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Epidemic of Non communicable diseases: its burden and implication on India

Vikas Bhatia[1☼], Jyotiranjan Sahoo[2], Sonu H Subba[3]

1.Dean & HOD, Dept. of Community Medicine and Family Medicine, AIIMS, Sijua, Patrapada, Bhubaneswar, Odisha – 751019, India; Email: bhatiaaiims@gmail.com
2.Senior resident, Dept. of Community Medicine and Family Medicine, AIIMS, Bhubaneswar – 751019, India; Email: dr.jyotiranjan@gmail.com
3.Addl. Professor, Dept. of Community Medicine and Family Medicine, AIIMS, Bhubaneswar – 751019, India; Email: sonuhsubba@yahoo.com

☼**Corresponding author:** Vikas Bhatia, Dean & HOD, Dept. of Community Medicine and Family Medicine, AIIMS, Sijua, Patrapada, Bhubaneswar, Odisha – 751019, India; Email: bhatiaaiims@gmail.com

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ABSTRACT

Non communicable diseases are now a major health problem, overtaking the communicable diseases. Epidemiological transition, demographic changes with rapid economic growth and increasing life expectancy made whole of the population vulnerable to NCDs. Non communicable diseases also otherwise called as chronic diseases are non infectious, of long duration and generally of slow progression. When we look at the current status, there are mainly five types of NCDs namely cardiovascular diseases like hypertension, stokes, heart attacks etc, Cancer, Chronic respiratory diseases, Diabetes, Accidents and injuries. According to an estimate by WHO, non communicable diseases accounts for nearly two third of deaths in all age groups where cardio-vascular diseases take the major chunk (24%), followed by respiratory problems (11%). NCDs account for just less than half of the DALYs (43%). According to National Crime Records Bureau, Government of India report 2012 mortality due to accident and injuries rising constantly in India each year. Similarly, cancer mortality rates were estimated to increase from what it was observed in 2004 i.e. approximately 20 lakh cases with 5 lakh deaths and projected to go up by nearly 5 lakh in number of cases and 30 thousand more number of deaths by 2014. NCDs not only hamper the health outcome but it also does the collateral damage like imposing economic burden, consumption health system, catastrophic effect on household income and individual. Although India has taken some steps to prevent and control the epidemic situation but still its action is lagging behind with time. A good surveillance system, orientation of health system towards prevention, multi-sectoral response with strong political will are some of the measure with which India can go forward to combat such epidemics.

Key Words: Cardiovascular diseases, Economic burden, Cancer, Health programs, Accidents and Injuries

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1. INTRODUCTION

The non communicable diseases are taking giant leap to grip the health of Indians; when India is still busy fighting against communicable diseases, malnutrition and maternal and child mortality. Because of overall development and targeted interventions the mortality due to infectious diseases mainly that of children and young adults has reduced, but simultaneously non-communicable diseases (NCDs), notably cardiovascular disease, cancer and diabetes, have increased in prominence. Epidemiological transition, demographic changes with rapid economic growth and increasing life expectancy made whole of the population vulnerable to NCDs (Engelgau, 2011). Economic boom due to industrialization and urbanization has brought life style changes in population that have made favourable grounds for NCDs including increased rate of accidents and injuries (Brown, 2011 & Yusuf, 2001). Over that, inadequacy of health system had made the situation worst (Zimmet, 2011).

Non communicable diseases also otherwise called as chronic diseases are non infectious, of long duration and generally of slow progression. The list of non communicable diseases is extensive which may be due to genetic factors or life style factors. When we look at the current status, there are mainly five types of NCDs, taking into consideration the proportional mortality and morbidity. List of important non-communicable diseases in India are listed below (Upadhaya, 2012);

1. Cardiovascular diseases like hypertension, stokes, heart attacks etc
2. Cancer
3. Chronic respiratory diseases
4. Diabetes
5. Accidents and injuries

NCDs are already the world's largest cause of death, accounting for 36 million deaths in 2008, i.e. 63 percent of the global total, with 78 percent of these deaths occurring in middle- and low-income countries and India is no exception. They are also leading causes of morbidity and poor health (Nikoliv, 2011).

2. BURDEN

Finding out burden of non communicable diseases in India is highly unreliable because of lack of proper surveillance, monitoring or registration system (Nonykynrih, 2004). According to an estimate by & World Health Organization (2011), non communicable diseases accounts for nearly two third of deaths in all age groups where cardio-vascular diseases take the major chunk (24%), followed by respiratory problems (11%), (Figure 1). NCDs account for just less than half of the DALYs (43%). 9.2 million of the potentially productive years of life lost (PPYLL) lost due to CVDs in the age group of 35-64 yrs in 2000 and is expected to rise to 17.9 million in 2030. Since the majority of deaths are premature there is a substantial loss of lives during the productive years as compared to other countries. NCD mortality shows some male preponderance and younger population are not exempted (Table 1), (World Health Organization, 2011).

Accidents may not be a chronic disease as it is a onetime event but it's after effects may last long. According to National Crime Records Bureau, Government of India report 2012 mortality due to accident and injuries rising constantly in India each year. There was 51.8% change in mortality in 2012 over 2002. Most of the deaths are due to unnatural causes like road traffic accidents, rail road accidents, poisoning etc (Table 2), (National Crime Record Bureau, 2012).

Similarly, cancer mortality rates were estimated to increase from what it was observed in 2004 i.e. approximately 20 lakh cases with 5 lakh deaths and projected to go up by nearly 5 lakh in number of cases and 30 thousand more number of deaths by 2014. Tobacco use which is by far the number one risk factor for cancer in India posed as an independent problem. In India, the most prevalent forms of cancer among men are tobacco-related cancers including lung, oral, larynx, oesophagus, and pharynx. In India almost 50% more men smoke than in the developed countries like United States. Amongst Indian women, in addition to tobacco-related cancers, cervix, breast, and ovarian cancers are also prevalent. India currently has the highest prevalence of oral cancer cases in the world as a result of the popularity of chewing tobacco in its rural regions (Taylor, 2010).

As NCDs are chronic degenerative diseases, the quoted prevalence is only the tip of the iceberg. Prevalence are more in elderly population as NCD present itself late with complications and due to lack of regular health checkups younger population form the submerged portion of the iceberg. Table 3 shows the prevalence of NCDs in elderly population of India according to different studies. Younger population is also vulnerable for NCDs. Prabhakaran et al (2010) found that CHDs affects Indian at least 5-6 yrs earlier than their western counter parts. Prevalence of CHDs increases drastically from 45 yrs onwards till age 60 yrs of age. The prevalence of diabetes in adults was found to be 2.4% in rural and 4-11.6% in urban dwellers. The prognosis of young diabetic is worse as they tend to develop

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Table 1

Mortality Profile of India due to NCDs

	Male	Female
Total NCD Deaths (in thousands)	582.3	481.7
NCD death in < 60 yrs (in thousands)	33.9	26.3
Age standardized death rates per lakh		
All NCDs	757.0	537.9
Cancer	135.9	108.9
Chronic respiratory disease	102.7	52.4
CVDs and Diabetes	400.2	300.3

Table 2

Mortality profile due to accidents of a decade in India

Years	2002	2004	2006	2008	2010	2012
Total no. of accidental deaths	260122	277263	314704	342309	384649	394982
Estimated mid yr. Population (in lakhs)	10506	10856	11197.5	11531.3	11857.6	12133.7
Rate of accidental death	24.8	25.5	28.1	29.7	32.4	32.6

Table 3

Prevalence of selected NCDs in elderly population according to different studies in India

Studies	Cardiovascular diseases	Diabetes	Respiratory problems
Prakash et al (2004)	48	-	36
Chandwani et al (2009)	83.6	76.5	23.5
Kisore et al (2004)	41.4	-	36.8
Agarwal et al (2011)	28	3.7	32.7
Kumar et al (2012)	44.3	13.4	34.1
Purty et al (2006)	25.9	8.1	17.2
Singh et al (2012)	53.7	16.7	6.6
Khokhar et al (2001)	37.5	32	41.4

complications earlier which also can be said for other non communicable diseases (Park, 2005). Heart diseases, stroke and diabetes are projected to increase cumulatively, and India stands to lose 237 billion dollars during the decade 2005-2015 (Planning commission, 12th five year plan).

Risk factors for NCDs also posed as independent burden as they are the precursor of chronic diseases among them insufficient physical activities, smoking, drinking alcohol and obesity are major ones. Looking at their prevalence insufficient physical activity stands at 12.4%, daily smokers at 22.4% and heavy drinker at 1.3%. Prevalence of obesity has gone up significantly from 15% to 20.1% in males and 13.7% to 18% in females 2002 to 2010 (Patel, 2011).

3. IMPLICATIONS

NCDs not only hamper the health outcome but it also does the collateral damage like imposing economic burden, consumption health system, catastrophic effect on household income and individual. Figure 2 shows the causal pathway for socio economic impact of NCDs (Nikoliv, 2011).

According to Mahal et al. (2010) out of pocket expenditure in India for NCDs increased by more than 50% i.e. from 31.6% in 1995-96 to 47.3% in 2004 which was mostly due to medications, laboratory diagnostic tests and purchase of medical appliances. A study by Shobhana et al. (2000) Showed that out of pocket spending was about INR 5300 during hospitalization for diabetes. Being chronic disease NCDs increases the hospital stay which adversely affect the productive life years of the individual, income of individual and household, health care resources etc. This was quite evident by Engelgaul et al. (2012) which state that hospital stay due to NCDs increased the hospital stay from 32% to 40% between the years 1995 to 2004. Accidents and injuries are most common cause of out of pocket expenditure followed by CVDs. 846 billion INR were spent out of pocket in 2004 which amounts to 3.3% of gross domestic product (GDP) for that year. Share of household pocket expenses are nearly 50%, main source for which are savings,

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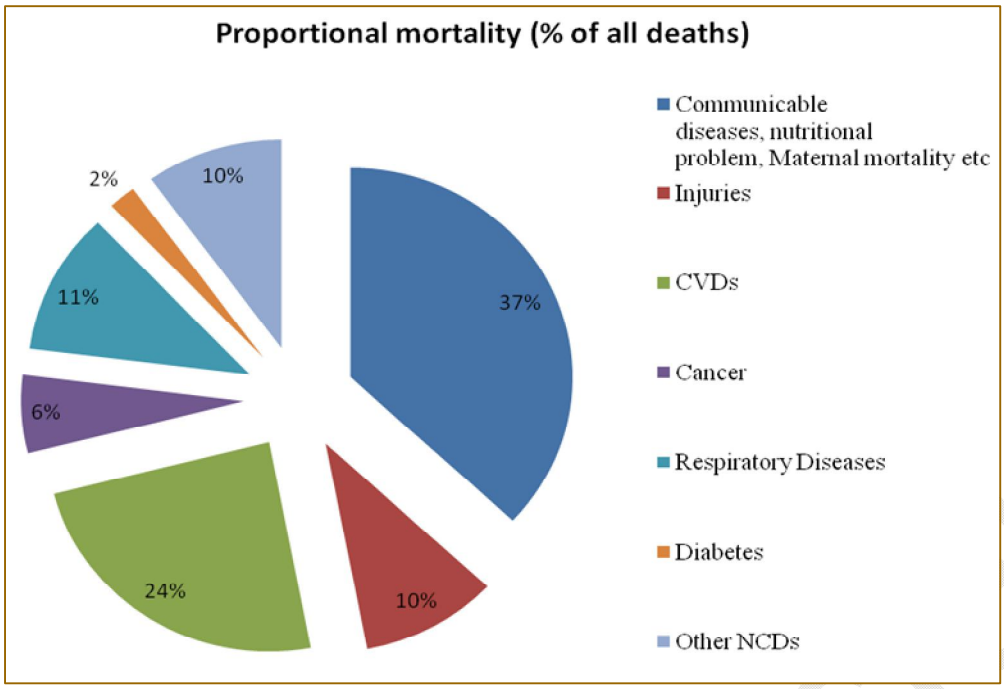

Figure 1

Proportional mortality (% of all death) due to NCDs in India

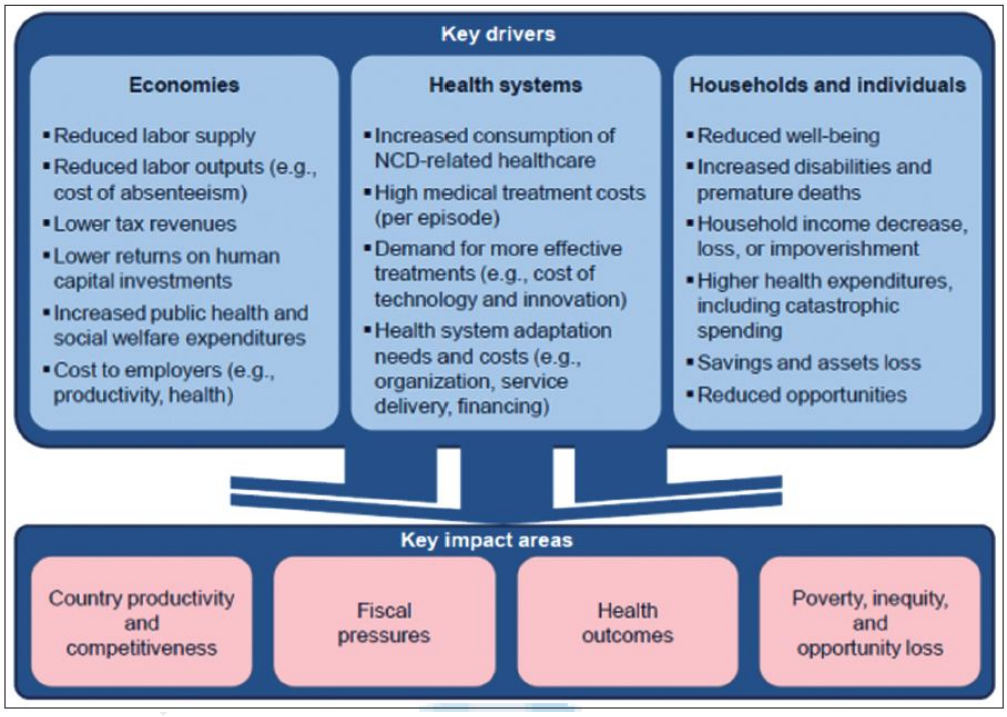

Figure 2

Causal pathway to socio-economic implication of non-communicable diseases

burrowing from relatives and sale of family assets. Rural poor are the worst hit by the NCDs as the cost for NCD represented a bigger portion i.e. almost double of the patient's share in household income than communicable disease (Binnendijk, 2012). It shows financial burden on household and individual which form a vicious cycle of poverty and ill health. Lack of public health facilities, inadequate infrastructure, and poor density of health workforce per 10,000 populations adds to the grave situation (Sharma, 2013).

4. PROGRESS BY INDIA TO CONTROL NCDS

4.1. Health programmes

- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS) with objective of prevention and control of NCDs through behaviour and life style changes, early diagnosis and treatment, capacity building at various level of health care, establishing palliative and rehabilitative care and human resource development (NPCDCS, Ministry of Health and Family Welfare)
- National program for ealth care for elderly (NPHCE, Ministry of Health and Family Welfare).
- National Rural Health Mission aims to integrate health promotion activities of NPCDCS.

4.2. Surveillance programs

- Integrated Disease Surveillance Program (IDSP) which mainly focuses non-communicable disease risk factors surveillance (ICMR, 2009)
- National Cancer Registry Program aims at finding out incidence and distribution of cancer in the country and consisting of both hospital based and population based cancer registry (ICMR, 2009).

4.3. Health system strengthening aimed at early detection of individuals at high risk of developing a chronic disease and those with early stage disease (Patel, 2011 & Srinath, 2005)

- National public health standards (2006) have been developed for chronic disease care in primary care.
- Medical officer's manual on prevention and control of cardiovascular disease, diabetes and stroke.

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Table 4

Some of the "Best buys" for NCDs

Risk factor/ Diseases	Interventions
Tobacco use	• Tax increases • Smoke-free indoor workplaces and public places • Health information and warnings • Bans on tobacco advertising, promotion and sponsorship
Harmful alcohol use	• Tax increases • Restricted access to retailed alcohol • Bans on alcohol advertising
Unhealthy diet & physical inactivity	• Reduced salt intake in food • Replacement of trans fat with polyunsaturated fat • Public awareness through mass media on diet and physical activity
CVDs and diabetes	• Counselling and multi-drug therapy for people with a high risk of developing heart attacks and strokes (including those with established CVD) • Treatment of heart attacks with aspirin
Cancer	• Hepatitis B immunization to prevent liver cancer (already scaled up) • Screening and treatment of pre-cancerous lesions to prevent cervical cancer

- Health workers guide with a flip chart for community awareness.
- India-specific physical activity guidelines.

4.4. Tobacco control

- Ban on tobacco use in Indian films and television programmes and ban on smoking in public places such as worksites, restaurants, bars, and all enclosed public spaces.

4.5. Areas yet get focus are

- Production and supply of healthy foods (i.e. fruits and vegetables)
- Regulation of unhealthy foods
- Urban planning to promote physical activity

5. WAY FORWARD

NCDs had surpassed communicable disease in term of mortality, morbidity and financial burden on the country. India has to prepare itself adequately to fight this war against NCDs. First: India has to place a surveillance or registration system to know the burden of NCDs exactly so that country can prioritize its actions. Second: India has to orient its health system towards prevention, screening and early interventions to reduce the existing burden. Focus on proper diet, exercise, change of life style and creating awareness among peoples for NCDs can provide an outcome effective and cost effective method so that economic burdens can be reduced. WHO has proposed certain interventions to cut out the economic burdens as shown in Table 4 (World Economic Forum, World Health Organization, 2011). In addition to this improved access to essential medicine, formulation treatment guideline and awareness among doctors can help to curb down the financial burden on India (Kotwani, 2010). Third: Need for multi-sectoral response is evident for NCDs which should include all the stakeholder ranging from global to local bodies. Fourth: Strong political will with policy level change is required to prioritize the programs and make more investment now when NCDs are in beginning phase so that future generation can breathe easy. Fifth: To improve health care facilities in number and its infrastructure, improve accesses and providing quality health care through public private partnership. Sixth: Use of evidence based approach and experience of other low or middle income countries can help in formulating new strategies to combat against NCDs (Reddy 2003). According to WHO, India has the capacity to tackle the rising burden of NCDs. It is reflected by different program that the country has started for non communicable diseases. India has a long way to go in term nationwide implementation of NCD programs which require strengthening the health facility infrastructure, man power and generating more resources and awareness.

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