IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Human Journals
Short Communication
June 2020 Vol.:18, Issue:3

Non Communicable Diseases in India - Prevalence & Prevention

IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals
ISSN 2349-7203
HUMAN

Reshmi Arya[1], Anusha Nukala[2], Naga Haritha Pamujula*

*[1]B.Pharmacy 4th year, [2]Pharm D 5th year, *Assistant Professor, Dept of Pharmaceutics*
St.Pauls college of Pharmacy, Osmania University, Hyderabad, Telangana, India.

Submission: 24 May 2020
Accepted: 31 May 2020
Published: 30 June 2020

Keywords: Non communicable diseases, socioeconomic development, risk factors, lifestyle modifications

ABSTRACT

Non communicable diseases (NCDs) are medical conditions or diseases that are not caused by infectious agents. These are chronic diseases of long duration and generally slow progression and are the result of a combination of genetic, physiological, environmental and behavioral factors. NCDs are one of the major challenges for public health in the 21st century, not only in terms of human suffering they cause but also the harm they show on the socio-economic development of the country. NCDs kills approximately 41 million people (71% of global deaths) worldwide each year, including 14 million people who die too young between the ages of 30 and 70. The majority of premature NCD deaths are preventable. Although morbidity and mortality from NCDs mainly occur in adulthood, exposure to risk factors begins in early life. Therefore, NCDs and its risk factors have great importance to young people as well. The present review focusses on the major NCDs in India, their risk factors and the preventable measures by simple lifestyle modifications.

INTRODUCTION

Non communicable diseases have been a difficult group to define. Even the term "non communicable diseases" is a misnomer, because it includes some diseases —notably, cancers of the liver, stomach and cervix that are at least partly caused by infectious organisms, and it usually excludes mental illnesses, despite their large contribution to long-term disability. However, four common behavioral risk factors (tobacco use, excessive alcohol consumption, poor diet, and lack of physical activity) are associated with four disease clusters Cardiovascular diseases (like heart stroke, coronary heart disease, Hypertension), Chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma), Cancer and Diabetes that account for about 80% of deaths from non-communicable diseases.[1]

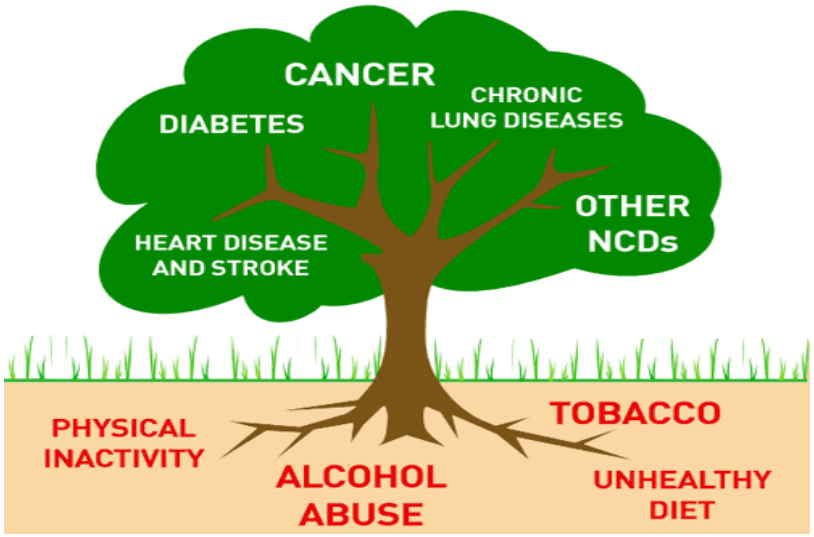

Figure No. 1: Major Non communicable diseases and common risk factors

The majority of NCD deaths occur in low and middle-income countries such as India, which is undergoing an epidemiological health transition owing to rapid urbanization, which in turn has led to an overall economic rise, but with certain associated flipsides (risk factors). A risk factor is defined as "An aspect of personal behavior or lifestyle, an environmental exposure, or a hereditary characteristic that is associated with an increase in the occurrence of a particular disease, injury, or other health condition"[2]. These behavioral and biological risk factors, with a predisposition to the development of NCDs, are use of tobacco and alcohol, physical inactivity, overweight and obesity, increased fat and sodium intake, low fruit and vegetable intake, raised blood pressure (BP), blood glucose and cholesterol levels (WHO, 2013).

Currently, NCD kills 36 million people a year, a number that by some estimates is expected to rise by 17–24% within the next decade.[3]

NCD ALLIANCE

The NCD Alliance is a global partnership founded in May 2009 by four international federations representing cardiovascular disease, diabetes, cancer, and chronic respiratory disease. The NCD Alliance brings together roughly 900 national member associations to fight non-communicable disease. Long term aims of the Alliance include:[4]

NCD/disease national plans for all:

1. A tobacco free world
2. Improved lifestyles
3. Strengthened health systems
4. Global access to affordable and good quality medicines and technologies
5. Human rights for people with NCDs.

Risk factors such as a person's background; lifestyle and environment are known to increase the likelihood of certain non-communicable diseases. They include age, gender, genetics, exposure to air pollution, and behaviors such as smoking, unhealthy diet and physical inactivity which can lead to hypertension and obesity, in turn leading to increased risk of many NCDs. Most NCDs are considered preventable because they are caused by modifiable risk factors.[5]

It has been estimated that if the primary risk factors were eliminated, 80% of the cases of heart disease, stroke and type 2 diabetes and 40% of cancers could be prevented. Interventions targeting the main risk factors could have a significant impact on reducing the burden of disease worldwide. Efforts focused on better diet and increased physical activity have been shown to control the prevalence of NCDs.[6]

1. CARDIOVASCULAR DISEASES

Hypertension: Cardiovascular diseases remain the top cause of global mortality, with an estimated 17.9 million attributed deaths in 2016 (31% of global deaths). Hypertension is consistently related to the development of ischemic heart disease, heart failure, stroke and chronic kidney disease; an estimated 57% and 24% of stroke and coronary artery disease-related deaths, respectively are due to hypertension. According to the global burden of diseases estimate 2015, it is the most important cause of mortality as well as the loss of disability-adjusted life years. [7]

Risk Factors: Tobacco use, Unhealthy diet, Obesity, Physical inactivity and Harmful use of alcohol.

Prevalence of hypertension due to tobacco consumption:

In The Global Adult Tobacco Survey (GATS), India found that the rural areas of the country exhibit comparatively higher prevalence rates (38.4%) in comparison to urban areas (25.3%). Relatively lesser prevalence in rural areas might be due to reporting bias i.e. subjects not willing to reveal their smoking habits. Very high prevalence (90.8%) of tobacco consumption in tribal area even among females (88.3%) can be attributed to easy availability of tobacco as most of the tribal study subjects working in tobacco fields, illiteracy, cultural acceptability and lack of awareness about the harmful effects of tobacco on health.

Prevalence of hypertension due to alcohol consumption:

Alcohol consumption was reported to be 10.8% in rural and 21.9% in tribal population. Prevalence of current use of alcohol ranged from as low as 7% in the western state of Gujarat (officially under Prohibition) to 75% in the North-eastern state of Arunachal Pradesh. There is also an extreme gender difference. Significantly higher use has been recorded among tribal, rural and lower socio-economic urban sections. Alcohol consumption is seen in 37.5% among tribal population of Uttarakhand. The study among Kerala tribes revealed alcohol consumption in 53% men and 1% among women.

Prevalence of hypertension due to obesity:

Obesity was noted in 40.2% of rural and 14% of tribal population. It was obvious that obesity is not only seen in affluent and urban population but its prevalence is increasing in rural areas and even to tribal populations. There is need for creating awareness about the harmful effects of obesity and its association with many non-communicable diseases among these population in a review on epidemic of obesity. Traditionally known for malnutrition, Indians now report more and more frequently with overweight, obesity, and their consequences. While the problem of undernutrition still exists in many parts of India, the additional burden of obesity due to change in lifestyles is alarming situation. A better understanding of the numbers and causes can help overcome barriers to the primary prevention of obesity for youth and adults in communities, medical care and workplaces. [8]

Coronary Heart Disease:

Cardiovascular disease (CVD) burden is large and is growing in South Asia. In these countries, the age of onset of first myocardial infarction is on average 10 years earlier as compared with other countries. Cardiovascular diseases (CVDs), especially coronary heart disease (CHD), have assumed epidemic proportions worldwide. Globally, CVD led to 17.5 million deaths in 2012. India is a large and socioeconomically diverse country, and there could be evidence of all the stages of this transition in the country. Other striking features of CVD epidemiology in India are high mortality rates, premature CHD, and increasing burden.

Risk Factors:

Tobacco use, Hypertension, Diabetes, Abdominal obesity, Physical inactivity and Psychosocial stress. Prevalence of risk factors in men and women, respectively, were smoking or use of any tobacco product is 22.8%and 2.4%, obesity in adults 3.2% and 6.7%, high blood pressure in 25.9% and 24.8%, and diabetes in 9.7% and 9.2%. An important change in risk factor dynamics in India is a more rapid increase in CVD risk factors in rural and slum populations compared with urban populations. Smoking and non-smoked tobacco continues to increase in rural and less literate populations, while it is declining in more educated urban populations. Genetic factors have been implicated in pathogenesis of premature atherosclerosis in Indians. [9]

2. CHRONIC RESPIRATORY DISEASES (ASTHMA and COPD)

COPD is one of the leading non-communicable causes of death globally, as well as in India. India has a population of 1·3 billion people living in 29 states and seven union territories, many of which have populations as large as some countries and which often vary widely in terms of ecology, economy and demography, all of which affect respiratory health. The Sustainable Development Goals aim to reduce premature mortality from non-communicable diseases by a third by 2030 through prevention and treatment. The National Health Policy of India 2017 recommends that premature mortality from non-communicable diseases, including chronic respiratory diseases, should be reduced by 25% by 2025. COPD and asthma were the predominant chronic respiratory diseases, with COPD contributing 75.6% of the total Disability adjusted life year (DALYs) due to chronic respiratory diseases in 2016 and asthma 20.0%.In 2016, the prevalence of COPD in India was 4.2% and the prevalence of asthma 2.9%. India has a prevalence of COPD that is higher than the global average, as well as more DALYs per person with COPD or asthma than the global average. Most states in India had higher rates of DALYs from COPD and asthma compared with locations elsewhere in the world at similar levels of SDI. However, there were substantial variations between the states.[10]

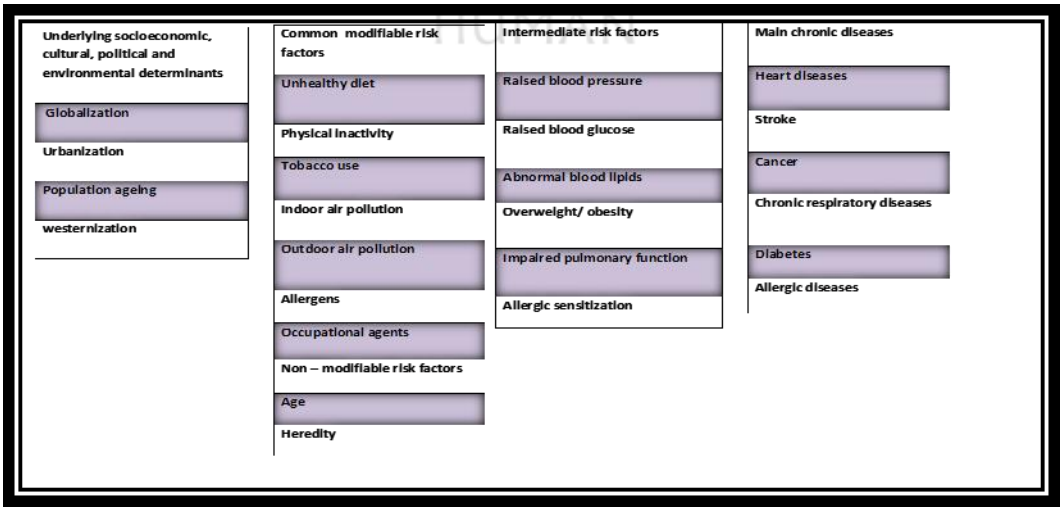

Figure No. 2: Causes of Chronic Respiratory disease

Primary prevention of CRDs requires the reduction or avoidance of personal exposure to common risk factors, to be started during pregnancy and childhood. Avoidance of direct and indirect exposure to tobacco smoke is of primary importance not only for healthier lungs, but as a preventative measure for the other 3 priority NCDs (cardiovascular disease, cancer, and

diabetes) identified in the Global Strategy for NCD prevention and control. Asthma, although not curable, is a treatable disease with preventable morbidity. It is also a known risk factor for COPD. Secondary and tertiary prevention involves avoidance of allergens and non-specific triggers. Optimal pharmacological treatment, including the use of anti-inflammatory medication, has been shown to be cost-effective in controlling asthma, preventing the development of chronic symptoms, and reducing mortality.

3. CANCER

Cancer is the second leading cause of death globally after cardiovascular diseases. Patients with cancer generally have a poorer prognosis in low-income and middle income countries, including India, because of relatively low cancer awareness, late diagnosis, and the lack of or inequitable access to affordable curative services compared with patients in high-income countries. India has a population of 1.3 billion spread across 29 states and seven union territories, and many of the states are as large as other countries, with varying degrees of development, population genetics, environments and lifestyles, leading to a heterogeneous distribution of disease burden and health loss. The India State-Level Disease Burden Initiative is collaboration with the Global Burden of Diseases, Injuries and Risk Factors Study (GBD) to produce subnational disease burden estimates for India.[11]

According to Globocan 2012, India along with United States and China collectively accounts for almost onethird of the global breast cancer burden. India is facing challenging situation due to 11.54% increases in incidence and 13.82% increase in mortality due to breast cancer during 2008–2012. Breast cancer is the major cause of morbidity and mortality among females ranking number one among females in Indian metropolitan cities like Delhi, Kolkata, Pune and Tripura, Bangalore and Mumbai and in Northeast, whereas in rural areas such as Barshi it still hold a second position. The main reasons for this observed hike in mortality are due to lack of inadequate breast cancer screening, diagnosis of disease at advanced stage and unavailability of appropriate medical facilities. Epidemiology of breast cancer across different PBCRs in India shows increasing trends for incidence and mortality mainly due to rapid urbanization, industrialization, population growth and ageing affecting almost all parts of India. Factors as marital status, location (urban/rural), BMI, breastfeeding, waist to hip ratio, low parity, obesity, alcohol consumption, tobacco chewing, smoking, lack of exercise, diet, environmental factors were major risk factors in India leading to increasing incidence cancer; however, the reason for high incidence of breast cancer in younger women are not

well known. Delayed disease presentation due to illiteracy, lack of awareness, financial constrains in some regions of India leads to late diagnosis, which in turn increases mortality rate. Lack of organized breast cancer screening program, paucity of diagnostic aids, and general indifference toward the health of females in the predominantly patriarchal Indian society are also the drawbacks leading to increased breast cancer incidence.[12]

A large number of factors are identified as risk factors for breast cancer. Late age at first pregnancy (>30 years), single child, late age at menopause etc are some of them. A high fat diet is also identified as a risk factor. Gynecological cancers have increased in India and are estimated to be around 182,602 by the year 2020 constituting about 30% of the total cancers among women in India. Among these, cancers of the uterine cervix followed by ovary and corpus uteri are the major contributors. In the year 2010, around 68,903 cases of cervix cancer are estimated to occur which may decrease to 53,654 cases by the year 2020. Early age at first intercourse, multiple sexual partners, poor sexual hygiene, repeated childbirth etc are some of the reproductive risk factors for cervical cancers. In India, by the year 2020, the cases of head & neck cancers are estimated to be around 218,421 (19.0% of All sites cancers). The main risk factors for these cancers are tobacco and alcohol. Most of the cancers have some relationships with diet. Predominant among them are cancers of the oesophagus, stomach, colon and liver. Consumption of large amounts of red chillies, food at very high temperatures and alcohol consumption are the main risk factors for stomach cancer in India.[13]

People choosing to take cancer prevention into their own hands have helped decrease the number of new cancer cases and have helped prevent many cancer deaths, according to the CDC.

4. DIABETES

Diabetes was identified as one of four priority non-communicable diseases (NCDs) targeted for action by the United Nations due to its growing disease burden. The burden of diabetes has steadily increased over the past quarter century in India and across the globe, with India contributing a major part of the global burden. Health is a state subject in India, with the state budget contributing two-thirds towards overall government spending on health care and the central budget contributing the remainder. It is therefore imperative to have robust and comprehensive estimates on the magnitude of diabetes and its risk factors in every state to

enable planning for targeted policy and interventions. In 2013, WHO developed targets for prevention and control of NCDs by 2025, which included a 25% reduction in mortality from NCDs, halting the rise in diabetes and obesity, and ensuring that at least 80% of patients have access to affordable basic technologies and essential medicines for NCDs. Overall diabetes burden estimates for the 1.3 billion population of India mask wide variations across the states of the country, many of which are comparable to large countries in terms of population.

Diabetes is a chronic disease requiring daily self-management by establishing and maintaining a continuum of care for the attainment of optimal health outcomes. Failure to do so increases the risk of early onset and development of microvascular and macrovascular complications of diabetes. Persons with diabetes themselves need to become caregivers and sustain a multitude of daily self-management decisions that include: Adherence to medications in terms of the correct dose, frequency, route and protection against adverse effects; Lifestyle modifications: Adequate physical activity and daily exercise with a healthy diet; Cessation from smoking and harmful use of alcohol; Self-monitoring of blood glucose and Foot-care. Diabetes self-management education and support (DSME/S) for educating the patient on diabetes self-care is an integral component of the chronic care model for primary-care clinics which is effective in improving diabetes-related health outcomes. The American Diabetes Association (ADA) has recommended measurement and monitoring of the key outcomes of DMSE/S including self-management, clinical outcomes, health status, and quality of life.[14,15]

HEALTHY LIFESTYLE TO PREVENT NON COMMUNICABLE DISEASES

All of the non-communicable diseases that are caused by these risk factors (cigarette smoking, high blood pressure, high blood sugar levels, high cholesterol levels, obesity, physical inactivity, and poor diet) are potentially preventable, or can be changed, through people leading healthy lifestyles.

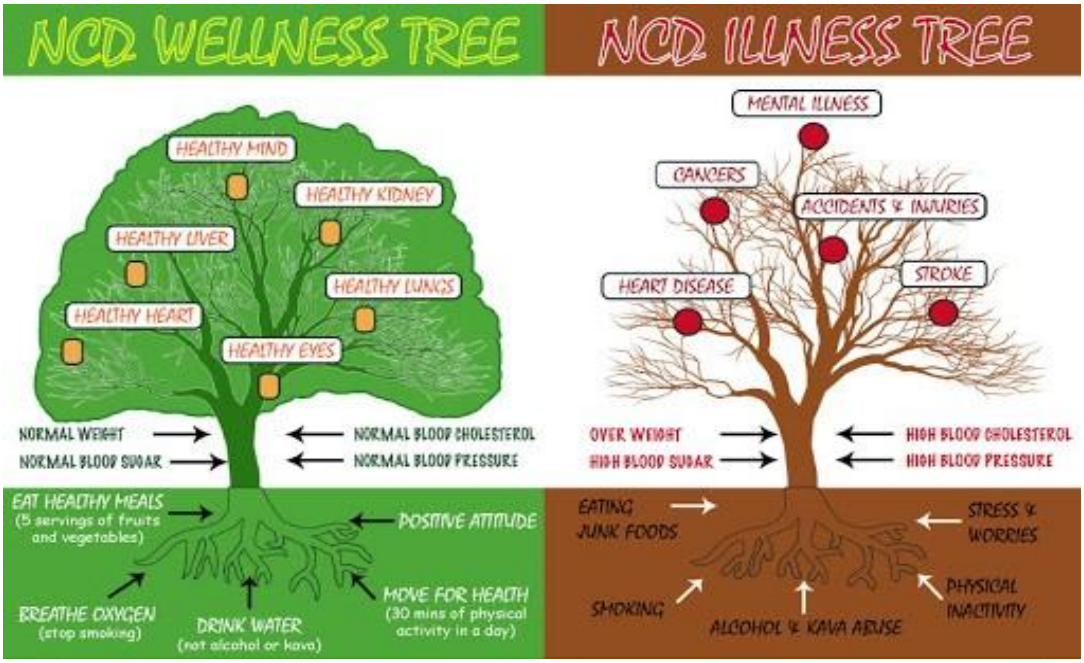

Figure No. 3: Difference between NCD wellness and illness

"***Prevention is better than cure***", Maintaining healthy lifestyle will eventually decrease the risk of attaining non-communicable diseases. Lifestyle modifications will help in preventing the diseases rather than searching for the treatment and cure.

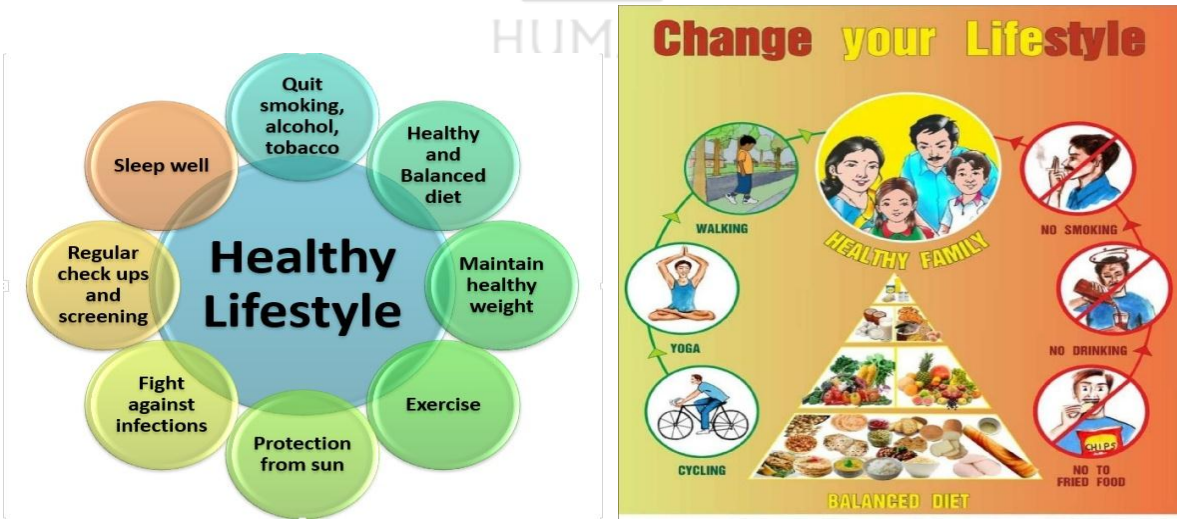

Figure No. 4: Measures to be followed to maintain a healthy lifestyle

CONCLUSION

The epidemic of NCDs cannot be halted simply by treating the sick, healthy persons have to be protected by addressing the root causes. Reducing the major risk factors for NCDs is the key factor to prevent deaths from NCDs. Tackling the risk factors will therefore not only save lives it will also provide a huge boost for the economic development of the country. All people should join together to reduce premature deaths from NCDs by one third by 2030, the commitment made in 2015 as part of sustainable Development goals. Young people can contribute in different ways to prevent NCDs such as sharing information/ targeted messages on key risk factors about NCDs on social media, organizing and supporting interventions to ensure healthy lives and promote well being for all people at all ages.

REFERENCES

1. David J. Hunter and et.al; Non communicable diseases; The New England Journal of Medicine; 2013; 369;1336-1343.
2. Sivasubramanian .R and et.al; Prevalence of hypertension among Indian adults: Results from the great India blood pressure survey;2019;71(4);309-313.
3. "Non-Communicable Diseases Deemed Development Challenge of 'Epidemic Proportions' in Political Declaration Adopted During Landmark General Assembly Summit". United Nations. Department of Public Information. 19 September 2011. Retrieved 14 March 2014
4. The NCD Alliance. "About Us". The NCD Alliance. Archived from the original on 4 May 2011. Retrieved 4 May 2011.
5. "The top 10 causes of death". World Health Organization. Retrieved 24 May 2015.
6. "Noncommunicable diseases". World Health Organization. Retrieved April 5, 2016
7. Sivasubramanian .R and et.al; Prevalence of hypertension among Indian adults: Results from the great India blood pressure survey;2019;71(4);309-313.
8. B. Madhu and et.al; Comparison of prevalence of lifestyle risk factors and 10 year risk of CVD event among rural and tribal population of KollegalTaluk, Chamrajanagar district, South India; Indian Heart Journal;2019;13;2961-2966.
9. Rajeev Gupta and et.al; Trends in coronary heart disease epidemiology in india; Diabetes & Metabolic Syndrome: Clinical Research & Reviews; 2016;82(2);307-315.
10. Freddie Bray et al; Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries: Cancer Journal for Clinicians. 2018; 68(0): 394-424
11. Mohandas K Mallath, David G Taylor et al; The growing burden of cancer in India: epidemiology and social context: Lancet Oncology. 2014; 15: e205-212.
12. Shreshtha et al; Epidemiology of breast cancer in Indian women: Asia Pacific Journal of Clinical Oncology. 2017; 13: 289-295.
13. Ramnath Takiar, Deenu Nadayil, Nandakumar A; Projections of Number of Cancer Cases in India (2010-2020) by Cancer Groups: Asian Pacific Journal of Cancer Prevention. 2014; 11: 1045-1049.
14. Nikhil Tandon et al; The increasing burden of diabetes and variations among the states of India: The Global Burden of Disease Study: Lancet Global Health. 2018; 2667(18): 1-11.
15. Saurav Basu et al; Diabetes self-care in primary health facilities in India-challenges and the way forward: World Journal of Diabetes. 2019; 10(6): 341-349.