Drug Abuse – A Holistic Approach

Drug abuse, also called substance abuse or chemical abuse, is a disorder that is characterised by a destructive pattern of using a substance that leads to significant problems or distress. Users are increasingly engaging in polydrug abuse, particularly narcotics, which are prescribed to relieve severe pain and stimulant medications, which treat conditions like attention deficit disorder and narcolepsy.

Long ago...

Initially, drug users were looked upon as those belonging to moral decay who warranted harsh punishment for the grave consequences of drug use. If one was not “man enough” to get away from addiction, it was firmly believed to be a disease like any other. In Alcoholics Anonymous, the pioneering work is to find a new organisation to order deeply into the reasons why a person fell into and subsequently lost control of himself in such usage.

In all that’s path-breaking studies helped change the very orientation. One therapist had about three alcoholic drug users (abusers), further with the advancement of means physiological science, more importantly after 1935, one, came to the conclusion that drug abuse is a chronic disease, could insinuate a person for his entire life and was ultimately curable by proper treatment. Thus, the disease of addiction was the much better understood than in the past. What was needed therefore, more than the sympathy towards such sufferers persons, a due recognition and systematic treatment approach for such cases.

Those could be akin to treating other health problems: like sugar-control or hypertension, to name a few.

Types of Drugs

Drugs that were put to wrong use are brown sugar (Its inferior version is heroin/morphine/igamaj and other such categories), and even alcohol which qualifies to fall under the drug category, for the reason that it is meant as a chemical in liquid form that is used to get high. These threaten society with points and other such common material could be called drugs. There could also be a case of drug abuse, where a medically prescribed medicine is consumed frequently, in increased quantity and violates the prescribed amount. Persons recognising this produces a sensation that “puts them up” and they therefore start using these consistently, not to its only needed as a medicine.

WHO Reports

The yearly report released by the body for WHO normally indicates an increase/decrease in pattern of drug use, whereas sometimes will it be more prevalent will be smoking tumor, at other times it could be methamphetamine. All these are to be seen as fluctuations in drug abuse, than anything else. There are many criteria to determine whether a person is addicted or not. These could include physical symptoms, emotional lapses to anti-social or gradual change in the family dynamics that lead to marked changes in social behaviour. The person exhibits the following signs and may also show general lack of interest and become a victim of sudden mood swings. Drug use can lead to mental health problems and drug use could become a habit with a sudden negative attitude. As a result, it would be better to leave this repetitious usage as a problem, where the user is fully aware of the consequences and is motivated by a desire primarily to stop the consumption of the drug in terms of quantity, frequency, and is inclined towards an irreversible urge towards drug use.

Vulnerability

Instead of looking at the causes for drug addiction per se, it is better to understand it as a vulnerability to addiction. That would be a better term. Genetic make-up plays a vital part in forming this habit, the family and friends around a person may serve as a deterrent or cause further usage of the drug(s), thereby increasing the positive expectancy that is to be
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India’s vision is to attain the level of health that will enable every individual to lead a social and economically productive life. The national rural health mission launched in 2005 is a right initiative in this direction.

Public health care infrastructure in India has made a remarkable and impressive development in the past six decades of Indian Planning. In fact mortality rate has fallen, Malaria has been controlled, small pox and Guinea worm have been completely eradicated Leprosy and Polio are nearing elimination.

Despite these achievements, 43 per cent malnutrition among under-5 children live in India and 38 per cent infants in India are underweight as compared to only 4 per cent in China.

Water sanitation remains a major problem. Data shows that 33.5 percent people get water from hand pump, 32 percent from treated source, 11.6 percent use tap water from untreated source, 11 percent use water directly from well and 11.9 percent people use water from other sources like pond, spring. This is not a very happy picture for the health scenario.

Acknowledging the gaps in health infrastructure and deficiencies in the health care system in rural areas the government conceptualized the National Rural Health Mission [NRHM] which is considered a milestone in the national health policy.

NRHM seeks to make a major course corrections to basic health care systems, decentralize the management of district health programs, integrate horizontal and vertical health and family welfare programs, strengthen organizational structure, and resources.

NRHM envisages to upgrade all Community Health Centers to Indian Public Health Standards.

Ironically, majority of the health infrastructure, medical manpower and other health resources are concentrated in urban areas where 27% of the population live. This is what NRHM is seeking to correct.

In this issue we discuss how the government policy in giving better health to all, especially in the villages is actually working on the ground.
India has built up gigantic rural health infrastructure and initiated huge number of rural health programmes and policies resulting in noticeable and significant achievements in the sphere of controlling leprosy, blindness, iodine deficiency disorder, rural health research and technology. Some of the legislations were enacted to protect life and personal liberty as the constitution holds the right to healthcare as a fundamental one. An analysis of the country’s approaches towards strengthening rural health care services since independence aptly shows an emphasis on decentralised service delivery is well-reflected in its focus on public health facilities operating at the lowest levels to serve the rural communities. Considering rural health care as a priority development-agenda numerous initiatives have been taken by the Government from time to time in last six decades.

A cursory view over the country’s current development scenario reveals that despite India’s recent dazzling economic growth, the issue of keeping rural India healthy still causes concern for the policy-makers and it is quite apparent from some of the prominent and basic rural health indicators like growing infant mortality rate, pitiable state of rural sanitation, prevalence of chronic diseases, unavailability of qualified and committed doctors in villages etc.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1943</td>
<td>The Health Survey and Development Committee, was constituted under the Chairmanship of Sir Joseph Bhore, was formulated on October 18, 1943 – which was assigned to document the prevailing health conditions in India and to recommend a comprehensive plan for the future.</td>
</tr>
<tr>
<td>1946</td>
<td>India was one of the first countries to recognize the merits of Primary Health Care (PHC) Approach. PHC was conceptualized in 1946, three decades before the Alma Ata declaration, when Sir Joseph Bhore made recommendations that formed the basis for organization of basic health services in India.</td>
</tr>
<tr>
<td>1951</td>
<td>India was the first country in the world to launch a family planning programme.</td>
</tr>
<tr>
<td>1952</td>
<td>The Community Development Programme was launched for the holistic and integrated development of rural India, which put a special focus on the issues of health and sanitation through establishment of primary health centre and sub-centres.</td>
</tr>
<tr>
<td>1953</td>
<td>National Malaria Control Programme (NMCP) was initiated; in 1958, NMCP was converted to the National Malaria Eradication Programme (NMEP) with a view to eradicate malaria from the country.</td>
</tr>
<tr>
<td>1955</td>
<td>The National Leprosy Control Programme was launched which was re-named as the National Leprosy Eradication Programme (NLEP) in 1983.</td>
</tr>
<tr>
<td>1961</td>
<td>Department of Family Planning created under Ministry of Health</td>
</tr>
<tr>
<td>1962</td>
<td>National Tuberculosis Control Programme (NTCP) was launched to control Tuberculosis</td>
</tr>
<tr>
<td>1967</td>
<td>The Jungalwalla Committee emphasised on integration of health services and focussed on “a service with a unified approach for all problems instead of a segmented approach for all different problems”.</td>
</tr>
<tr>
<td>1973</td>
<td>The Kartar Singh Committee laid down the norms for health workers. With an aim to ensure proper coverage of health services the committee proposed that one primary health centre should be established for every 50,000 population and each primary health centre to be divided into 16 sub-centres each for covering a population of 3,000 to 3,500. It was also suggested that each sub-centre need to be staffed by a team of one male and one female health worker and the work of 3-4 health workers to be supervised by one health assistant.</td>
</tr>
<tr>
<td>1975</td>
<td>The Shrivastav Committee on Medical Education and Support Manpower focussed on the referral services for strengthening health care system of the country</td>
</tr>
<tr>
<td>1976</td>
<td>National Programme for Control of Blindness (NPCB) was launched as a 100% Centrally Sponsored scheme with the goal to reduce the prevalence of blindness.</td>
</tr>
<tr>
<td>1977</td>
<td>Taking into consideration, the recommendations of the Shrivastava committee report, Rural Health Scheme was launched; with an aim to encourage community participation in rural health care system, the Community Health Volunteer-Village Health Guide Scheme was initiated</td>
</tr>
<tr>
<td>1978</td>
<td>The Alma Ata Declaration provided a dynamic insight into the understanding of primary health care</td>
</tr>
<tr>
<td>1983</td>
<td>The responsibility of the state to provide comprehensive primary health care to its people as envisaged by the Alma Ata Declaration led to the formulation of India’s first National Health Policy (NHP) with an aim to provide of universal, comprehensive primary health services across the nation;</td>
</tr>
<tr>
<td>1985</td>
<td>Universal Immunization Programme (UIP) was launched. Under the UIP, vaccines for six vaccine-preventable diseases (Tuberculosis, Diphtheria, Pertussis (whooping cough), Tetanus, Poliomyelitis, and Measles) were made available free of cost to all.</td>
</tr>
<tr>
<td>1987</td>
<td>The National AIDS Control Programme launched in 1987 to prevent HIV transmission; decrease the morbidity and mortality associated with the HIV infection and minimise the socio-economic impact resulting from the HIV infection</td>
</tr>
<tr>
<td>1992</td>
<td>Child Survival and Safe Motherhood Programme (CSSM) were launched.</td>
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<tr>
<td>1993</td>
<td>A national Iodine Deficiency Disorders (IDD) control programme was launched</td>
</tr>
<tr>
<td>1997</td>
<td>Launched of National Nutrition Policy for promoting nutritional status for its entire population</td>
</tr>
<tr>
<td>1997</td>
<td>Revised National TB Control Programme (RNTCP), which is an application to India of WHO recommended strategy of Directly Observed Treatment Short course (DOTS), was launched on 26 March 1997.</td>
</tr>
<tr>
<td>1997</td>
<td>Initiation of Reproductive and Child Health (RCH) programme to comprehensively integrates interventions that improve child health and address factors contributing to infant and under-five mortality.</td>
</tr>
</tbody>
</table>
some of the prominent and basic rural health indicators like growing infant mortality rate, pitiable state of rural sanitation, prevalence of chronic diseases, unavailability of qualified and committed doctors in villages etc. Although a wide range of cost-effective primary and secondary prevention strategies are available in rural India but their coverage is generally low. Much of the quality health care services for chronic diseases and illness are still being provided by the private hospitals and nursing-homes, which is quite expensive and in most of the situations appearing to be non-affordable for the rural poor. Sufficient evidence also exists to warrant immediate action to scale up interventions for chronic diseases and injuries through private and public sectors.

Keeping in view the prevailing rural health situation, it seems that concerted efforts are required towards making health services and facilities accessible and available to the people of rural India especially for the rural poor - through the regionalization of health services and minimizing inter and intra-state differences. There is a felt need for quality management and quality assurance in rural health care delivery system so as to make the same more effective, economical and accountable. No concerted effort has been made so far to prepare comprehensive standards for the Sub-centres. Though the Government is primarily responsible for public health care it alone cannot ensure basic health care services to the entire rural population. Engaging and encouraging more and more private sector through public-private partnerships can potentially strengthen human resources required for improving service-delivery in under-served rural areas. Simultaneously, the National Rural Health Mission must work towards building an integrated service as accepted by the Alma Ata declaration and that is possible only with strengthening of the PHC, referral systems, and linking up secondary hospitals with tertiary institutions. The over-emphasis on tertiary sector with hi-tech services for diseases of the rich must not be allowed to hijack the system. Attention is also needed on conducting study on need-assessment to identify the factors affecting the quality of service-delivery in health sector in collaboration with the local government, increase deployment of appropriate skilled health providers, especially at the primary health care level.

On the other hand, through culture-bound behaviour-change communication, delivered through several complementary channels, health messages need to reach every rural household repeatedly. Key themes should include family planning, antenatal care, promotion of institutional deliveries, breastfeeding, immunisation, complementary feeding, hygiene, and care seeking. So it may be concluded that the overall challenge for the Indian policy-makers is to find ways to make equitable, affordable and quality health care accessible to the rural population, especially the poor and the vulnerable sections of rural India.

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Good health status is an important contribution to economic development and contributes to rapid growth. Improvement in health status contributed in a great way to the economic growth rate in France and Great Britain. On the contrary diminished health status is one of the factors responsible for Africa’s low economic performance.

Health care in shambles

In India, despite rapid strides in socio-economic development, health and education, the widening economic, regional and gender disparities are posing challenges for the health sector. About 75 per cent of health infrastructure is concentrated in urban areas where only 27 per cent of the population lives. The health status of Indians, is still a cause of concern. This is reflected in the life expectancy (63 years), infant mortality rate (54/1000 live births), maternal mortality rate (254/100 000 live births); however, over a period of time some progress has been made.

### Demographic and socio-economic profile of India

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population (in crore)</td>
<td>1.21</td>
</tr>
<tr>
<td>Decadal Growth (%)</td>
<td>17.64</td>
</tr>
<tr>
<td>Crude Birth Rate</td>
<td>22.8</td>
</tr>
<tr>
<td>Crude Death Rate</td>
<td>7.4</td>
</tr>
<tr>
<td>Total Fertility Rate</td>
<td>2.7</td>
</tr>
<tr>
<td>Sex Ratio</td>
<td>940 females/1000 males</td>
</tr>
<tr>
<td>Population below Poverty line (%)</td>
<td>26.10</td>
</tr>
<tr>
<td>Schedule Caste population (in million)</td>
<td>166.64</td>
</tr>
<tr>
<td>Schedule Tribe population (in million)</td>
<td>84.33</td>
</tr>
<tr>
<td>Female Literacy Rate (%)</td>
<td>65.46</td>
</tr>
</tbody>
</table>

Almost all of India’s Five Year Plans and national health policies have lamented the shortage of doctors in the rural areas. According to the data given
in the Approach Paper of the Twelfth Plan, there is shortage of 2,433 doctors at PHCs (10.27 per cent of the required number); 11,361 specialists at CHCs (62.6 per cent of the required number); and 13,683 nurses at PHCs and CHCs combined (i.e., 24.69 per cent of the required number). In addition 7,655 Pharmacists and 14,225 Laboratory Technicians are needed at PHCs & CHCs (27.13 per cent and 50.42 per cent of the required number) in the country. India is the largest supplier of medical graduates to the United States and the United Kingdom. Yet, its own rural areas have remained chronically deprived of professional doctors.

**Twelfth Plan outlook towards health care**

The role of health care in economic development has received increasing attention in recent years. Health care can be focused primarily on four growth channels: (a) health and labour, (b) health and education, (c) health and saving and (d) health and labour productivity. Investment in man and health care plays a significant role in fostering economic growth. It is, therefore, in the fitness of things that the Approach Paper of the Twelfth Five-Year Plan, whose central theme is “sustainable and inclusive growth”, has presented a comprehensive programme for the sector, aiming at to provide broad-based health care in rural areas. The Approach Paper’s visions of health care are:

- Decrease the infant mortality rate and maternal mortality rate.
- Provide access to public health services for every citizen.
- Prevent and control communicable and non-communicable diseases.
- Improving child sex ratio for age group 0-6 years.
- Control population as well as ensure gender and demographic balance.

**Status of public health in India**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public health expenditure in India has declined from 1.3 per cent of GDP in 1990 to 0.9 per cent of GDP in 2009.</td>
<td></td>
</tr>
<tr>
<td>The Union budgetary allocation for health is 1.3 per cent while the State’s budgetary allocation is 5.5 per cent.</td>
<td></td>
</tr>
<tr>
<td>Union Government contribution to public health expenditure is 15 per cent while States contribution about 85 per cent.</td>
<td></td>
</tr>
<tr>
<td>Maternal Mortality Rate is 254 per 100,000 live births (2006) based on estimates of Registrar General of India.</td>
<td></td>
</tr>
<tr>
<td>Infant Mortality Rate is 54 per 1,000 (2007) as per Sample Registration System.</td>
<td></td>
</tr>
<tr>
<td>Total Fertility Rate is 2.7 (2007) estimated by Sample Registration System.</td>
<td></td>
</tr>
<tr>
<td>Lack of community ownership of public health programmes impacts levels of efficiency, accountability and effectiveness.</td>
<td></td>
</tr>
<tr>
<td>Lack of integration of sanitation, hygiene, nutrition and drinking water issues.</td>
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</tr>
<tr>
<td>There are striking regional inequalities.</td>
<td></td>
</tr>
<tr>
<td>Population stabilization is still a challenge, especially in States with weak demographic indicators.</td>
<td></td>
</tr>
<tr>
<td>Only 10 per cent Indian has some form of health insurance, mostly inadequate.</td>
<td></td>
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<tr>
<td>Hospitalized Indians spend on an average 58 per cent of their total annual expenditure.</td>
<td></td>
</tr>
<tr>
<td>Over 40 per cent of hospitalized Indians borrow heavily or sell assets to cover expenses.</td>
<td></td>
</tr>
<tr>
<td>Over 25 per cent of hospitalized Indians fall below poverty line because of hospital expenses.</td>
<td></td>
</tr>
<tr>
<td>Lack of capital investment in health for prolonged period of time.</td>
<td></td>
</tr>
<tr>
<td>Ensuring delivery of safe drugs is a major challenge.</td>
<td></td>
</tr>
<tr>
<td>Lack of human resources is responsible for inadequate provision of health services, especially in rural areas.</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Issues of SRS Bulletin
Encourage a healthy lifestyle and alternative systems of medicine through.

Clean drinking water, sanitation and better nutrition, childcare, etc.

Expenditure on health by Centre and States to increase from 1.3 per cent of GDP to at least 2.0 per cent, and perhaps 2.5 per cent of GDP by end of 12th Plan.

Need targeted approach to increase seats in medical colleges, nursing colleges and other licensed health professionals.

Improve quality of NRHM services vs. quantity of NRHM infrastructure.

Role of PPP in secondary and tertiary healthcare must be expanded.

Health insurance cover should be expanded to all disadvantaged groups.

Focus on women and children; ICDS needs to be revamped.

Health economics

Health economics relates to the issues of health and health care. According to 2001 Census, around 30 percent of the population is below 14 years and only 5 percent of the population is above 65 years. Hence, the balance of 65 percent of the population is aged between 15 and 65 and a certain segment will be growing old in the next two decades. India as a country that depends more on its human resources to excel in many streams can make it possible only if the resources are kept healthy. To be precise, economics has taken the centre stage and there is a need for integrating more of economics with health sector by increasing the focus on economics and behavioural economics, etc.

Healthy labour force increases the participation ratio as well as hours worked. To reap the benefit of education, children must have a sound health. On the other hand medical expenses deplete savings and investment in the education of children. The reduced earning potential of individuals ultimately affects national income. According to Adam Smith, “productivity of labour can only enhance nation’s wealth” and health is the most prominent factor in determining labour productivity. Individual in good health may be able to produce more per hour worked with an efficient use of machinery and technology. They are also flexible and adoptable to change. On the other hand, health condition can set off a downward spiral, causing poverty further ill health and an inability to afford treatment.

If every human being is treated as a stock in the human capital, than even a day’s loss of productivity will certainly impact the value of the stock and hence the human capital and productivity. Health pushes many a families in the unorganized sector to below the poverty line status. Over 25 percent of hospitalized Indians fall below poverty line because of hospital expenses and hence health is a major cause of indebtedness, particularly in rural areas. While many of the people in the organized sector have some form of backing in the form of paid leaves, group coverage, etc., the people in the informal sector do not enjoy such privileges. The delay in treatment impacts these people in two ways: (a) capital erosion as their work is mostly semi-skilled or unskilled and depends on their physical health, (b) business continuity, the ability to continue in the business.

Some observations

The Indian economy will continue to be one of the fastest growing economies in the world. However, growth is not enough. What India is needs is growth with equity, especially growth with sustainable livelihood opportunities. In view of the obvious deficiencies in India’s overall rural infrastructure, it is unlikely that the rural areas will have a sufficient number of doctors over the next several decades. Thus, the solution to India’s doctor shortages does not lie in building more medical colleges. A better alternative would be that India must upgrade the skills of existing unlicensed rural practitioners and empower government nurses and pharmacists to take additional tasks. An alternative to the Indian Medical Council Act is the Drugs and Cosmetics Act that empowers States to recognize practitioners other than MBBS-holders to provide a limited range of medical care services.

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In any country the state of health is measured in terms of life expectancy, mortality rate, fertility rate and many more. But it can’t be ignored that all these indicators of health are dependent on other factors like per capita income, nutrition, sanitation, safe drinking water, social infrastructure, medical care facilities, employment status, poverty, etc which impact the health of every individual. There is direct relationship between health and development. While health contributes to economic development; economic development improves the health status of the population in a country. As investment on health increases, the productive capacity of the working population increases leading to rise in income levels resulting in reduction of poverty.

Health may be a state responsibility but the central government does contribute through grants and other schemes by sponsoring the health missions. The public health sector consists of central government, state government and local bodies. The National Health Policy has three tier structures comprising the primary, secondary and tertiary health services. The primary tier consists of Sub-Centre (SC) for a population of 3000-5000, Primary Health Centre (PHC) for a population of 20,000-30,000 and Community Health Centre (CHC) as referral centre for every four PHCs covering a population of 80,000-1,20,000. All the district hospitals have to function as the secondary tier for rural health care and the tertiary health care was to be provided by health care institutions in urban
areas which are well equipped with sophisticated diagnostic and investigative facilities. As per the annual report released in December 2011 (as on March 2010) by the Ministry of Health and Social Welfare, for the information to the general public, there were 147068 Sub Centres, 23673 Primary Health Centres and 4535 Community Health Centres functioning in the country in addition to 1579 District Hospitals to ensure availability of quality healthcare on equitable, accessible and affordable basis across the regions and communities with special focus on under-served population and marginalised groups.

Based on the learning from various studies, few issues are being discussed regarding the health scenario in India.

**Progress of Health Status in India**

To achieve the objectives of the Department of Health and Family Welfare i.e. universal access to primary health care services for all sections of society, improving maternal and child health, focussing on population stabilization, developing human resources for health to achieve health goals, reducing overall diseases of the society, etc. few indicators were identified and their progress have been made available. Here are some facts:

It is revealed from the health status given in table that around 69% of population lives in rural areas thus making it an important sector for policy makers. When it comes to sex ratio, there is slight improvement in comparison to 2001 data but the child sex ratio has decreased to 914 in 2011 from 927 in 2001 which is some cause of concern for the government. Haryana, Punjab and J&K are the states at the lowest bottom measuring 830, 846 and 859 girls per thousand boys which is the most

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Outcome achieved 2010-11</th>
<th>Outcome achieved 2011-12</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td></td>
<td></td>
<td>1.21 crore  83.3 crore (68.84%) living in rural and 37.7 (31.16%) living in urban areas</td>
</tr>
<tr>
<td>Sex ratio</td>
<td>940 per 1000 person</td>
<td></td>
<td>933 per 1000 person in 2001</td>
</tr>
<tr>
<td>Child sex ratio</td>
<td>914 per 1000 boys</td>
<td></td>
<td>927 per 1000 boys in 2001</td>
</tr>
<tr>
<td>Life expectancy at birth</td>
<td>49.7 years in 1970-75</td>
<td></td>
<td>63.5 years in 2004-06</td>
</tr>
<tr>
<td>Crude birth rate</td>
<td>22.1 per 1000 population</td>
<td>29.5 in 1991</td>
<td>Rural: 23.7  Urban: 18.0</td>
</tr>
<tr>
<td>Crude death rate</td>
<td>7.2 per 1000 population</td>
<td>7.1 per 1000</td>
<td>Rural: 7.7  Urban: 5.8</td>
</tr>
<tr>
<td>Improvement in maternal health</td>
<td>78.5%</td>
<td>79%</td>
<td></td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>47 per 1000</td>
<td>43 per 1000</td>
<td>Rural: 51  Urban: 31</td>
</tr>
<tr>
<td>Child mortality rate (0-4yrs)</td>
<td>13.3 per 1000</td>
<td>26.5 in 1991</td>
<td>Rural: 14.9  Urban: 7.8</td>
</tr>
<tr>
<td>Reduction in growth of population</td>
<td>2.5 children born per woman</td>
<td>2.4 children born per woman</td>
<td></td>
</tr>
<tr>
<td>Development of human resource</td>
<td>0.074 number of doctors per 1000 population</td>
<td>0.075 number of doctors per 1000 population</td>
<td></td>
</tr>
<tr>
<td>Average number of PHCs per district</td>
<td>36.99</td>
<td>36.99</td>
<td>37.45 projected in 2012-13</td>
</tr>
<tr>
<td>Average number of PHCs per 1000 population</td>
<td>0.0201</td>
<td>0.0201</td>
<td>0.020 projected in 2012-13</td>
</tr>
</tbody>
</table>

*Source: Results Framework Documents, Ministry of Health and Family Welfare, 2012-13*
adverse child ratio in the country. The differences in life expectancy at birth may be due to varying conditions of rural-urban places, different income level and socio-economic conditions (highest in Kerala-74 and lowest in Bihar 58-61 yrs). Crude birth rate is also showing some improvement to 22.1 (2010) from 29.5 in 1991 per thousand population but this rate is higher in rural areas (23.7) in comparison to urban areas (18.0).

Crude birth rate and crude death rate both have shown some improvement but in both the cases rural areas are lagging behind urban areas. There is slight improvement in maternal health as well as infant mortality rate from the previous years but in rural areas the infant mortality rate again higher (51) in comparison to urban areas (31). Child (0-4 yrs) mortality rate has also shown improvement but again rural areas (14.9) are lagging behind urban areas (7.8), may be because of the low literacy rate and for want of male child in rural areas. Because of the education women have shown some reduction in growth of population which has come down to 2.4 from 2.5 children per women. It is revealed from the report data that most of the indicators have improvement but the cause of concern is that rural areas are lagging behind urban areas in almost all the sectors. Government may be doing much for the rural areas but more need to be done so that the rural areas can be brought at par with the urban areas.

Interventions of the Government

With the launch of the National Rural Health Mission on 12th April 2005, the Ministry of Health and Family Welfare has initiated a number of plans. Few of them are discussed as under:

Janani Suraksha Yojana

This scheme encourages women to use public health services for safe delivery by providing Rs. 1400 to cover travel cost and other expenses in rural areas of low performing states. It also provides cash incentives to female community health workers for promoting safe care in pregnancy and facilitating access to institutional care. This scheme has given motivation to number of pregnant women to have delivery at institutions the safety of the mother and child both. More than 8 lakhs women have been trained to be deployed as ASHAs at village level directly accountable to the panchayats. These ASHAs have contributed significantly in promoting this JSY scheme and institutional delivery in rural areas.

Janani-Shishu Suraksha Karyakaram

This is the new scheme launched by the government for providing better health services to the mother and child. Under this scheme all women delivering in public health institutions will have absolutely free of cost services including medicines, food, diagnostic, free transport from home and back and even blood if required. This scheme is estimated to benefit nearly 12 million women and expected to motivate even those pregnant women who opt for home delivery. This scheme is likely to improve the infant mortality rate in the coming days through proper child care practices and nutrition. As per the annual report 2012-13 by Ministry of Health and Family Welfare, 293 special born care units, 1124 new born stabilisation units and 8582 new born care corners have been set up so far in different parts of the rural India.

Operationalisation of 24x7 facility at PHCs

Under the NRHM scheme to provide round the clock service to the mother and child all the primary health centres have been operationalised on 24 hrs basis with all the facilities like new born corners, delivery services with the presence of medical officer and nursing assistants so that immediate care can be provided to the pregnant women in need. It has been observed time to time
that due to non-availability of transport facilities the pregnant women are unable to reach and avail emergency services resulting in maternal death, by keeping this in mind and providing speedy and urgent health care to the provision of patent transport services have been started.

**Village Health and Sanitation Committee**

Village Health and Sanitation Committee comprises a Panchayat member, civil society representative, Anganwadi worker, and Auxiliary Nurse Midwife. This committee is expected to prepare village level health action plan and grants to this committee are given through NRHM to meet local health needs of the villages including maintenance needs of the Sub-centres. This scheme is likely to get succeed as it involves most of the local workers headed by the village Sarpanch who are well aware of the local needs of the village community. When it comes to sanitation programme ‘Nirmal Gram’ yojna has been started weekly aim at defecation free village with all houses, schools, anganwadis and other community centres. But the need of the hour is that community is to be educated for the use and maintenance of those toilets to have good sanitation and clean environment. However only 25% of the villages have achieved the status of the ‘Nirmal Gram’ out of 2.5 lakh gram panchayats.

**Mother Child Health Tracking System – A Case of Rural Haryana**

Under the aegis of the National Health Rural Mission the government of Haryana has started a program “Mother Child Health Tracking System”. The prime objective of this mission is to keep a track on sex ratio in the state and to decrease the mortality rate of mother and child both. To avail the facilities every mother need to register themselves at Central Health Centres (CHC) or Primary Health Centre (PHC). All the registered mothers are being provided information through Short Service Messages (SMSs) not only about their vaccination but about the type of diets they are supposed to take during and after the pregnancy. As reported 12058 pregnant women and 9058 newly born babies exclusively from district Mahendergarh have been registered by 6th April 2012.

Under this scheme all the pregnant women who come for delivery to CHCs or PHCs are being registered on the spot through the software which is connected to Headquarters at Panchkula. The officer sitting in their offices can contact the individuals to find out the status of services being provided by the CHCs or PHCs. It is well known that district Mahendergarh is at the bottom in sex ratio in Haryana and this mission is expected to control this rate in the near future.

**Conclusion**

Under the NRHM scheme there is no dearth of plans and facilities provided by the governments but the need of the hour is that all these plans be implemented with honesty for the welfare of the people. Availability of data shows some improvement in almost all the sectors. Nutrition, safe drinking water and sanitation and education are the most important determinants of health status of any country, unluckily our country is lagging in all these areas as the data shows. All these factors are closely related to poverty and marginalisation. It is well understood that poor performing states are those states which are highest in poverty, malnutrition, low literacy rate, poor water and sanitation facilities. It is the urgent need to come out of all these deficiencies we have in our country with more and more efforts not only at government level but by the public itself.

*(Dr. Ajai Pal Sharma is Assistant Professor in the Department of Management, School of Law, Governance, Public Policy and Management, Central University of Haryana, Jant-Pali Villages-Mahendergarh, e-mail: ajaipalsharma@gmail.com)*
The Government since independence, recognizing that [i] the protection of people’s health is its primary obligation and duty to its citizens and [ii] the major causes of ill health among the poor are their ignorance, financial inability to pay, apathy and lack of access to medical services, assigned priority to health, among other basic needs, in successive Five Year Plans. The National Health Policy 2002 reaffirms to provide prophylactic and curative health care services and aims at achieving acceptable standards of good health for all people by increasing their access to the decentralized public health system. The Prime Minister Manmohan Singh has also emphasized ‘a determined effort to strengthen our public health systems’.

NRHM: Acknowledging the considerable gaps in health infrastructure and deficiencies in the health care system in rural areas the Government conceptualized National Rural Health Mission [NRHM] which the Prime Minister launched on April 12, 2005. The NRHM mandates to ‘provide effective health care to rural population, especially women and children, with special focus on 18 States which have weak public health indicators’.

This article reviews the performance of NRHM in the context of its objectives, guaranteed services and targets and suggests measures to improve the performance to meet India’s commitment to the United Nation’s Millennium Development Goals [UNMDG] by 2015.

NRHM aims at significantly improving the health care system in rural areas and minimizing imbalances between urban and rural areas through provision of universal access to affordable, equitable and of good quality health care which rural households desire, deserve and demand. To accomplish this, NRHM seeks to make architectural corrections to basic health care systems, decentralize the management of district health programs, integrate horizontal and vertical health and family...
welfare programs, strengthen organizational structure, pool resources, optimize human resources and encourage community participation, partnership and ownership of health and health care delivery. It has clearly defined objectives, viz. [i] Reduction in child and maternal mortality [ii] Access to integrated comprehensive primary health care services and universal immunization [iii] Prevention and control of communicable and non-communicable diseases etc. NRHM guarantees provision of skilled attendance at all births, emergency Obstetric care, basic neonatal care for new born, and full coverage of services related to patient treatment of childhood and maternal diseases, blindness, leprosy, tuberculosis, vector borne diseases, full coverage of secondary care services at sub-district and district hospitals, and health education and preventive health measures.

At Community level NRHM ensures [i] Availability of trained community level worker at village level, with a drug kit for generic ailments [ii] Observing Health Day at Aanganwadi level on a fixed day/month for immunization, ante/post natal checkups, mother and child health care services including nutrition [iii] Availability of generic drugs for common ailments at sub- centers and hospitals [iv] Access to hospital care through assured availability of doctors, drugs and quality services at PHC/CHC and assured referral-transport-communication systems to avail these facilities in time. Improved access to universal immunization through induction of Auto Disabled Syringes and alternate vaccine delivery [v] Improved facilities for institutional deliveries through provision of referral transport, escort and improved hospital care subsidized under the Janani Surakshya Yojana for the BPL families [vi] Improved outreach services to medically under-served remote areas through mobile medical units [vii] Increase awareness about preventive health including nutrition

**Targets:** NRH aims to upgrade all Community Health Centers to Indian Public Health Standards, engage 4,00,000 female Accredited Social Health Activists (ASHAs) and increase in utilization of First Referral units from bed occupancy by referred cases of less than 20% to over 75%. These, _inter alia_, would help NRHM achieve by March 2012 [i] Reduction in Infant Mortality Rate [IMR] to 30 per 1000 live births, Maternal Mortality Rate [MMR] to 100 per 100,000 live births, Total Fertility Rate [TFR] to 2.1 [ii] Malaria Mortality Reduction Rate [50% upto 2010, additional 10% by 2012], Kala Azar Mortality Reduction Rate [100% by 2010 and sustaining elimination until2012], Filaria/ Microfilaria Reduction Rate [70% by 2010, 80% by 2012 and elimination by2015] and Dengue Mortality Reduction Rate[ 50% by 2010 and sustaining at that level until2012][iii] Cataract operations [increasing to 46 lakhs until 2012][iv] Leprosy Prevalence Reduction Rate from 1.8 per 10,000 in 2005 to less than 1 per10,000 thereafter [v] Tuberculosis DOTS series [maintain 85% cure rate through entire Mission Period and also sustain planned case detection rate]

**Commitment by States:** NRHM attempts to reform the health sector through restructuring health delivery system and developing better health financing mechanisms, among others. As health is a State subject, States have a significant role in areas viz. [i] to decentralize planning and implementation arrangements and to formulate community owned District Health Action Plans [ii] to strengthen health institutions [SHCs/PHCs/CHCs/ Taluk/District Hospitals] and provide adequate staff to respond favorably and on time the needs of rural people to significantly minimize the incidences and consequences of diseases [TB, Malaria, HIV/AIDS, Filaria, Leprosy etc.] [iii] to devolve sufficient administrative and financial powers to the PRIs to facilitate the decentralization process to deliver results [iv] to increase expenditure on health sector by at least 10% annually over the Mission period.

The NRHM provides an overarching umbrella to the existing 18 health and family welfare programs. The effort is to integrate all vertical programs and bring under the District Health Society at district level and State Health Society at State level.

**Funding:** Public spending on health in India [around 1.2% of GDP] is amongst the lowest in the world, whereas more than Rs.100,000 crore are
being spent annually as household expenditure on health, which is around three times the public expenditure on health. Private sector health care being unregulated significantly increases the cost of health care and makes it unaffordable for the rural poor. Funding under NRHM significantly increased from Rs.27,700 crore in 2004-05 to 39,000 crore in 2005-06 [from 0.95% of GDP to 1.05%]. The allocation under NRHM progressively increased from Rs.14,702.76 crore in 2009-10 to Rs.14,988.02 crore in 2010-11, to Rs.18,115 crore in 2011-12 and further significantly to Rs.20,822 crore in 2012-13.

The 65th World Health Assembly of the WHO adopted the concept of Universal Health Coverage [UHC] as a citizen’s right in 2005, which implies, inter alia, that reforms in health sector must aim at improving the public hospital system, raising the quality of care, creating benchmarks, and introducing transparent regulatory processes. Acknowledging this the Planning Commission established the High Level Expert Group [HLEG] to address, inter alia, issues of rising costs of private care and insurance payments that few can afford. The HLEG has suggested comprehensive framework and developed investment plan to attain UHC by 2020 and to help every citizen access to a national health package of essential primary, secondary and tertiary care, both inpatient and outpatient. Services must be tax funded and cashless at delivery. User fees are to be abolished since they are inefficient, inadequate and iniquitous. India has already pledged more funding by increasing budgetary allocation and raising funds from other sources.

**Manpower:** As on September 2011, the NRHM [i] added over 1,40,000 staff which include 11,712 doctors and specialists, 10,851 AYUSH doctors, 66,784 auxiliary nurse midwives, 32,860 staff nurses and 14,434 paramedics and AYUSH paramedics [ii] selected 8,55,000 ASHAs out of which 8,07,000 received orientation training and are already engaged [iii] provided 7,41,000 ASHAs with drug kits [iv] provided each village one ASHA per 1000 population.

**Centers:** As on March 2010, NRHM had functioning 1,47,069 Sub-centers [SCs], 30,431 PHCs and 4,535 Community Health Centers [CHCs]. During 2005-12, 14,676 [48.23%] PHCs are converted into viable 24/7 facilities at least for Reproductive and Child Care against target of all existing PHCs. High focus States account for 35%. Further, 442 districts are equipped with mobile medical units.

**Committees:** At the village level, Village Health, Sanitation and Nutrition Committees [VHSNCs] are constituted to create awareness about disease prevention and popularize preventive measures. Already 4,96,338 VHSNCs are constituted. Each VHSNC is annually provided Rs.10,000. States are also provided funds for capacity building and training VHSNC members.

**Health Indicators:** NRHM improved health indicators modestly, viz. [i] MMR declined from 301 to 212 per 100,000 live births between 2003 and 2009. Seven high focus States accounting for almost 75% of all maternal deaths, still have 39% shortfall of the minimum international norms for access to emergency obstetric care. [ii] Institutional deliveries increased from 39% to 78% between 2006 and 2009. [iii] IMR declined from 58 infant deaths per 1000 live births to 47 in five years against targeted five per year [iv] The 18 focus States had wide gaps between achievements and targets for MMR and TFR reduction [v] Emergency Response and patient transport systems which were negligible in 2005 increased to about 7,000 ambulances in 23 States and linked to centralized round-the-clock call centers to reach the emergency call location within 40 minutes, even in rural areas [vi] Beneficiaries under Janani Suraksha Yojana increased from 90.37 lakh to 106.96 lakh between 2008-09 and 2010-11.

Following Table exhibits modest improvement in selected health indicators at national level. However, significant improvement has to be made among districts and States to achieve India’s commitment to UNMDGs by 2015, particularly in rural areas.
Table 1: Selected Health Indicators

<table>
<thead>
<tr>
<th>Parameters</th>
<th>1981</th>
<th>1991</th>
<th>Current level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Birth Rate per 1000 population</td>
<td>33.9</td>
<td>29.5</td>
<td>22.1 [2010]</td>
</tr>
<tr>
<td>Crude Death Rate per 1000 population</td>
<td>12.5</td>
<td>9.8</td>
<td>7.2 [2010]</td>
</tr>
<tr>
<td>Total Fertility Rate per Woman</td>
<td>4.5</td>
<td>3.6</td>
<td>2.6 [2009]</td>
</tr>
<tr>
<td>Maternal Mortality Rate per 100,000 lives</td>
<td>NA</td>
<td>NA</td>
<td>212 [2009]</td>
</tr>
<tr>
<td>Infant Mortality Rate per 1000 live births</td>
<td>110</td>
<td>80</td>
<td>47 [2010]</td>
</tr>
<tr>
<td>Child [0-4 years] Mortality Rate per 1000</td>
<td>41.2</td>
<td>26.5</td>
<td>14.1 [2009]</td>
</tr>
</tbody>
</table>

Many States and districts show dismal performance as compared to satisfactory performance by only a few States and districts. For example, health indicators in the following Table reveal States of Bihar and Uttar Pradesh lagging much behind Andhra Pradesh and Tamil Nadu.

The HUNGaMA Survey [2011] on Hunger and Malnutrition in 100 focused districts in six States of Bihar, Jharkhand, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh reveals [i] 42% children under five are underweight and 59% are stunted, of which half are severely stunted [ii] malnutrition is significantly higher among children from low-income families. Children from Muslim, SCs and STs generally have worse nutrition indicators [iii] 92% mothers had never heard the word ‘malnutrition’ [iv] 51% mothers did not give colostrum to the new born soon after birth and 58% mothers fed water to their infants before six months [v] 11% mothers reported using soap to wash hands before a meal and 19% after a visit to the toilet [vi] while 86% mothers accessed Anganwadi centers for immunization only 19% mothers reported Anganwadi centers counseling to parents despite 96% villages having Anganwadi centers of which 61% having pucca building.

The Lancet Medical Journal revealed that in 2010, India with four other countries accounted for 50% of the estimated number of global deaths due to eight main preventable infectious diseases in children younger than five years. In 2010 India recorded nearly 1.7 million estimated deaths. Pneumonia and diarrhea caused about 4,00,000 and 2,10,000 deaths respectively. In India, pneumonia and diarrhea were responsible for about 1,43,000 and 19,000 deaths respectively in neonates [less than 28 days old] and nearly 2,54,000 and 1,93,000 deaths of children aged 1-59 months respectively. The Lancet study of November 2010 revealed no significant improvements during 2005-10. A majority of rural people have unsatisfactory hygiene and have no access to safe drinking water and sanitation. A recent UNICEF report says in India 638 million people [54%] defecate in the open as against just 7% each in Brazil and Bangladesh. In India only 6% rural children below five years used toilets and about 50% of all Indians did not regularly wash their hands with soap after contact with excreta. Washing hands can reduce impact of diarrhea by over 40% and of respiratory infections including pneumonia by 30%. Global Hand Washing Day initiated in 2008 to create awareness should be a continuous process, not just for one day.

**Shortcomings:** The Mission Steering Group of the NRHM has, *inter alia*, identified many shortcomings in the public health delivery system, viz. [i] poor upkeep and maintenance [ii] dilapidated infrastructure and inadequate supply of drugs and equipment [iii] unacceptable level of employee absenteeism, 40% nation-wide average [iv] some States are not deploying additional funds and resources [v] fund utilization in many States is around 70% [vi] despite elaborate institutional network of facilities, only 20% of those seeking outdoor treatment avail public services [vii] many medical officers visit

A recent UNICEF report says in India 638 million people [54%] defecate in the open as against just 7% each in Brazil and Bangladesh. In India only 6% rural children below five years used toilets and about 50% of all Indians did not regularly wash their hands with soap after contact with excreta.
PHCs infrequently and practice privately in nearby towns [viii] ANMs are frequently unavailable to attend child births despite mother’s willingness to come to PHC. [viii] most PHCs charge a fee to poor though PHCs have to provide free services,

There is need to initiate following measures to significantly improve performance.

**Awareness campaigns:** Awareness has necessarily to be created among the staff at all levels to precisely understand the deteriorating health status in India as sharply brought out by international and national studies. The staff should have serious concern and demonstrate their commitment to respond favorably and instantly to the needs of rural households and women in particular that can boost country’s image.

Through systematic campaigns on a continuing basis PRIs, staff and NGOs at village level should create awareness among rural people of all age groups about various types of health facilities available. Print and electronic media have a significant role and responsibility to create awareness and facilitate bridging the gaps between the demand and supply of health services.

**Training:** Since many ASHAs in tribal, hilly and backward regions may not have educational qualifications required to perform responsibilities under NRHM they need to be trained frequently for capacity building and performance monitored.

**Review:** At the district and State level quarterly review of implementation must focus on correcting district and State-wise imbalances, achieving integration and convergence of different programs, adequate funding to bridge gaps in infrastructure and inculcating patient-friendly attitude in staff.

**Monitoring :** Right to health is recognized as an inalienable right of all citizens as incorporated in the relevant rulings by the Supreme Court as well as the International Conventions to which India is a signatory. As rights convey guaranteed entitlement to the citizens, the monitoring authority has to ensure their compliance. Since decentralized planning, preparation of district health plans, community ownership of the health delivery system and inter-sectoral convergence are the core elements for effective implementation of NRHM, the Community and the Patient Welfare Committees should monitor the performance on these parameters annually. Health Monitoring and Planning Committees formed at PHC, Block, District and State levels should monitor quarterly community based activities at respective levels. Monitoring periodic public hearings and grievance redressal system should make health service providers accountable to the community and beneficiaries. Organizing periodic independent household and facility surveys can identify gaps in the planning and implementation of NRHM to provide quality health services. Supervision Missions should help achieve targets district-wise. An IT based MIS can be developed for rigorous monitoring the performance of all activities.

**Community empowerment:** Experience suggests that rural communities suffer denial to access healthcare in many respects, viz. [i] treatment not given or patient not attended on time; insulting or discriminatory behavior of staff; inadequate attention given to the patient [ii] non-availability of staff (doctor or nurse), medicines, essential equipment/ infrastructure, transport facility for referring the patient outside for investigations [iii] charges more than specified; denial on grounds of inability to pay user fees. Consequences of denial are serious, sometimes resulting in death of the patient, adverse health consequences, temporary or permanent physical damage or disability; financial loss to patient and the family. Community empowerment is, therefore, a *sine qua non* to guarantee individual’s right to health care by putting community pressure on health providers. PRIs, Community based organizations, NGOs, Civil Societies, Self-Help Groups etc. should be empowered to demand quality public health services and make service providers accountable. Women members of Bank supported 69.53 lakh SHGs should be empowered to demand health services from SCs/PHCs/CSs and their grievances must be redressed.

*The author is Mumbai-based Consultant in Rural Studies & Rural Development*. 
In a contemporary civilized society primary health care would play a significant role in promoting effective human development and is the backbone of the Indian health system. Right to health is a part of Right to Life incorporated under article 21 of the Fundamental Rights of Indian Constitution. Health being a state subject, is the responsibility of the state government to ensure good and effective medicare facility to the rural poor.

The Common Minimum Programme (CMP) of the United Progressive Alliance (UPA) Government in 2004 committed that the total expenditure on health by the centre and the state governments would be raised to between 2 to 3 percent. While there is a substantial rise in the out lay on health and family welfare in the eleventh plan to Rs. 1,40,135 crores from Rs. 58,920 crores in the tenth plan the allocation still remains way below the level required to meet the common minimum programme commitment by the UPA Government.

The analysis on health reveals that the total health expenditure amounted to 5.2 percent of the GDP at a factor cost. It shows the share of the government in total health expenditure has been less than 1.5 percent. What is worse is that the reform policies had led to greater commercialization of health sector, as such health cost has risen rapidly. Since the mid 1990’s house hold health expenditure has risen at 14 percent per annum.

**Public Health Infrastructure**

Public health care infrastructure in India has made a remarkable and impressive development in the past six decades of Indian Planning in. The Policy focused much on the improvement of rural health. In fact mortality rate has fallen, Malaria has been controlled, small pox and Guinea worm have been completely eradicated and Leprosy and Polio are nearing elimination. Efforts are being made by the centre and the state governments to provide better
infrastructure facilities to improve the primary health and community health services in rural areas.

Table—2 reveals that there are about 19786 government hospitals followed by hospitals with beds and dispensaries, 23390 PHCs, 145272 sub centers, 4045 Community Health Centers, about 7002 Voluntary Health Organizations catering to the needs of the growing population in rural areas. No doubt it is a progressive trend towards rural medicare programme.

National Rural Health Mission

The National Rural Health Mission (NRHM) launched on 12 April, 2005 is a right initiative in strengthening the rural health infrastructure. India’s vision 2020 is to attain the level of health that would enable every individual to lead a social and economically productive life. Prime Minister Dr. Manmohan Singh has described the National Rural Health Mission as a milestone in rural health programme and an essential instrument for achieving the goal; of good health for all.

The Principal objective of NRHM is to establish a fully functional connectivity owned decentralized health delivery system. The schemes approach has been to streamline basic health care delivery to the poor living below the poverty line. Increase in health investment on target communities helps

### TABLE - 1

<table>
<thead>
<tr>
<th>Plan period</th>
<th>Total plan investment</th>
<th>Plan outlay on health</th>
<th>Investment on health as percentage of total</th>
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<tbody>
<tr>
<td>I Plan 1951-56</td>
<td>1960</td>
<td>65.2</td>
<td>3.32</td>
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<tr>
<td>II Plan 1956-61</td>
<td>4672</td>
<td>140.8</td>
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<td>III Plan 1961-66</td>
<td>8576</td>
<td>225.9</td>
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<td>Annual Plan 1960-69</td>
<td>6625.4</td>
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<td>IV Plan 1969-74</td>
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<td>V Plan 1974-79</td>
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<td>Annual Plan 1979-80</td>
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<td>223.1</td>
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<td>IX Plan 1997-2002</td>
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<td></td>
</tr>
<tr>
<td>XI Plan 2007—12</td>
<td>140135</td>
<td>2.4</td>
<td></td>
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</table>

in eradicating poverty says Anup Mishra of the Institute of Economic growth. One of the Principal goals of NRHM was to raise health expenditure from 0.9 percent to 2.3 of the GDP. The actual health expenditure however still remains around one percent. Biswajit Dhar Head, Think Tank research system has rightly observed that more than what we spend on rural health sector it is crucial to ensure more health care access to the rural poor.

It is noteworthy that today under NRHM about 4,62,000 special health workers are physically trained and posted in rural areas as link workers to NRHM. Around 1,77,924 Health Committees are functioning and about 26 District Hospitals have been identified for upgradation.

**Budget allocation for Flagship Schemes**


The ICDS success depends on the Anganwadi worker a woman who is the pilot of the programme. The scheme is government’s main weapon to combat child malnutrition. **Comparative Health Investment Analysis**

A comparative government expenditure on Defense, Education and Health in developed and developing countries reveals that the investment on health sector in India is lowest in the world.

<table>
<thead>
<tr>
<th>TABLE – 2</th>
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<tbody>
<tr>
<td>PUBLIC HEALTH INFRASTRUCTURE FACILITIES IN INDIA (1951 - 2012)</td>
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<tr>
<td>Item</td>
</tr>
<tr>
<td>Hospitals</td>
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<tr>
<td>Hospitals with Dispensary beds</td>
</tr>
<tr>
<td>Dispensaries</td>
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<td>Primary Health Centers</td>
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<td>Sub Centers</td>
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<td>Community Health Centers</td>
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<td>Voluntary Organization</td>
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<table>
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<th>TABLE - 3</th>
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<tr>
<td>Union Budge Allocation for Flagship Schemes</td>
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<td>(Rs. In Crores)</td>
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<td>12020</td>
<td>19040</td>
<td>11933</td>
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<td>Mid Day meal</td>
<td>1375</td>
<td>1508</td>
<td>3011</td>
<td>413</td>
<td>6004</td>
<td>9514</td>
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</tbody>
</table>
Table–5 reveals that the percentage of total expenditure on Health sector in India is only 2.5 percent as per the World development report (2009). A comparative analysis of health investment reveals that the performance of Sri Lanka, Bangladesh in the health sector is more satisfactory compared to India. Government expenditure in Bangladesh is about 5.3%, Sri Lanka, 6.2% Pakistan 2.05%, UK 15.7%, USA 18.6% while in Germany it is 20%.

Women’s Health a Vital Factor

It is painful to note that close to 3 lakh girls under the age group of 15 years are not only married but have at least one born child. More than 50 percent of the married women between the age group of 15 and 49 have anemia caused by iron deficiency which has contributed to 19 percent maternal death.

Though health is on state list, the effort on the part of the state government in spending the budget allotted for national rural health mission is minimal. The unspent money in Andhra Pradesh was 31%, while 31.1% in Uttar Pradesh and 29.2% in Orissa and 18% in Maharashtra while it is 31.9% in north eastern states for 2008-09. The critical evaluation reveals that lack of Ambulance facility, village health workers and medical infrastructure, supply of drugs have badly affected this national project, in states like Uttar Pradesh, Rajasthan, Madhya Pradesh, Himachal Pradesh and the North eastern states.

Issues to be Addressed

1. Shortage of funds is a major drawback in public sector for rural health, this leads to non-availability of health infrastructure, provision of inputs, drugs etc at grass root level.

2. There is sub-optimal utilization of health centers due to inadequate human resources and lack of availability of drugs and good laboratory.

3. In rural areas improving nutrition seems to be the biggest challenge.

4. A large number of legal provisions exist in the health sector such as no smoking, it is unfortunate that the level of enforcement of legal provisions is very poor. There is need to strengthen the implementation mechanism.

5. A large number of innovative schemes and programmes are often launched in the country. But actual implementations remain limited due to non-availability of funds.

6. The number of doctors, nurses and paramedical workers for 1000 population is low. There is a shortfall of budget particularly for rural health care centers and for deprived weaker sections of the population.

7. To assess the development in the field of medical relief in public health, the union health ministry has constituted committees, such as Bhore Committee, Dr. A. Laxmanswamy mudiliiar and Swamy Mudaliar, central expert committees under the Indian Council of Medical Research (ICMR) to make effective recommendations to improve the health sector. The recommendations of these committees need to be translated into reality.

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FOCUS ON NUTRITION:
HEALTHY DIET ESSENTIAL TO TACKLE DISEASES

Dhurjati Mukherjee

One cannot deny that despite India’s high GDP for the last few years, under-nutrition has assumed alarming proportions. In fact, every fourth new born Indian baby is underweight that is, 40 per cent of all babies fall in this category. Even Prof. Amartya Sen, the renowned economist, has been harping on the problem of malnutrition that has plagued the country for years and led to increase in various forms of diseases in children.

The activation of the National Council on India’s Nutritional Challenges and the decision to overhaul nutrition programmes in the country after a series of negative international reports about the abysmal nutrition record are significant developments. The panel has also decided to map undernourished endemic zones and high risk and vulnerable districts apart from launching a special nutrition programme in 200 “high burden districts”.

India has one of the poorest records in the world when it comes to nutrition among children. Around 70 per children are anaemic and 1.83 million under 5 die every year. Moreover 43 per cent malnutrition among under-5 children in the country is worse than even the sub-Saharan Africa. Moreover around 38 per cent infants in India are underweight as opposed to only 4 per cent in China. Similarly other indicators also paint a grim picture.

The Council was activated to give a direction to overcome the nation’s nutritional challenges through coordinated inter-sectoral action but several quarters have been lost due to delays in
holding periodic meetings. However, it is expected that now positive steps would be taken and ‘Dietary Guidelines for Indians’ will be released shortly by the Indian Council of Medical Research with some new recommendations of the National Institute of Nutrition (NIN).

As is well known, poverty and hunger in the country have been favourite subjects of discussion debate both of academics and the media but very little has been done in this regard. Hunger in modern day isn’t about protruding bellies and sunken faces but mostly about getting enough to eat. It’s about not getting the sufficient quantity of food needed that is essential and nutritious for a healthy life. This is specially true of children and lactating mothers and it is widely felt that at least 50 per cent of women and children suffer from nutritional deficiencies. Though scientists of the National Institute of Nutrition (NIN), Hyderabad way back in 1988 claimed, in a recent survey, that malnutrition among women has come down, the real picture is quite different, specially the conditions of the opposite sex in the backward districts of the country.

One cannot deny that despite India’s high GDP for the last few years, under-nutrition has assumed alarming proportions. In fact, every fourth new born Indian baby is underweight that is, 40 per cent of all babies fall in this category. Even Prof. Amartya Sen, the renowned economist, has been harping on the problem of malnutrition that has plagued has been harping on the problem of malnutrition that has plagued the country for years and led to increase in various forms of diseases in children.

The rise in food prices has compounded the problem of the country’s poor. Between 2004 and 2010, cereals, pulses, vegetables, sugar and milk almost doubled in most parts of the country. Moreover corruption and inefficiency stood in the way of subsidized foodgrains reaching the real beneficiaries, specially in the rural areas. The Food Security Act – which is under consideration -- also falls far short of the needs of the poor offering 25 kg of grain to below poverty line families instead of the 35 kg mandated by the Supreme Court during the right to food hearings.

For a nutritious diet, there is need not just for rice and wheat but other things as well. In recent times, pulses, which are considered a nutritious supplement being high in protein content, have gone beyond the reach of the BPL sections. Pulses are traditionally considered a residual crop, only suited for growth under rain-fed conditions when one cannot grow rice or wheat. A shortage of pulses can have devastating long-term effects on our national nutritional standards and the consequences are already being felt.

Guidelines

It is pertinent here to refer to the new guidelines released by a medical and nutritional panel released for better health. The dietary guidelines have been evolved after consultations involving around from 100 experts across the country as these are designed to match the revised cut-off waistline and specific weight indicators that could keep the body fit and free from diseases. The new rules are obviously intended to replace guidelines produced by the NIN way back in 1988. It is necessary to mention here that there has been a rapid growth in diseases and most of people – even educated ones – not being aware about what constitutes a balanced diet. In such a situation, these guidelines would be of great health if the salient aspects are given wide publicity.

The guidelines suggest among other things reducing carbohydrates, adjusting fat quality, taking less sugar and salt, higher protein and drinking more water and also a little alcohol for
those who are already in the habit. The reduction in carbohydrate intake is really important for Indians who tend to develop triglycerides which are a risk factor for heart diseases. This could be brought down by reducing rice and wheat intake, according to experts. However, considering the fact that a major segment of the population is poor, this may not be easily accomplished.

Under the revised guidelines, people who consume small quantities of alcohol, limited to 30 ml twice a week, will not be discouraged a shift from the earlier stand that had asserted that alcohol intake should not be encouraged at all. This change has been brought about because doctors are prescribing small quantities of alcohol intake for those who suffer from heart diseases.

The adaptation of these guidelines by the public is expected to reduce the prevalence of obesity, diabetes and heart diseases which have plagued the country in a big way. Specially in urban and semi-urban areas the incidence of these diseases have been increasing at a very fast pace and their control has become an imperative need. As is generally agreed, a poor or an unbalanced diet has been found to increase the risk of gout, fatty liver diseases, polycystic diseases and some types of cancer.

Obesity has emerged as a widely prevalent problem, specially among the urban population, and reducing weight and trimming the waistline can be achieved through a balanced diet as also walking and physical exercise. These help to tone the body, control the blood pressure, boost the immune system so that the risk of heart diseases, diabetes, cancer and also mental diseases are decreased. Walkers and those involved in physical exercise (which may include yoga) have also been shown to live a healthy, mentally active life even in old age in greater numbers than their inactive counterparts.

Diabetes, hypertension and ischemic heart diseases develop in susceptible genetically predisposed individuals when the environment is conducive. Even if the disease appears inevitable, the same can be delayed by 10 years or more by maintaining a standard body mass index (BMI) of 23-24. This can be calculated by dividing weight in kilograms by the height in metre squared.

It is thus very much necessary that diet has to be regulated by eating the 20 calories per kilogram of expected weight. This combined with walking as also adequate physical exercise will help maintain the BMI. It may be mentioned here that consuming too much sweets or extra salt during meal time may be harmful. Sweets such as ladoo contain around 250-280 calories, a plate of bhel puri around 350-400 calories and a teaspoon of oil 50 calories.

Nutritionists have been advocating that one should eat lots of vegetables and fruits to ensure a healthy diet. Oranges, papayas and carrots are rich in beta-carotene, vitamin C and various other nutrients that keep the body healthy. They lower cholesterol and blood pressure, promote collagen formation and help maintain healthy joints. Green vegetables are perhaps the best to consume as the nutrients found in them reduce cancer risks, lower blood pressure and cholesterol levels, normalize the digestive time, support retinal health, fight harmful radicals and boost the immune system. Special mention may be made of spinach (high in iron and folic acid), broccoli (high in anti-cancer properties and containing antioxidants, minerals and vitamins A and C) and kiwi (rich in vitamin C and potassium).

White vegetables also help maintain cholesterol and blood pressure levels. Onions and garlic are rich in sulphides, reduce tumour, reduce inflammation and lower blood fats, blood pressure and blood sugar. They are also great infection fighters with their anti-bacterial, anti-fungal
anti-viral and anti-tumour properties. Radish is another vegetable in this category which, with its high moisture content, makes it very good for the skin and the eyes.

The need for vegetable intake in large quantities has been emphasized by doctors and nutritionists for their contribution to good health. Most vegetables are not quite costly and within easy reach of the low income sections. Though fruits are a little costly, some like guava, bananas and oranges are within affordable limits during season times.

A healthy and balanced diet has become all the more important because of the spread of pollution and environmental degradation, resulting in reducing the immune power of the individual. Such a diet helps to keep the body healthy and keeps it free from most diseases. It needs to be pointed out here that India is one of the largest disease prone countries of the world, not just because of poverty and squalor, but also because of the lack of knowledge and awareness about what constitutes a healthy diet.

It is heartening to note that the NIN is now engaged to formulate an ‘Indian Food Composition’ (IFC) data base to analyze and document the nutrient values of 1200 food items consumed in the country. This would go a long way in creating necessary awareness among the masses about what constitutes a low cost nutritious diet with balance of protein, carbohydrates, minerals and vitamins. Meanwhile the voluntary organizations should be given the responsibility to spread such awareness among the community through training camps, specially in the rural and semi urban areas, so that one could know how to keep the body healthy.

[The author is Kolkata based writer on rural development issues. E-mail: dhurjatimukherjee54@gmail.com]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>1998 Guidelines</th>
<th>New Consensus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrates</td>
<td>60-70% of total calorie intake</td>
<td>50-60% of total calorie intake</td>
</tr>
<tr>
<td>Proteins</td>
<td>10-12% of total calorie intake</td>
<td>10-15% of total calorie intake</td>
</tr>
<tr>
<td>Fats</td>
<td>15-30% of total calorie intake</td>
<td>Less than 30% of total calorie intake</td>
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<td>Saturated Fatty Acids</td>
<td>Not specified</td>
<td>Less than 10% of total calorie intake</td>
</tr>
<tr>
<td>Trans Fatty Acids</td>
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<td>Less than 1% of total calorie intake</td>
</tr>
<tr>
<td>Essential polyunsaturated Fatty Acids</td>
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<td>5 to 8% of total calorie intake</td>
</tr>
<tr>
<td>Mono Unsaturated Fatty Acids</td>
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<td>10-15% of total calorie intake</td>
</tr>
<tr>
<td>Salt</td>
<td>Less than 8 gms per day</td>
<td>Less than 5 gms per day</td>
</tr>
<tr>
<td>Sugar</td>
<td>20-25% per day</td>
<td>Less than 10% of total calorie intake</td>
</tr>
<tr>
<td>Water</td>
<td>1 litre per day</td>
<td>1.5 litres per day</td>
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<tr>
<td>Food choices eating out</td>
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<td>Healthy snack options – avoid high calorie drinks, opt for butter milk, coconut water and fresh lime water</td>
</tr>
<tr>
<td>Meal portions</td>
<td>Not mentioned</td>
<td>Small, frequent meals</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Not to be encouraged</td>
<td>Small quantities not to be discouraged</td>
</tr>
</tbody>
</table>

Source: National Institute of Nutrition, Hyderabad, 2011
India is a vast country of 3 million square kilometres, ranking as the second most populous country in the world. It also has the distinction of contributing 20% of the global births. This means that every year approximately 30 million women in this country are pregnant and 27 million among them go for live births. Out of this staggering number, 136,000 mothers die along with 1 million newborns making it the worst case of Maternal Mortality Rate (MMR) and Newborn Mortality Rate (NMR). Ten Percent among the surviving children do not make it beyond five years of age earning our country the dubious distinction of holding 25% of the world’s Child Mortality Rate (CMR). One third of the remaining children remain low weight. With a demographic profile of women in the reproductive age (15-40 years) and children (under 15 years) constituting 60% of the population, we can safely assume that two thirds of our population are vulnerable to illness, ill health and death while being in the cycle of pregnancy and post-natal period of survival and development.
births as opposed to that in UP which is more than 700. Similarly a careful observation of National Family Health Survey (NFHS) 1-3 reveals the ratio of MMR of rural and urban areas as 434:385 in the 1990s to 619:287 in the last decade. It is in this context that this essay examines the causal relationship between Child and Maternal Health Care and Mother’s formal education. The authors believe that this study and its conclusions have significant impact on the investment in female education and concerted efforts in improving ante-natal and post-natal health care.

**An Examination of the Existing Scenario**

Child and Mother’s health conditions are revealed through the four factors that govern the first five years after child birth.

1. **Maternal Mortality Rate (MMR):** UNICEF defines MMR as the death of a mother during pregnancy or after first 42 days after pregnancy due to various causes directly and indirectly relating to pregnancy and child birth. 99% of the pregnancy related births occur in developing countries and according to the Sample Registration System 2004-05, India has recorded a very high MMR of an average of 254/100,000 live births.

2. **Neonatal Mortality Rate (NMR):** NMR is the death of an infant in the first 28 days of its life. The NMR Rate of 35/1000 leads to 65% of Infant Mortality Rate in the first year. The major causes for NMR in India are low birth weight due to pre-mature birth, birth asphyxia and infections.

3. **Infant Mortality Rate (IMR):** Infants whose mothers die in the first six weeks after child birth are likely to die in the first year. Though IMR has been slowly declining at the rate of 1.3% per year, more than half of the infants die due to preventable reasons like lack of institutional delivery, skilled attendant, antenatal health care visits and intake of folic acid/iron tablets by mothers-to-be for at least 100 days of pregnancy.

4. **Infant Health and Breast feeding:** The live birth mortality rate of 57/1000 in India is higher than that of Sub-Saharan Africa. According to NFHS-3 (2006), only one-fourth of the mothers begin breast feeding 1 hour after birth, less than half of the mothers resort to exclusive breast feeding within the first six months and 56% provide complementary breast feeding of six months and beyond.

The causes of this abysmal state of affairs can be grouped under clinical reasons and socio-cultural reasons.

A. **Clinical Reasons:** Half of the maternal deaths are due to haemorrhage and sepsis which are preventable through institutional deliveries and adequate maternal health care. Half of the married women in India are anaemic and one-third is malnourished. Delayed initiation of breast feeding, absence of community and health care facilities during the ante-natal and the post-natal periods, delayed clothing, early bathing and applying harmful materials are all reasons worth looking into.

B. **Socio-Cultural Reasons:** Social inequality is the foremost reason for the staggering number of maternal and child deaths. Female Literacy Rate is at 54.3% (2001) and families below poverty line constitute 26.1% (2002) of the Indian population. The prevalence of son preference and female sex ratio of 933/1000 (2001) reflects the study of NFHS-2 that 85% of the women prefer at least one son and 33% more sons than daughters. Motherhood reaches Indian women too early. One third of the women become mothers by 15 years, two-thirds by 18 years and the median age of first child birth is 19 years according to NFHS 2. Giving birth to children before reaching physical maturity increases the risk of NMR by 1.7 times and IMR by 1.6 times. Cultural prejudices like treating pregnancy as ‘natural’ and hence depriving mothers-to-be from institutionalised healthcare, attributing illness to supernatural powers and post-partum seclusion practices prevalent in some cultures aggravate the situation.

**The Importance of Maternal Education**

The Government of India has identified universal screening of pregnant women and operationalizing
essential and emergency health care as serious priorities to reverse the situation. The Continuum Care Approach brought about by the Integrated Lifecycle policies like Janani Suraksha Yojana and Integrated Management of Newborn and Childhood Illness programme (UNICEF) are good efforts to instil and encourage behavioural change patterns. Demographic and Health Surveys and World Fertility Surveys done in 22 developing countries reveal that Maternal Education plays an important part in reducing NMR, IMR and increasing child’s height in relation to age, immunization and improved sanitation in the household. Besides socio-economic status and geographical area, education and health have a simultaneous causal relationship. This is a key to understanding the public and private benefits of female education and targeting and delivering health care systems to women. Though socio-economic, environmental and biological factors contribute to better health benefits; there are three broad ways in which the influence of formal education in women triggers better health choices. Optimal Formal Education (of at least middle-school level) ensures

1. Modern means of safeguarding health
2. Better utilization of the resources available to them
3. Independent decision making ability

Literacy which eventually leads to education, employment and independence also leads to:

a. Women using preventive care methods by frequently visiting doctors during their pregnancy
b. Consciously consuming a better combination of food because of nutritional awareness which results both in quantitative increment of food intake and a qualitative improvement by the consumption of a balanced and nutritious food
c. Being able to invest quality time and more money for her child’s health by purchasing medical inputs and following the doctor’s prescription
d. Affecting fertility decisions as better education empowers a woman to choose quality life for her children rather than the number of children she has.

In a complex country like India, various factors like place of residence, caste and religion, child’s sex and birth order are decisive in the care and support a mother receives for herself and her child. Yet mother’s education and her employment status have strong relationship with pre-natal and post-natal care which is stark from the table given below.

### Table 1: Relationship between Maternal Education and access to health facilities
(Represented as percentage of mothers who had access to the facilities)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Illiterate Mothers (%)</th>
<th>Mothers with Middle School Education (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ante-natal Care</td>
<td>50</td>
<td>79</td>
</tr>
<tr>
<td>Delivery in Institutions</td>
<td>12</td>
<td>67</td>
</tr>
<tr>
<td>Seeking Health Professionals</td>
<td>20</td>
<td>75</td>
</tr>
</tbody>
</table>

Source: Tabulated based on the NFHS Subject report no 5, 1997

**Conclusion**

Overcoming the North-South divide, maternal education emerges as the single most strongest and positive influence on better child health care keeping other socio-economic indices constant. A women educated till middle school is 6 times as likely to go for ante-natal care, 7 times as likely to go for tetanus toxoid vaccination for the child, 5 times as likely to take iron/folic acid tablets, 8 times as likely to take institutional help for delivery and 6 times as likely to consult a health professional says a study done in Northern India. Improving child survival rests with awareness and intelligent use of the combination of resources available at the mother’s disposal. Without doubt, even in a varied cultural setting, investment in female education is directly linked to the Child and Mother’s health. Policy makers should remember this crucial angle while framing the necessary and emergency health packages for Indian mothers.

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There is growing empirical evidence that social capital contributes significantly to sustainable development. The traditional composition of natural capital, physical or produced capital, and human capital needs to be broadened to include social capital. Social capital refers to the internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions in which they are embedded.

Social capital is the glue that holds societies together and without which there can be no economic growth or human well-being. Without social capital, society at large will collapse, and today’s world presents some very sad examples of this. It is critical for poverty alleviation and sustainable human and economic development.

There are a number of key sources of social capital in the context of social and economic development.

- **Families:** As the main source of economic and social welfare for its members, the family is the first building block in the generation of social capital for the larger society.
Communities: Social interactions among neighbors, friends and groups generate social capital and the ability to work together for a common good. This is especially important for the poor as social capital can be used as a substitute for human and physical capital.

Firms: Building and sustaining efficient organizations like firms demands trust and a common sense of purpose, i.e., social capital. Social capital benefits firms by reducing transactions costs, but can also have negative effects for a firm and society.

Civil Society: Social capital is crucial to the success of any non-governmental organization because it provides opportunities for participation and gives voice to those who may be locked out of more formal avenues to affect change.

Public Sector: The public sector, i.e., the state and its institutions, is central to the functioning and welfare of any society.

Ethnicity: Ethnic relations come up frequently in discussions of social capital. Whether it is immigration, microenterprise development, tribal nepotism or racial conflict, ethnic ties are a clear example of how actors who share common values and culture can band together for mutual benefit.

Gender: Social networks of impoverished women in Brazil are important for women to obtain income and other necessities.

Social capital and rural development

Rural livelihoods are to a great extent influenced by agriculture and allied activities. Social capital has become a critical issue in agriculture development as it plays important role in collective action such as management of common resources and collective marketing. Social capital is central in understanding how farm households, and the farming community in general, adopt and benefit from improved agricultural technologies. The importance of collective action, the use of social capital in information flows regarding new technology options and adoption procedures, and the actual ways in which communities enhance their collective welfare. In the realm of rural and agricultural development, the importance of social capital, perceived as a willingness and ability to work together, has been emphasized in the case of technology options such as watersheds, irrigation management, and integrated pest management strategies. The concept has thus become one of the most popular exports from sociological theory into development discourses and has evolved into a panacea for the problems and challenges that confront modern societies and their socioeconomic and political development. Social capital is a key but hidden factor that can make a critical difference in productivity. Mobilizing community force is essential force for productivity enhance and rural life improvement.

Horizontal social capital among the farmers can improve the performance of agricultural sector and improve agricultural output and incomes. Following are the major areas that can bring about rural development and enhance the wellbeing of the rural population.

Social capital and irrigation

Local participation and cooperation among the farmers over the use of water have increased the water supply and brought welfare to all the farmers through this mutual help. Several instances can be cited to show how social capital served to enhance irrigation systems. Indrawati Basin Irrigation Project in Nepal and Gal Oya Irrigation project in Sri Lanka are a few projects that became quite successful through cooperation of local farmers.

Social capital and forestry management

Forest are common property resources and they contribute a lot to the subsistence and livelihoods of rural population. In the absence of local participation and cooperation, there are possibilities of excessive use of these resources leading to the degradation of forests. This threatens the availability of forest resources and dries up water sources. Thus management of forests is an inherent part of promoting the well being of rural population. There are several cases where community participation has resulted in sustainable forestry. Community Forestry...
Enterprises in Mexico, local people participation in Gujarat to manage forests are a few successful examples.

**Social capital and farm credit**

Credit through a basic input for farm operations is often denied to poor farmers. This major constraint can be circumvented through group based lending schemes. Agricultural cooperative credit societies can improve farmer’s access to credit.

Social capital thus serves to promote rural development.

**Social capital promotes rural diversification**

The accumulation of group activities that are not related to farming practice might have positive effects on new types of diversified activity compared to ordinary types of agricultural production activity. Agribusiness is one such rural diversified activity which provides new income sources and opportunities for rural urban exchanges. Agribusiness activities are not only the activities supported by social capital, but also the place where social capital accumulates. The issue of resource management especially forest resource must be handled through social capital since it is regarded as a part of villagers’ life. Rural diversification can allow the formation of new networks and linkages among people, and social capital can accumulate and contribute to the development of new activities in a chain reaction.

**Social capital and women empowerment**

Another major field where social capital can play a vital role is women empowerment. Horizontal social capital can empower women, improve their incomes, and enable them in decision making. Kudumbasree Mission of Kerala, Grameen Bank of Bangladesh nurtured Self Help Groups which are woman oriented.

The SHGs have played a significant role in the mobilization of savings and diversification of income sources of these poor women. Access to bank loans and pooling of savings has helped these women to meet their requirements such as health, education, sanitation etc. They have also become enterprising by successfully running several commercial micro enterprises. These have definitely enabled the poor women along with their families to enjoy better living standards and have offered them a helping hand to get out of poverty.

**Social capital and poverty alleviation**

Social capital building approaches are increasingly used in poverty alleviation programs. A social capital orientation in rural development can help transform people into active citizens by adopting a bottom-up approach, influencing the ability of individuals and groups to cooperate in taking advantage of emerging opportunities. Social capital is a chief tool to mobilize physical capital, environment capital and human capital. These can play a vital role in the alleviation of poverty. Here too, the aforementioned examples of Kudumbasree, Grameen Bank, farmer cooperatives etc are relevant as they have enabled many to battle poverty.

Thus social capital has great relevance in the present society to achieve various socio-economic goals. Frank (2004) identifies six positive effects of social capital for society and the state. These are a reduction of transaction costs, facilitation of the dissemination of knowledge and innovations, promotion of cooperative and/or socially-minded behavior, benefits for the individual and social spill-over, less capital-intensive interventions, and a people-centered perspective. These positive effects of social capital are also central to any successful rural extension program.

[The authors are Assistant Professor(s), Dept. of Economics, Govt. Victoria College, Palakkad, Kerala].

*A social capital orientation in rural development can help transform people into active citizens by adopting a bottom-up approach*
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9958530203, 9868145041, 011-27652352
Drylands are limited by rainfall, high evapotranspiration and show a gradient increase in productivity from hyper-arid to arid and semi-arid to dry sub-humid areas, on decreasing aridity or moisture deficit. Drylands cover about 41 per cent of earth’s available land surface and three quarters of world food supplies come from drylands (FAO, 1999). The challenges for global agriculture in 21st century is to produce 7 per cent more food to feed a projected population of 10 billion by 2050 by making sustainable use of existing resources and responding climate change (FAO, 2009). Drylands span over 41 per cent of earth’s available land surface will need to contribute their share to this yield increase. So improving dryland crop yield is important, both to maintain food security and to improve livelihoods of the poor.

Drylands in India contribute 70 per cent total cultivated area and about 50 per cent of the geographical area is affected by desertification. Food insecurity, extreme poverty and environmental nexus are the most challenging in the drylands. Improving crop productivity is important both to maintain food security and to improve livelihoods.
of the people in drylands. Investments are needed for soil and water conservation in order to improve soil fertility and soil moisture. Conservation and efficient utilization of natural resources are two key components to achieve sustainability in drylands. Land degradation and over exploitation of resources prompted researchers and policy makers to evolve innovative technologies which halt degradation and restore productivity. A number of technological innovations are used which include cultural practices, engineering methods, sustainable agricultural practices, precision conservation and agroforestry. Hence transforming drylands is necessary to achieve second green revolution.

Every continent contains dryland regions. Drylands are most extensive in Africa (13 M km²) and Asia (11 M km²). About three quarters of the world food supplies consisting of wheat, maize, sorghum, pulses, oilseeds, potato and fruits are grown on drylands (FAO, 1999). According to the Millennium Assessment (MA) report there are 2.3 billion people living in the drylands, out of which 1 billion are below poverty line accounting half of the world’s poor (MA, 2005). Millions of rural dryland dwellers are directly dependent on local dryland ecosystem services for their daily survival. Therefore, any shortfall in any one of such services will create food insecurity, famines, conflicts and vulnerability of millions of rural poor. Climate change will have a disproportionate effect of dryland areas, contributing to desertification and increasing the vulnerability of people in drylands. We need to put the conservation of dryland ecosystem services at the heart of development policy, if we want to reduce poverty and achieve the millennium development goals.

**Background**

**Definition and characteristics**

Drylands are generally defined as lands with limited rainfall. Mainly their dryness is due to the negative balance between precipitation and evapotranspiration rates. Drylands are thus been defined in terms of water stress as areas where mean annual precipitation (P) is less than half of the potential evapotranspiration (PET). According to the FAO (1993), drylands are agroclimatic zones having short growing periods, which is defined as the period when both water and temperature permit crop growth. So drylands are zones falling between 1-74, 75-119 and 120-180 growing days representing arid, semi-arid and dry sub-humid lands, respectively.

Drylands are characterised by low (100-600 mm annually) erratic and highly inconstant and unreliable rainfall levels. Precipitation is low concentrated during short periods, resulting much of the rainfall to be lost in evaporation and the usual intensity of storms ensures that much of the rainfall runs-off in floods. Fragile environments and unpredictable drought and floods are common features of dryland ecosystems.

**Classification of drylands**

Dryland ecosystems are mainly categorised into four subtypes according to aridity index and annual rainfall levels into hyperarid, arid, semi-arid and dry sub-humid areas as shown in Table-1.

**World drylands**

Dryland ecosystems occupy over 41 per cent of the earth’s land surface. Desertification affects

<table>
<thead>
<tr>
<th>Subtypes</th>
<th>Aridity index</th>
<th>Current area</th>
<th>Dominant Biome</th>
<th>Current Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mk m²</td>
<td>% global</td>
<td></td>
</tr>
<tr>
<td>Hyper-arid</td>
<td>&lt;0.05</td>
<td>9.78</td>
<td>6.6</td>
<td>Desert</td>
</tr>
<tr>
<td>Arid</td>
<td>0.05-0.20</td>
<td>15.66</td>
<td>10.6</td>
<td>Desert</td>
</tr>
<tr>
<td>Semi-arid</td>
<td>0.20-0.50</td>
<td>22.59</td>
<td>15.3</td>
<td>Grassland</td>
</tr>
<tr>
<td>Dry sub-humid</td>
<td>0.50-0.65</td>
<td>12.87</td>
<td>8.7</td>
<td>Forests</td>
</tr>
</tbody>
</table>

(Source: World resource institute, 2002)
70 per cent of the world drylands, amounting to 3.6 billion ha or one-fourth of world’s land surface (IFAD, 1995).

Asia possesses the largest land area affected by desertification, 71 per cent of which is moderately to severely degraded. In Africa two-thirds of which is desert or drylands. 73 per cent of agricultural drylands are moderately to severely degraded (IFAD, 1995). Africa is under greatest desertification threat, with a rate of disappearance of forest cover of 3.5 to 5 million ha per year bearing down on both surface and ground water resources and with half the contents farmland suffering from soil degradation and erosion.

Causes of dryland formation

Limited rainfall, poor soil quality, fragile environments are the main factor behind dryland formation. There is always water scarcity in drylands. The dryness of drylands is due to negative balance between mean annual precipitation and potential evapotranspiration rates. Besides, limited rainfall, the soils are of poor quality, low in organic matter, hence less fertile. Harsh climates are another important issue which limits crop diversification in drylands. What makes the drylands a difficult environment is not only less rainfall, but also its erratic distribution. Inter-annual rainfall can vary from 20-100 per cent and periodic draughts are common (Zurayk and Haider, 2002).

Problems of drylands

Water scarcity due to limited rainfall, low soil fertility, mostly deep sandy soil with poor water holding capacity, shallow and rocky soils with low organic matter content. Fragile environments with unpredictable floods and droughts are other factors limiting drylands to become productive ecosystems. Lack of technologies limitation of resources and biotic pressures contribute further in conversion of drylands into deserts.

Loss of resources

In the world as a whole about 25000 million tones of soil are being washed away from land every year. In India, the figure is 6.25 thousand million tones. Due to erosion and degradation, the world is losing between 5-7 million ha of cultivated land.

Table-2 : Drylands of the World

<table>
<thead>
<tr>
<th>Continents</th>
<th>Land mass (M ha)</th>
<th>Hyper-arid (&lt;0.05)</th>
<th>Arid (0.5-0.20)</th>
<th>Semi-arid (0.20-0.50)</th>
<th>Dry sub-humid (0.50-0.65)</th>
<th>% of world drylands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>2965.6</td>
<td>672.0</td>
<td>503.5</td>
<td>513.8</td>
<td>268.7</td>
<td>31.9</td>
</tr>
<tr>
<td>Asia</td>
<td>4255.9</td>
<td>277.3</td>
<td>625.7</td>
<td>693.4</td>
<td>352.7</td>
<td>31.7</td>
</tr>
<tr>
<td>Australia</td>
<td>882.2</td>
<td>0.0</td>
<td>303.0</td>
<td>309.4</td>
<td>51.3</td>
<td>10.8</td>
</tr>
<tr>
<td>Europe</td>
<td>950.5</td>
<td>0.0</td>
<td>11.0</td>
<td>105.2</td>
<td>183.5</td>
<td>4.9</td>
</tr>
<tr>
<td>North America</td>
<td>2190.9</td>
<td>3.1</td>
<td>81.5</td>
<td>419.4</td>
<td>231.5</td>
<td>12.0</td>
</tr>
<tr>
<td>South America</td>
<td>1767.5</td>
<td>25.7</td>
<td>44.5</td>
<td>264.5</td>
<td>207.0</td>
<td>8.8</td>
</tr>
<tr>
<td>Total</td>
<td>13012.6</td>
<td>978.1</td>
<td>1569.2</td>
<td>2305.3</td>
<td>1294.7</td>
<td>100.0</td>
</tr>
<tr>
<td>% of world drylands</td>
<td>16</td>
<td>26</td>
<td>37</td>
<td>21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
every year which is nearly the same as the new land brought under cultivation, which means that the extent of cultivated land remains more or less same (Lazarus, 1992). According to Millennium Ecosystem Assessment (MA) Report about 10-20 per cent of world drylands are degraded accounting about 6-12 million km² (MA, 2005). Drylands in India contribute to over 70 per cent of the total cultivated area and about 50 per cent of the total geographic area is affected by desertification (Hegde, 2006). Land degradation is particularly problematic for both environmental sustainability and poverty reduction in dryland areas. The UN Convention to Combat Desertification (UNCCD) and others use “desertification” to describe dryland degradation which is caused due to several factors including climatic variations and human activities. Depending on the level of aridity, dryland biodiversity is relatively rich, still relatively secure and is critical for the provision of dryland services. Of 25 global “biodiversity hot spots” identified by Conservation International, 8 are in drylands. So to conserve dryland are very important to ensure food security, conserve rich biodiversity of drylands and improve livelihoods of dryland people. To conserve the scarce resources of drylands a number of practices or methods are used which constitute dryland conservation technologies. These technologies are agronomic or cultural practices that help to intercept rain drops and reduce the splash effect, help to obtain a better intake of water by the soil by improving the organic matter content and soil structure; help to retard and reduce the surface runoff through the use of mulches, strip cropping, mixed cropping and contour cultivation. Use of vegetation on mechanical structures such as gully checks and water harvesting structures etc. enhance their strength and extend their life span.

**Agronomic or cultural practices**

Agronomic or cultural practices for soil and water conservation in drylands help to intercept rain drops and reduce the splash effect, help to obtain a better intake of water by the soil by improving the organic matter content and soil structure; help to retard and reduce the surface runoff through the use of mulches, strip cropping, mixed cropping and contour cultivation. Use of vegetation on mechanical structures such as gully checks and water harvesting structures etc. enhance their strength and extend their life span.

**Surface mulching with maize straw**

**Contour farming**

**Mechanical and engineering methods**

These are permanent structures used to supplement the agronomical practices, when the later alone are not adequately effective. These measures play a vital role in controlling soil erosion.

i. Sustainable farming practices

ii. Precision conservation

iii. Integrated watershed approach, and

iv. Use of agroforestry
and reducing runoff. These are used mostly in drylands where the slope of the soil is more than permissible limit. The main objective of the mechanical methods for controlling soil erosion are: i) to increase the time of concentration by intercepting the runoff and thereby providing an opportunity for the infiltration of water and ii) to divide a long slope into several short ones so as to reduce the velocity of the runoff and thus preventing erosion. These measures are basin listing, sub-soiling, terracing, contour bunding, contour trenching, gully plugging, check dams and water harvesting structure for hilly areas.

Check dam

Gully plug

**Water harvesting structures for dry hilly areas**

Water harvesting is a prominent and technically feasible technology in arid hilly areas. It helps in runoff harvesting and ground water recharging. Different types of water harvesting structures are used for efficient utilization of rainfall. Such as community tanks, inter-terrace runoff harvesting, hill spring outflow harvesting and rooftop harvesting structures. Runoff utilization is increasingly becoming a common practice in dryland conservation agriculture.

There are other approaches which can be adopted for conservations of dryland ecosystems. These research based approaches are as:

i) Sustainable farming practices
ii) Precision conservation
iii) Integrated watershed approach and
iv) Use of agroforestry

### 1. Sustainable farming practices

The past decades have witnessed a dramatic change in agriculture with food production soaring due to green revolution. The green revolution entailed the use of improved technologies like high yielding crop verities, expansion of irrigation, mechanization and the use of chemical fertilizers and pesticides. Sustainable agricultural practices are not new, but drawn on traditional knowledge and practices, adopted to ensure food security and maintaining productivity of dryland ecosystems on sustainable basis. These practices are conservation tillage, integrated nutrient management, agroforestry, water harvesting, livestock integration, use of FYM and mulches, green manuring and integrated pest management etc. to maximize productivity without compromising the needs of the future generations.

### 2 Precision conservation

Precision conservation offers an alternative to integrate the use of spatial technologies such as global position system (GPS), remote sensing (RS) and geographic information system (GIS) and the ability to analyze spatial relationship within and among mapped data to develop management plans that account for the temporal and spatial variability of flows in the environment. Hence precision conservation practices helps to maintain maximum production by improving soil and water conservation by developing efficient land use management plans.
Precision conservation is an innovative three-tier approach comprising a set of spatial technologies and procedures linked to mapped variables, which is used to implement conservation management practices that take into account spatial and temporal variability across natural and agricultural systems (Berry et al., 2003; 2005).

3. Integrated watershed approach

An approach towards dryland conservation. Basically a watershed is a basin like landform defined by high points and ridge lines that descend into lower elevations and stream valleys. A watershed carried a water “shed” from the land after rainfalls and snow melts. Drop by drop water is channeled into soils, groundwater, creaks and streams making its way to rivers and eventually the sea. In other words a watershed is a geohydraulic unit or piece of land that drain at a common point. The aim of watershed management is to ensure that every drop of water and every square foot of land is best utilized.

Integrated watershed approach is not only anti erosion and anti-runoff approach but also a comprehensive integrated approach of land and water resource management. This approach is preventive, progressive, corrective as well as curative.

4. Role of agroforestry in soil and water conservation in dryland ecosystems

Agroforestry is the science of developing integrated self-sustainable land use systems in which trees are grown on farm lands along with field crops. It includes the introduction and/or retention of tree crops for timber and fodder, fruit trees, shrubs bamboos, canes and palms along with cultivated filed crops including pasture simultaneously or sequentially on the same piece of land and at the same time to meet the ecological and socio-economic needs of the people. A well planned and properly managed agroforestry programme substantially increase the yield of the land and maintains sustained productivity.

The following are the major agroforestry systems:

1) Agrisilviculture (trees + field crops)
2) Boundary plantation (trees on boundary + field crops)
3) Block plantation (sequential blocks of trees and field crops).
4) Energy plantation (trees + field crops during trees establishment period).
5) Allay cropping (hedges of economic value + field crops).
6) Agrihorticulture (fruit tree + field crops)
7) Silvipasture (trees + pasture/animal husbandry)
8) Forage forestry (fodder trees + pasture).

Besides above mentioned systems, two main practices are adopted with the object of intensifying farming on slopes alongwith reducing soil erosion and increasing moisture conservation. These are i) sloping agriculture land technology (SALT), ii) Biomass transfer technology (BTT).

Sloping Agriculture Land Technology (SALT)

The sloping agricultural land technology (SALT) is a farming system developed by the Mindanao Baptist Rural Life Centre in the southern Philippines during the 1970’s. Basically attuned to the production needs of small-scale hill farmers. This agroforestry technology has gained wide popularity in Asia because it is culturally appropriate, economically sound and is designed to limit soil erosion. SALT is a technology
package of soil conservation and food production that integrates several soil conservation measures (Tacio, 1989; Evans, 1992). Basically, the SALT method involves planting field crops and perennial crops in bands 3-5 m wide between double rows of nitrogen-fixing shrubs and trees planted along the contour. These minimize soil erosion and maintain the fertility of the soil. SALT helps considerably in the establishment of a stable ecosystem, the double hedge rows of leguminous shrubs or trees prevent soil erosion. Their branches are cut every 30-45 days and incorporated back into the soil to improve its fertility (Palmer, 1991). The crops provide permanent vegetative cover which aids the conservation of both water and soil.

**Biomass transfer technology (BTT)**

Various agroforestry technologies are finding enormous application in the east and central African (ECA) region and are lifting many out of poverty and mitigating declining agricultural productivity and natural resources. One such example is biomass transfer in which trees that are rich in mineral elements (fertilizer trees), when integrated with inorganic fertilizer can double or triple crops yields in degraded lands.

Biomass transfer technology involves the growing of trees/shrubs along boundaries or contours on farms or the collection of the same from off-farm niches such as roadsides and applying the leaves on field at planting. In western Kenya, *Tithonia diversifolia* become the preferred species used by farmers to grow maize, beans or kale etc.

**Conclusion**

Drylands cover about 41 per cent of land surface. Characterised mostly by low, erratic and highly inconsistent rainfall, water scarcity, soil erosion and climate change are its prominent features. About half of the world food supply comes from drylands and host over half of the world’s poor. Keeping in view the rich biodiversity of drylands and home land for millions of rural poor people which are directly dependent on scarce resources of drylands, different innovative technologies for conservation of drylands area adopted to ensure food security, improve productivity and maintain environmental stability. By this way dryland resources and biodiversity reserves are conserved.

Apart from soil and water conservation measures, enhancement of soil fertility is also a vital component of dryland conservation. From a high cost external input-oriented agricultural production, to an integrated nutrient management approach, soil fertility can be thought of with inputs like biofertilizers, organic manures and composts green manures and use of mulches etc.

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This paper focuses on health problem of the Paraja tribe residing in Takuguda village of Randapali Gram Panchayat in Korpaut district of Odisha. Tribal population of this district is 50.66 percent as per the census data of 2011. In 2006 Union Ministry of Panchayati Raj included it in the list of 250 most backward districts of the country. An assortment of tribes reside in villages located in the periphery of its major towns and remote hills.

The Paraja tribe has a distinct language, belief system, separate identity, adherence to customary law and primeval socio-political institutions. It is an underdeveloped agrarian society where people use simple technology for farming. The spoken dialect has no written literature.

Being located in areas adjacent to the town they have frequent interaction with the town dwellers. This has influenced food and clothing pattern of few younger tribal men. But their attitude towards life, belief and thinking which have descended down from time immemorial and preserved by successive generations is less porous for penetration of new ways of thinking and belief generated through processes of modernization. Specific religious beliefs and rituals keep their group identity intact. Takuguda is not very far from Jeypore, the primary business centre of the district.

Curative methods are resorted to by appeasing the spirit through rituals like animal or bird sacrifice. Besides they do not trust modern curative processes. Economic reasons also account for not accessing health care facilities provided by government.
and Ambaguda, a semi urban area with health and education facilities. But proximity to urban areas has not impacted much the tradition and beliefs of majority of the people specifically those related to health and hygiene.

**Attitude towards health**

Health is not absence of disease. It is a state of physical and mental well being which is influenced by several factors like awareness, attitude, culture, individual and community predispositions; geographic, demographic, economic and, educational factors, communication facilities, sanitation, hygiene, government interventions to provide health care facilities, professional ethics and commitment of service providers etc. Almost all these determinants are absent in the tribe under discussion which indicates poor status of physical and mental health. Parajas of this village are backward in education. Poverty compels each member of the family to earn his or her livelihood at a time which could have been utilized for learning and improving their mental ability. This compulsion impedes their education and limits awareness of hygiene and health care. Illiterate parents, unaware of health care have little time to spare for the upkeep of children. Unclean habits have passed on from generation to generation though each succeeding generation has been provided with better opportunities and amenities compared to the preceding one.

Some facets of their socio-economic life are “primitive” and health care is acme of these aspects. It is their psyche which has primarily impacted understanding of health. One important psychological reason is the belief in the supernatural, the malevolent spirit (Duma) which causes disease and death. Therefore, curative methods are resorted by appeasing the spirit through rituals like animal or bird sacrifice. Besides they do not trust modern curative process and medicine for cultural factors. Economic reasons also account for not accessing health care facilities provided by government. If the ailment advances few of them refer to the nearby health care centre when it does not respond to treatment and possibility for survival is remote.

**Types of diseases**

They suffer from diseases which are genetic as well as ecological. Some people suffer from sickle cell which is genetic. But quite a few suffer from anemia due to malnutrition, water and airborne diseases like gastroenteritis, tuberculosis, measles etc. and vector borne diseases like malaria. Their consumption habit is utterly disgusting. Regular bath is few and far between especially among children. Children moving with running nose are a common sight. Mostly women and children walk barefoot. Worm infection causes anemia. Pot bellied children are believed to be the curse of the presence of malevolent spirit in the body. Their homes are constructed to accommodate people as well as domestic animals. Cow dung cake and wood are burnt for cooking and driving out mosquitoes and fleas. Obviously exposure to smoke affects lungs and eye sight.

Treatment of diseases is influenced by complex socio-cultural factors. Their rudimentary knowledge of medicine and treatment is not always successful in curing diseases. Tribals of this area have knowledge of herbal medicine. Plants, flowers, leaves, juice of leaves, seeds etc., are used for treatment of diseases. In most cases such treatment does not yield favourable result. Herbs apart faith healing is embedded in their culture. Health disorders are reported to the Desari (a healer possessing supernatural powers) first. Special rituals are performed to cure a person when herbs are reinforced with its power. With animal/bird sacrifice and wine the malevolent power is appeased. Gurmain (a women forecaster) is invited to perform specific rituals which also includes healing. Epidemics are believed to be caused by the spirit for some forbidden acts committed by the villagers.
Common diseases are respiratory track infection which affects infants as well as adults. Inadequate vaccination, lack of early diagnosis, use of local knowledge to cure account for high mortality. The area is malaria prone. Malaria control measures have been implemented but without success. People are disinclined to use mosquito nets. Of course vectors are active all around for which cow dung cake is burnt but that causes serious respiratory and sight problems.

One of the fatal food and waterborne infection is diarrhea causing large scale morbidity and death. Poor sanitation, improper disposal of excreta, lack of safe drinking water, stale food, unclean habits account for diarrhea and epidemics like cholera. The number of affected people increases during the rainy season. Nutritional disorder causes micronutrient deficiency and affects various vital organs of the body. Majority of the children are affected by skin and other diseases due to worm infection, defecation in the open field, barefoot walk, consumption of dirty water and no regular medication to weed out the worm in the body. Herbal treatment without proper diagnosis has increased the number of affected persons. Tuberculosis patients are many. Particularly men working in unhygienic places are affected by this fatal disease. People also suffer from leprosy. Lepers are not allowed to stay in the village. This is considered as the most dreadful of all diseases. Patient is ostracized. Many of them come to the nearby towns and survive by begging. Sexually transmitted skin diseases are however absent. Such cases are rarely reported.

Women suffer from gynecological diseases due to early marriage, frequent pregnancy, lack of care during pre and post natal periods, inadequate rest, poverty, lack of awareness to use better medical facilities, vaccination, vitamin and care during delivery and thereafter. They also suffer from air and waterborne diseases, worm infection and genetic disorder. They are in a most disadvantageous position in the family as gender prejudices prevail on treatment of diseases. Reluctance to accept modern health care during pregnancy and gynecological disorder adds to their health problem. Besides with meager earnings they are not able to meet the heavy expenses for treatment in the health centre or town hospital.

**Policy Intervention**

Since independence health policy of the Union as well as State Governments have been emphatic on rural health in various five year plans which have provided for integrated curative, preventive, promotive and rehabilitative services. The two health policies adopted in 1983 and 2002 and the National Rural Health Mission (NRHM) have opened up an array of opportunities for the villagers to refer to better trained health care personnel. Herbal medicine along with cheaper homoeopathy, ayurveda, unnai are also provided in view of the economic problems of the people. Mobile health centres have been incepted to facilitate speedy treatment. Sanitation and hygiene awareness is created through specific programmes.

NRHM was launched in Odisha on 17 June 2005 to provide effective health care with specific focus on the backward districts. The poor and marginalized which includes women were to be given special attention under the programme. It has adopted a comprehensive approach by including the departments of Panchyat Raj, Women and Child Development, Rural Water Supply and Sanitation and Education. This is different from the previous approaches to ameliorate health problems of the rural poor. Accredited Social Health Activists (ASHA) are recruited from the local populace, who provide care to the pregnant women. A composite Ayurveda., Yoga, Naturopathy. Unani. Siddha and Homoeopathy medication has been introduced to save the cost and provide traditional curative
methods of our country. Public involvement in solving health problems as well as suggesting improvement is ensured through Rogi Kalayan Samties. The objective of NRHM is to reduce maternal and child mortality for which the Odisha Government has tied up with Norway(NIPI) since 13 December, 2007. Besides it envisages universal access to public services for food and nutrition, sanitation and hygiene, prevention of communicable and non communicable diseases. These objectives have remained unachieved in this village.

But this village has no health centre. The nearest is at Randapali and the government hospital is quite afar. Interaction with some people revealed that they have not availed delivery facilities in the hospital because of lack of awareness. It is the personal factor which is affecting policy intervention for which massive awareness campaign is needed.

Success of policies depends on the commitment of service providers as well as response of the people. Economic reason is a primary factor dissuading the people to refer their ailments to the government hospital. Medicines are not always available for free. The taboo attached to free allopath medicine and its damaging side effects are often raised in interpersonal interactions. Interventions in their traditional belief pattern is essential with comprehensive programmes for providing health care. For success of health care programmes the Desari is to be apprised about its effectiveness. Educated local people should be convinced about the comprehensive approach. Availing medical facilities should be linked to accessing various types of subsidies. The cost of treatment should take into account their affordability. Commitment of all the stake holders is essential to penetrate the cultural environment so that the taboos attached to modern medicine and treatment can be done away with.

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Onion has been used as an ingredient in various dishes for thousands of years by many cultures around the world. World onion production is steadily increasing and now onion is the second most important horticultural crop after tomatoes.

There are many different varieties of onion, red, yellow, white, and green, each with their own unique flavor, from very strong to mildly sweet. Onions can be eaten raw, cooked, fried, dried or roasted. They are commonly used to flavor dips, salads, soups, spreads, stir-fry and other dishes.

Onions (*Allium cepa*) belong to the lily family, the same family as garlic, leeks, chives, scallions and shallots. There are over 600 species of Allium, distributed all over Europe, North America, Northern Africa and Asia. The plants can be used as ornamentals, vegetables, spices, or as medicine. There are over 120 different documented uses of the Alliums.

Onion and other Allium vegetables are characterized by their rich content of thiosulfinates, sulfides, sulfoxides, and other odoriferous sulfur compounds. The cysteine sulfoxides are primarily responsible for the onion flavor and produce the eye-irritating compounds that induce lacrimation. The thiosulfinates exhibit antimicrobial properties. Onion is effective against many bacteria including *Bacillus subtilis*, *Salmonella*, and *E. coli*. Onion is not as potent as garlic since the sulfur compounds in onion are only about one-quarter the level found in garlic.

The onion (*Allium cepa*), which is also known as the bulb onion, common onion and garden
onion is the most widely cultivated species of the genus Allium. The genus Allium also contains a number of other species variously referred to as onions and cultivated for food, such as the Japanese bunching onion (A. fistulosum), Egyptian onion (A. ×proliferum), and Canada onion (A. canadense). The name “wild onion” is applied to a number of Allium species. The vast majority of cultivars of A. cepa belong to the ‘common onion group’ (A. cepa var. cepa) and are usually referred to simply as ‘onions’. The ‘Aggregatum Group’ of cultivars (A. cepa var. aggregatum) includes both shallots and potato onions.

In Onion, sulphur is a constituent of secondary compounds, i.e. allin, cycloallin and thiopropanol (Schnug 1993). These secondary compounds not only govern the taste, pungency and medicinal properties of onion but are also important for resistance against pests and diseases (Brown and Morra 1997).

In overall cropping pattern, onion occupies about 0.1 per cent of gross cropped area (area under all crops in the country) and about 7 per cent of total area under all vegetable crops. Maharashtra ranks top in onion production and other major onion growing states in the country are Gujarat, Orissa, Karnataka, Tamil Nadu, Madhya Pradesh, Uttar Pradesh and Andhra Pradesh. Onion represents the only item among fruits and vegetables where India figures prominent in the world production and export.

Nutritional Benefits

After going through the onion’s nutritional facts, listed below, there will be no doubt about the nutritional abundance in onions. Here are some of the benefits of having onions as part of your diet:

- Eating onions boosts your appetite and prevents atherosclerosis.
- Onions extracts provide cures for cough, cold, bronchitis, as well as asthma.
- Onions can cause a marked reduction in bronchial spasms.
- Onion consumption reduces chances of colon cancer, stimulated growth of benevolent bifid bacteria and inhibits growth of potentially harmful bacteria in the abdominal tract.
- An interesting nutrition fact about onions is that the sulfides contained in them can lower blood lipid levels and reduce blood pressure.
- Onions also prevent blood clotting and platelet clumping.

Hope, onion’s nutritional information provided here prompts you to make it a part of your diet. The nutritional value of onions and great taste they provide are the reasons for them being the second largest traded vegetable, after tomatoes. So their nutritional value does make it worth all the tears. In passing, here’s a tip, if you want to cut an onion without tears, peel it in cold water.

Medicinal properties and health effects of onions

- Onion is diuretic, applied on bruises, boils and wounds.
- It relieves heat sensation.
- Bulb juice is used in smelling on hysterical fits in faintness.
- It is used to relieve insect bites and sour throat.
- Onion in diet may play a part in preventing heart disease and other ailments.
- Wide-ranging claims have been made for the effectiveness of onion against conditions ranging from the common cold to heart disease, diabetes, osteoporosis, and other diseases.
- It contains chemical compounds believed to have anti-inflammatory, anticholesterol, anticancer, and antioxidant properties, such as quercetin. Preliminary studies have shown increased consumption of onions reduces the risk of head and neck cancers.
- In many parts of the undeveloped world, onion is used to heal blisters and boils. A traditional Maltese remedy for sea urchin wounds is to
tie half a baked onion to the afflicted area overnight. A similar traditional cure is known in Bulgaria. Half-baked onion with sugar is placed over the finger and fingernail in case of inflammation.

- An application of raw onion is also said to be helpful in reducing swelling from bee stings. In the United States, products that contain onion extract are used in the treatment of topical scars; some studies have found it’s action to be ineffective, while others found that it may act as an anti-inflammatory or bacteriostatic and can improve collagen organization in rabbits.

- Onion may be beneficial for women, who are at increased risk of osteoporosis as they go through menopause, by destroying osteoclasts so they do not break down the bone.

- An American chemist has stated the pleiomeric chemicals in onions have the potential to alleviate or prevent sore throat. Onion in combination with jaggery has been widely used as a traditional household remedy for sore throat in India.

- Shallots have the most phenols, six times the amount found in Vidalia onion, the variety with the lowest phenolic content. Shallots also have the most antioxidant activity.

- Yellow onion is the most flavonoids, eleven times the amount found in Western White, the variety with the lowest flavonoid content.

- For all varieties of onions, the more phenols and flavonoids it contains, the more reputed antioxidant and anticancer activity it provides, when tested against liver and colon cancer cells in laboratory studies.

- While members of the onion family appear to have medicinal properties for humans, they can be deadly for dogs, cats, and guinea pigs

**Growing tips for Onions**

The color of an onion gives you some insight into it’s properties. The white onions are the strongest, followed by yellow, with red or purple being the mildest-flavored types.

**Buying seeds:** The length of day affects the growth of some onions, so when buying onion sets or seeds, be sure to find out whether the onion in question is appropriate for your area. Some do better in the south and others do better in the north - and some do well anywhere.

**Planting the onions:** Onions can be started from seed or from sets. Sets are slightly more expensive but give a much quicker result than seeds. In the south, they can be planted in the fall for a spring harvest, but in the north, early spring is the best time to plant. When planting sets, be sure that you plant the bulblet with the pointed end up.

**Growing conditions:** Onions prefer rich, well-drained, moist soil. They are an easy plant to grow and require little maintenance other than weeding once planted.

**Harvesting:** Harvest young scallions at any time. To harvest mature bulbs, wait until the tops begin to yellow. Knock the plants down and leave them there for a couple of days. Then carefully pull the plant. Move harvested bulbs to a dry area and set them on a screen for a few days for drying.
Ornamental uses: Some onion family members make nice additions to the ornamental garden, including ornamental onion, chives, garlic chives, and society garlic. In addition to providing a nice cottage-garden look, the tops can be snipped for use in soups and salads whenever the mood strikes.

Selection and Storage of Onions

Choose onions that are clean, well shaped, have no opening at the neck, and feature crisp, dry outer skins. Avoid those that are sprouting or have signs of mold. In addition, onions of inferior quality often have soft spots, moisture at their neck, and dark patches, which may all be indications of decay. As conventionally grown onions are often irradiated to prevent them from sprouting, purchase organically grown varieties whenever possible to avoid onions that have undergone this process. When purchasing scallions, look for those that have green, fresh-looking tops that appear crisp yet tender. The base should be whitish in color for two or three inches. Avoid those that have wilted or yellowed tops.

Onions should be stored in a well ventilated space at room temperature, away from heat and bright light. With the exception of green onions, do not refrigerate onions. Place them in a wire hanging basket or a perforated bowl with a raised base so that air can circulate underneath. The length of storage varies with the type of onion. Those that are more pungent in flavor, such as yellow onions, should keep for about a month if stored properly. They will keep longer than those with a sweeter taste, such as white onions, since the compounds that confer their sharp taste help to preserve them. Scallions should be stored in a plastic bag in the refrigerator where they will keep for about one week. All onions should be stored away from potatoes, as they will absorb their moisture and ethylene gas, causing them to spoil more readily.

Store cut onions by placing in a sealed container; use them within a day or two since they tend to oxidize and lose their nutrient content rather quickly. Cooked onions will best maintain their taste in an airtight container where they can be kept for a few days; they should never be placed in a metal storage container as this may cause them to discolor. Although peeled and chopped onions can be frozen (without first being blanched), this process will cause them to lose some of their flavor.

Scientific Classification of Onion

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Plantae</th>
</tr>
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<tbody>
<tr>
<td>Clade</td>
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<td>Family</td>
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</table>
Sub- family : Allioideae
Genus : Allium
Species : A. cepa
Binomial name : Allium cepa

| Nutritional value per 100 g (3.5 oz) |
|-------------------------------|-----------------|
| Energy                        | 166 kJ (40 kcal) |
| Carbohydrates                 | 9.34 g           |
| - Sugars                      | 4.24 g           |
| - Dietary fiber               | 1.7 g            |
| Fat                           | 0.1 g            |
| - saturated                   | 0.042 g          |
| - monounsaturated             | 0.013 g          |
| - polyunsaturated             | 0.017 g          |
| Protein                       | 1.1 g            |
| Water                         | 89.11 g          |
| Vitamin A equiv.              | 0 μg (0%)        |
| Thiamine (vit. B₁)            | 0.046 mg (4%)    |
| Riboflavin (vit. B₂)          | 0.027 mg (2%)    |
| Niacin (vit. B₃)              | 0.116 mg (1%)    |
| Vitamin B₆                     | 0.12 mg (9%)     |
| Folate (vit. B₉)              | 19 μg (5%)       |
| Vitamin B₁₂                    | 0 μg (0%)        |
| Vitamin C                     | 7.4 mg (9%)      |
| Vitamin E                     | 0.02 mg (0%)     |
| Vitamin K                     | 0.4 μg (0%)      |
| Calcium                       | 23 mg (2%)       |
| Iron                           | 0.21 mg (2%)     |
| Magnesium                      | 0.129 mg (0%)    |

Nutritional value per 100 g (3.5 oz)

Value of onion in everyday life

Onion is an important and indispensible item in every kitchen as condiment and vegetable. The green leaves, immature and bulbs are eaten either raw or used in the preparation of kitchen recopies. On account of its special characteristics of pungency, it is valued much. Onions are used in soups, sauces and for seasoning foods. The small bulbs and shallots are pickled in vinegar or brine. Onions, and other Allium species, are highly valued herbs possessing culinary and medicinal value. Some of their beneficial properties are seen after long-term usage. Onion may be a useful herb for the prevention of cardiovascular disease, especially since they diminish the risk of blood clots. Onion also protects against stomach and other cancers, as well as protecting against certain infections. Onion can improve lung function, especially in asthmatics. The more pungent varieties of onion appear to possess the greatest concentration of health-promoting phytochemicals.

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Kurukshetra
FORTHCOMING
ISSUES

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demoralization, both physical and emotional. People who are emotionally fragile and prone to anxiety are more likely to develop depression. The symptoms of depression can be mild or severe and can last for weeks, months, or even years. Treatment for depression often involves medication, therapy, or a combination of both. It is important to seek help if you are experiencing symptoms of depression, as this condition can have a significant impact on your quality of life.

Withdrawal symptoms
Withdrawal symptoms can occur in people who have been using drugs for a long time and then stop using them suddenly. These symptoms can be physical, psychological, or both. Physical symptoms may include tremors, headaches, nausea, and vomiting. Psychological symptoms may include restlessness, irritability, and anxiety. Treatment for withdrawal symptoms may involve medications, therapy, or a combination of both. It is important to seek help if you are experiencing withdrawal symptoms, as this condition can be dangerous and even life-threatening.

Prevention
Prevention is key in preventing the onset of drug addiction. It is important to recognize the risk factors and warning signs of addiction and to take steps to avoid becoming addicted. Some strategies for prevention include avoiding situations that may trigger a desire to use drugs, seeking support from friends and family, and avoiding substances that may be harmful. It is also important to seek help if you are struggling with addiction, as there are many treatment options available that can help you overcome your addiction.

Government initiatives
The government has implemented various initiatives to address the issue of substance abuse in the country. Some of these initiatives include the National Drug Abuse Control Programme (NDACP), which was launched in 2004, and the National Drug Abuse Control Programme (NDACP-II), which was launched in 2013. These programmes aim to prevent the use of drugs and to provide treatment and rehabilitation services for those who are affected by drug addiction. The government has also implemented various laws and regulations to combat drug abuse, including the Narcotics Control Act, 1956, and the Drugs for Control of Drug Abuse Act, 2015.