologic transition. (1971) A theory of the epidemiology of population change. Milbank Mem Fund Q;49:509–38.
[11] Srinath Reddy K, Shah B, Varghese C, Ramadoss A. (2005) Responding to the threat of chronic diseases in India. Lancet;366:1744- 49.
[12] Mohan V, Deepa R, Shanthirani S, Premalatha G. (2001) Prevalence of coronary artery disease and its relationship to lipids in a selected population in south India. The Chennai Urban population Study (CUPS No. 5). J Am Coll Cardiol;38:682-87.
[13] Wild S, Roglic G, Green A, Sicree R., King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. Diabetes Care 2004;27:1047-53.
[14] He FJ, Macgregor GA (2004) Universal salt reduction. Hypertension 43: E12–E13 PM:14732726. doi: 10.1161/01.hyp.0000115923.42167.30
[15] He FJ, Macgregor GA (2005) Blood pressure—importance of salt intake. Am J Hypertens 18: 1258–1259 PM:16182118.
[16] He FJ, Macgregor GA (2009) A comprehensive review on salt and health and current experience of worldwide salt reduction programmes. J Hum Hypertens 23: 363–384 ISI:000266026600001. doi: 10.1038/jhh.2008.144
[17] Asaria P, Chisholm D, Mathers C, Ezzati M, Beaglehole R (2007) Chronic disease prevention: health effects and financial costs of strategies to reduce salt intake and control tobacco use. Lancet 370: 2044–2053 PM:18063027. doi: 10.1016/s0140-6736(07)61698-5
[18] Popkin BM (2006) Global nutrition dynamics: the world is shifting rapidly toward a diet linked with noncommunicable diseases. Am J Clin Nutr 84: 289–298 PM:16895874.
[19] Palestinian National Authority Ministry of Health (2013) National nutrition policy, strategies & action plan PSAP) 2011–2013