Health and Population

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REVIEW OF THE PRESENT HEALTH STATUS OF INDIA, EMERGING HEALTH PROBLEMS AND THEIR SOLUTIONS**

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ABSTRACT

The current status of health and health system in the country, emerging health problems and challenges are critically reviewed in this paper. The strategic issues for meeting the future challenges of health system of the country are highlighted in detail. After reviewing the health scenario in the country, the author suggests that sincere efforts need to be made by the government and the community for improving the quality of life of the people. Lastly, the role of Medical Professional Associations like IAPSM, IMA, IAP, etc. for improvement of the health status has been emphasised.

Status of Health and Health System in India

Any appraisal of the health status of a nation must be done against the backdrop of its population. Presently, we are 1 billion and our population is growing at a rate of about 18 million every year. With only 2.4 per cent of the world land area, India has to support 16 per cent of its population. As per the 1901 census, India's population was 238 million (the then India included India, Pakistan and Bangladesh of today). During these hundred years, the population of India alone has become more than four times. All our economic progress is becoming far outstripped by the increase in our numbers. And this galloping growth in population is the most important determinant of all aspects of our national wellbeing including health.

Though the crude death rate has been constantly declining, yet the crude birth rate has not come down to the extent it was desired. Despite a slight decline in

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the growth rate, the population continues to grow at *an* alarmingly high rate. Though the decline in birth and death rates have occurred in all the States, the rates of decline are slower in some States like Uttar Pradesh and Bihar. Even within the same State, there are substantial differences between districts.

When we review the mortality rates for the country, we find that the mortality rates, especially crude death rate, infant mortality rate and to some extent maternal mortality rate have shown a decreasing trend. The IMR has declined from more than 200 at the time of independence to 73, CDR from 27 to 9 and MMR to 4.5. Life expectancy at birth has increased considerably. Presently it is 62 and 61 years for females and males respectively. The projections for the period 2001-2006 reveal that the life expectancy among females (66.7 years) would remain higher than that of males (64.9 years).

Among the major achievements of the country, the notable are (I) the declining trend in vaccine preventable disorders due to improvement in immunisation coverage and (ii) sincere efforts being made for eradication of poliomyelitis through country-wide Pulse Polio Immunisation Programme.

After the successful eradication of Smallpox; now Guinea worm disease is on the verge of eradication. The last nine cases of Guinea worm disease were reported in 1996 from Jodhpur, Rajasthan and the country is likely to be declared free from Guinea worm soon.

Leprosy has also shown a declining trend. The prevalence of leprosy has declined from 3.9/1000 in 1985 to 0.7/1000 in 1995 and in the Ninth Five Year Plan it is proposed to integrate leprosy eradication programme with general health services where prevalence is less than 0.5/1000.

Tuberculosis is also one of the major public health problems in the country. We have an estimated 14 million cases of tuberculosis; 1/4th of which are infectious. Every year 1.5 million new cases occur and 0.5 million die due to this disease. The revised National Tuberculosis Control Programme which envisages to have a cure rate of 85 per cent and case detection of 70 per cent, is expected to contain the problem of TB in the country.

Malaria control has emerged as a major challenge for the country. In 1998, 9.37 lakh malaria cases were reported of which 43 per cent were due to Plasmodium falciparum.

Seventeen thousand cases of *kalaazar* with 255 deaths were reported from 36 districts of Bihar and 10 districts of West Bengal in 1997. Japanese Encephalitis was also reported in 1997 (2200 cases and 670 deaths). Water borne diseases like diarrhoea, dysentery, gastro-enteritis, enteric fever, viral hepatitis, etc. still occur in countless numbers in India. A large section of our population, especially women and children suffer from various grades of under nutrition and malnutrition. And now non-communicable diseases are also emerging as a major public health problem.

In fact, the rate of decline of morbidity has not been upto the desired level, though mortality has come down considerably in these years.

When one considers the health and related policies in India, we find that we have well formulated policy guidelines in terms of National Policies for Health, Nutrition, Education, Children, etc. These policies provide an overall framework for health and development and reflect political commitment. The Constitution of the country, the directive principles and the national policies provide the broad guidelines for mobilisation and distribution of resources in such a way as to meet the health needs of the masses. The constitutional amendments from time to time and their ratification by the State assemblies also provide the guidelines to planners and administrators to direct the resources to the priority areas.

Since health is a State subject, the implementation aspect is the responsibility of the States. Inadequate resource availability in the States may affect the policy implementation. However, decentralisation in health and development planning as envisaged under the Panchayati Raj Act provides an opportunity for community participation in developmental programmes.

The resources allocated to the health sector form an important determinant of health services in the country. The outlay in health and health related sectors have been increasing over the Five Year Plans. But, as the percentage of total outlay for health has remained constant over the successive Five Year Plans at around 2-3 per cent of GDP as compared to the figure of 10 per cent in developed countries, the major financial expenditure (about 60%) is towards the payment of salaries of health personnel only in the country.

Now the government is mobilising additional financial resources for health through various international organisations. The private and corporate sectors are also being encouraged through several incentives and concessions so as to involve

them in health and family welfare services.

Over the years the country has expanded the health care delivery system and has by and large, adequate availability of health manpower, except for a few categories, and training institutes. We have a vast infrastructure spread across the length and breadth of the country (1.3 lakh sub-centres, 22600 primary health centres and 2600 community health centres)

The Reproductive and Child Health Programme with a budget of Rs. 5111 crore is one of the biggest programmes started in the Ninth Five Year Plan. Revised National TB Control Programme using the DOTS strategy, Multi Drug Therapy (MDT) for leprosy, newer strategies being introduced for control of Malaria, *Kalaazar,* Filariaisis, etc. are sure to yield positive results in due course of time.

With a view to further strengthen the secondary health care delivery system, government has already initiated State Health Care System Projects in Andhra Pradesh, Karnataka, Punjab and West Bengal and it is being extended to seven more States with IDA assistance from the World Bank.

Having experienced and understood the limitations of public sector, efforts are being made for privatisation of health care services as well as health care financing.

There cannot be health without simultaneous social and economic development. There has been huge expansion of our industrial infrastructure and our economic growth is certainly looking up, yet the main challenge remains to narrow down the disparity between haves and havenots.

There are many poverty alleviation and income generation programmes which indicate political commitment but the major issue is to make these benefits percolate down to the needy and poor.

Various international organisations and United Nations Agencies also provide significant material and technical assistance to health and family welfare programmes in the country. The WHO continues to collaborate in promoting and developing health care facilities. World Bank has provided assistance to various National Health Programmes (leprosy, blindness, etc.) and some Area Projects. Other agencies like ODA, DANIDA, SIDA, etc. are also providing significant partnership for improving health and family welfare services.

However, one of the main issues for international partnership in health is the terms and conditions of assistance, which need to be suitable to the recipient countries. The international partnership should strengthen the national health systems.

Future Challenges for Health Services

After having reviewed the current health status and health system in the country, the author talks about certain challenges which our health system is likely to face in the near future.

Of the communicable diseases, perhaps the biggest challenge would be HIV/AIDS. Of the estimated 33.4 million cases of HIV in the world, 95 per cent are in developing countries. In India ever since the first case was detected in 1986 in a commercial sex worker, till November 1999, 91809 HIV+ve and 9695 full blown cases have been reported by the NACO. The actual number is estimated to be much more than the reported figures.

Other communicable diseases such as Malaria, Tuberculosis, *Kalaazar* and Japanese Encephalitis are likely to continue to pose challenges to the country in the coming years. Moreover, newer diseases reported from other parts of the world may also be considered while planning future health systems. More than 33 new viral and other diseases have been identified by CDC Atlanta since 1973; such as HIV, Rota virus, Parovirus-B19, Ebola virus, Hepatis-C, Hantavirus, etc. Out-breaks of many of these have been reported from various countries in the world, of late. Some examples are:

Ebola Haemorrhagic fever reported in 1979 from Zaire, Africa, resulting in 316 cases of which 245 died.

Bovine Spongiform Encephalopathy (BSE) reported in 1995 in U.K. in cows and about 1,60,000 animals were estimated to be infected. Twelve cases of man variant in U.K. were also reported.

Economic impact of Cholera reported from Peru in 1991 was estimated to be $770 million from trade barriers and loss due to reduction in tourist revenue.

Plague reported from Surat in India in September 1994 had resulted in similar economic loss to the country.

The Meningitis epidemic in Africa in 1997 resulted in 41,699 cases and 4900 deaths.

The emerging and re-emerging infectious diseases may be attributed to social events like war or civil conflicts, rapid urbanisation and industrialisation, migration of population, agricultural practices and food production, ecological changes which may be manmade or natural; human behaviour changes, improved health care facilities for diagnosis and management, microbial adaptation by development of drug resistance, changes in virulence and toxin production, mutation, etc. The health infrastructure in developing countries has been inadequate to meet these challenges. There are inadequate funds, poor surveillance and lack of trained manpower.

Non-communicable diseases will become a major public health problem in the country due to changing life styles, increasing stress and tensions due to changes in social and cultural systems in the society. Other factors like increase in life expectancy, resulting primarily from decline in child mortality, control of infectious diseases, extensive use of antibiotics, improvement in nutritional standards and access to health services, etc. have also contributed to increase in life expectancy in the population. With increase in the number of aged people, there will be higher incidence and prevalence of diseases like Hypertension; IHD, Diabetes, Cancers and the whole range of geriatrics problems.

The estimated number of cancer cases in India are two million and every year seven lakh new cases are detected and three lakh die due to cancer in the country. The prevalence of mental disorders is estimated to be 10-15 per cent. Various studies put the prevalence of diabetes from 0.95 per cent to 3.8 per cent in urban areas and 0.6 to 1.93 per cent in rural areas of the country. About 40 million are estimated to suffer from Coronary Vascular diseases. The prevalence of IHD is estimated to be varying from 4.6 to 14.1 per 1000 population.

There are approximately 12.5 million economically blind in India and 80 per cent of this blindness is due to cataract. Nearly 60 million have endemic goitre and an estimated 8.8 million have mental or psychomotor handicap due to iodine deficiency.

156 deaths due to road accidents occur every day in the country. All these numbers will swell in the coming decades.

The percentage of elderly people (60 years and above) is projected to increase from 6 per cent to 12 per cent by 2025. This demographic transition would result in an ageing society, with elderly people having multiple illnesses, loss of vision, loss of hearing, impaired mobility, social isolation, mental stress, loneliness, depression, etc.

Over the past 50 years, the threats from rapidly changing physical and social environments have increased at an unprecedented rate. Environmental degradation, pollution and green house effect have significantly affected the very ecology of our planet. Sub soil water levels are going down. In due course of time, it appears as if all of us will be living in a big-2 green house. We should therefore, expect more allergic, respiratory, neoplastic and Iatrogenic diseases also.

Indeed, if health is seen not just as the absence of disease but also as a central goal of human development, then the protection of environment and protection and improvement of health are mutually supportive. In future, the environmental health is going to be a big challenge for the health managers.

Issues and Strategies for Future Planning of Services

Having reviewed the health scenario in India, it becomes evident that concerted efforts have to be made by the government and the community for improving the quality of life of people. While one can notice a considerable progress in certain fronts; in the field of health, all is not so well.

The rapid growth of population has far outstripped our economic and social developments. For sustainable development, therefore, stabilisation of population is the first and foremost requirement. There is no chance for us till we achieve the replacement level of fertility. We have to achieve NRR of unity by the target date i.e. 2011-2016. The RCH programme launched by the government in the Ninth Five Year Plan is therefore, a step in the right direction and we all have to ensure that it succeeds.

We will have to ensure equitable distribution of health services for ensuring equity for health. Location of health services and facilities should be such that these are easily accessible and available to people, especially the under-privileged sections of the society. Regionalisation of health care services with clear-cut geographical demarcation for use of facilities along with proper two-way referral system would go a long way to ensure equitable distribution of health services to all.

Moreover, human resource planning, human resource development, performance appraisal system, work culture, rational transfer-policies, incentives and career development opportunities for health manpower would ensure a motivated workforce. Therefore, this aspect would need adequate attention.

Strengthening of health promotion and protection by development of an integrated education and health promotion programme, with locally relevant content and media for dispersion of the messages, implementation of preventive and promotive health activities in an integrated and comprehensive manner with involvement of all health and related sectors, and making health as an integral part of the development programme along with strict and effective enforcement of legislation related to health and environment are some of the other primary level strategies for the future.

Strengthening of the health sector including partnership in health development by identification and specification of the role of public and private sectors in health should be encouraged. The co-ordinating and monitoring mechanisms need to be defined and effectively implemented in the health and related sectors. Effective involvement of the indigenous systems of medicine in provision of health care services with specified role and responsibilities would further strengthen the system.

Developing and strengthening of specific health programmes, adopting and developing an area specific comprehensive health care approach to cover all the major health problems in a given geographical area with linkages with other related sectors would avoid duplication and wastage of resources.

Another area for future consideration would be developing and using an appropriate health technology so as to have locally relevant health technologies which fit into the local socio-cultural milieu.

Strengthening of international partnership in health by integrated involvement of international organisations and agencies in important national health programmes and having a common platform for sharing experiences and expertise in health among various countries especially in the South East Asian countries are important requirements.

Role of Indian Association of Preventive and Social Medicine

The professional associations like the Indian Association of Preventive and

Social Medicine, the Indian Public Health Association, the Indian Medical Association, the Indian Paediatric Association, etc. can play a very crucial role by providing technical inputs for planning, monitoring and evaluating the health services in the country. .

Lkkjka'k

प्रस्तुत लेख में लेखक द्वारा देश में उभरती स्वास्थ्य समस्याओं के संदर्भ में वर्तमान स्वास्थ्य स्थिति की समीक्षा की गई थी। इस लेख में वर्तमान स्वास्थ्य स्थिति, विद्यमान स्वास्थ्य प्रणाली, उभरती हुई स्वास्थ्य समस्याओं और उनसे संबंधित चुनौतियों की विवेचनात्मक समीक्षा की गई है। देश की वर्तमान स्वास्थ्य प्रणाली के सामने भावी चुनौतियों को हल करने संबंधी महत्वपूर्ण मुद्दों पर विस्तार से चर्चा की गई है। देश की स्वास्थ्य परिदृश्य की समीक्षा करने के पश्चात लेखक द्वारा लोगों के जीवन स्तर में सुधार लाने के लिए सरकार और समुदाय, दोनों के सहयोग से निश्ठापूर्वक प्रयास किए जाने का सुझाव दिया गया है।

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HEALTHY AGEING

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ABSTRACT

This article presents in brief the problems faced by elderly people in the process of ageing with reference to their (i) atrophy of the taste buds and loss of teeth; (ii) changes in the gastro-intestinal tract; (iii) respiratory system; (iv) kidney and urinary system; (v) urinary bladder, (vi) heart and circulatory system; (vii) muscular system; (viii) brain; and (ix) bones. The author also suggests simple measures to ensure healthy ageing.

Ageing is not a disease. It is a slow process through which an adult individual passes after a certain age and this process is always associated with some visible changes like greying hair and wrinkling of skin as well as internal changes in the physiological organs collectively known as ageing process or biological ageing. There is no fixed age at which a person begins to age. It, varies widely from one individual to another. For example, a man of 70 may look like a mature healthy adult and another man at the age of 55 looks old. However, the age of 60 years is taken as a cut-off point, above which all individuals are known as elderly persons. There are some other terms for elderly persons like older persons and senior citizens.

This ageing process, which is inevitable for all, is always associated with decline of bodily functions. For example, the elderly man will not be able to run like a young adult. There are many effects of ageing on the life style of elderly persons. However, it varies from one person to another. In other words, the chronological age, according to calendar years, might widely differ from his biological age. Elderly persons or aged persons are not a homogenous group, but can be of three broad categories viz. "young-old", usually between 60 and 75 years; "old-old", usually between 76 and 85 years; and "very-old" usually; between 86 years and above.

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Importance of Healthy Ageing

Our life expectancy is steeply rising and millions are living in their eighth or ninth decade of life. It means, an elderly individual will have at least 20-30 years (after his 60^{th} year) to live, and he has to remain healthy and active but not just a bed-ridden 'vegetable'. Healthy ageing should be the main objective of all age-care programmes. It is the responsibility of everyone to ensure that elderly persons are kept as healthy as possible, so that they have an active meaningful life. This is not so simple because, as mentioned earlier, ageing is associated with physiological and structural changes in all organs of the body which bring about the functional decline of the body.

It must also be remembered that physiologically declining body of the elderly individual becomes extremely vulnerable to several diseases of old age like diabetes, coronary artery diseases, 'strokes' in brain and malignancy. Physiological ageing is then converted to pathological ageing.

Clinical Disorders in Elderly

Most elderly individuals at the age of about 60 years develop the following clinical disorders - high blood pressure, diabetes, urinary disorders, osteo-arthritis of the joints and cardiovascular disorders. Many elderly persons develop mental health disorders like depression and dementia. Those elderly persons who belong to high economic level consume number of drugs at the same time since these drugs are available in the market over the counter and need no doctor's prescription. Many of these drugs interact with each other and produce harmful effects. This is one danger, which all elderly and their caretakers should be aware of and doctor should be consulted regarding the medicines that elderly persons need for their clinical disorders.

Dangers of Clinical Disorders in Elderly as just Ageing Manifestations

On the other hand, there is a danger that diseases effecting the older persons are ignored because they are generally considered as manifestations of old age and no doctor's attention is needed. As a result, doctor's attention to old age patients is brought at a much later stage when the condition is already advanced to a significant extent. All individuals should remember that disease process runs its course very rapidly in the system of an elderly individual and at

the same time the complications can be much more severe than in adults. It is, therefore, necessary that any clinical abnormality experienced by an elderly person should be brought to the notice of a doctor or at least a health worker, who might be able to diagnose the condition and decide whether it is necessary for doctor's attention.

Physiological Decline and Consequences

As mentioned earlier, ageing process is a decline in biological functions affecting most physical systems. The following is a list of such declines, which change the life-style of the elderly individuals to a large extent.

Atrophy of the Taste Buds and Loss of Teeth

With increasing age, the taste buds on the tongue responsible for sweet and sour get atrophied and as a result, the preferences for food alters significantly. There is a craving for sweet foods in general. The elderly individuals should be aware of these changes and control their diet accordingly.

Loss of teeth is a common feature in ageing. While individuals in the economically satisfactory level can have dentures which replace the functioning of teeth, there are millions of elderly in the lower economic level who are toothless in old age. Even with dentures, the eating habits are considerably altered as chewing is avoided and the elderly individuals prefer to eat soft mashy or liquid food which quite often leads to nutritional deficiencies.

Changes in the Gastro-Intestinal Tract

During old age, considerable changes occur in the gastro-intestinal system. For example, stomach becomes smaller in size, foods take a long time to pass on to duodenum, the next segment of the gastro-intestinal tract, thus causing a sense of heaviness and uncomfortable feeling if the diet is not appropriately altered. The gastro-intestinal tract which is always in the moving condition, generally known as motility, through which foods are gradually passed through various segments of small and large intestine towards the rectum for getting ingested foods digested and absorbed, and those not needed are excreted.

With ageing, the walls of the intestine get atrophied and weak and the motility is markedly reduced (lazy intestine). The enzymes for digestion

secreted by the intestine are also reduced. The partly digested food stays in the intestine for a longer period. As a result, the common complaint of the elderly person is gas formation (fluctulance) and constipation.

An appropriate diet composed of easily digestible food with adequate amount of roughage or food fibers to stimulate the motility of the intestine will reduce these complaints to a great extent. Diet in ageing should receive high priority.

Respiratory System

The two lungs are responsible for the respiration of the body through which our body gets rid of carbondioxide and also gets fresh oxygen from outside which then gets absorbed into the blood and is then carried to all parts of the body. During ageing, a significant portion of the lungs is fibrosed and they are unable to offer the same benefit of oxygenation of blood in the lungs.

Kidney and Urinary System

The two kidneys get smaller in size and the power of the kidneys to filter out the unwanted waste products from the body is diminished. The total amount of urine becomes less in old age and this is not beneficial since the waste products are not expelled out of the body adequately. Fluid intake should therefore be increased considerably to increase the quantity of urine.

With ageing, the water balance in the body is disturbed. "The body of an elderly is made up of only 55 per cent of water whereas a young adult body consists of 75 per cent of water. Elderly person's body is already dehydrated. They are vulnerable to high temperature as in sunstroke. It is, therefore, extremely important for an old person to drink as much of fluid as possible, in the form of liquid food like soup or plain water. A general rule is to drink at least 8 glasses of water per day. One should also remember that though the body of elderly is dehydrated, he or she gets less thirsty due to gradual atrophy of the thirst centre in the brain.

Urinary Bladder

Urinary bladder gets smaller in size due to shrinkage and as a result, the accumulation of urine even of a small amount, leads to an urge for urination. It is very rightly stated that in young age, the individual controls the bladder; but in

old age, the bladder controls the individual.

With increase in age, the valve in the bladder which controls the exit of urine from the bladder to urethra, gets atrophied and weak, Involuntary leakage of urine occurs in case the bladder is full or due to increase of pressure on bladder on sneezing or even on laughing, a condition known as urinary incontinence. Incontinence is a common complaint of elderly females.

Heart and Circulatory System

The blood vessels get rigid and quite often the vessel walls become rough with the deposition of solid matters consisting mostly of cholesterol. The heart muscles get weaker and power to send blood throughout the body through the circulatory system gets less and less powerful. As a result, most, organs in the body do not get sufficient amount of blood.. Physical activity is therefore regarded as a very important step to ensure adequate supply of blood and delay the process of ageing.

The most dangerous effect on heart is coronary heart disease, especially coronary thrombosis. Clots on the walls of the blood vessels are swept away and get impacted in the narrow coronary vessels of heart and thus blocking the action of heart. Physical activity to promote appropriate blood circulation and consuming a diet which does keep blood cholesterol and fatty substances under control are two effective preventive measures.

Muscular System

The muscles in the body get gradually atrophied with ageing and especially those small muscles, which are necessary for quick reflex action. The elderly person can quite be capable of working like a normal person and can undertake activities which require big muscles of legs and arms. But when it comes to quick movement which needs small muscles for quick reflex movements and these functions are impaired, causing accidents like slipping on wet floor of the bathroom.

Brain

With ageing, the size of the brain gets smaller and the weight also becomes less. This, however, does not interfere with the function of the brain. However, in general, the brain cells and its fibres which carry impulses from brain to the system and upwards get degenerated. The most glaring

manifestation of ageing affecting the brain is forgetfulness and in simple terms, it is inability of brain to recall the past experience. This, however, is common in all elderly persons.

Bones

The bones form a vital part of the human body and are supposed to be permanent. Once these are formed, they become porous and fragile as age advances, especially in elderly females. The condition is known as osteoporosis. In developed countries of the West, billions of dollars are spent for repairing fractured hip joints and thigh bones, as a result of even minor falls due to osteoporosis. Improved blood circulation to bones through physical activity and proper diet with adequate calcium are two best preventive measures.

Simple Measures to Ensure Healthy Ageing

1. Physical activity
2. Proper diet
3. Social interaction with others
4. Being aware of the vulnerabilities in old age and taking precautions to avoid these.
5. Preparation for old age from adulthood. Physical activity like walking or exercise should be started not in old age but much earlier
6. Consult a doctor in sickness. Do not treat yourself by "popping pills".

Lkkjk'k

प्रस्तुत लेख में वृद्धावस्था के विभिन्न पहलुओं के संदर्भ में लेखक द्वारा वयोवृद्ध लोगों की समस्याओं पर संक्षेप में प्रकाश डाला गया है जैसे 1. आस्वादन कलिकाओं की दुर्बलता तथा दन्तक्षय, 2– जठरान्त्रीय तंत्रिका में परिवर्तन,3–श्वसन प्रक्रिया में विकार, 4– गुर्दे तथा मूत्रप्रणाली में विकार 5– मूत्राशय संबंधी विकार, 6–हदय तथा रक्त परिचलन तंत्र संबंधी विकार, 7–मांसपेशी तन्त्र में विकार, 8– मतिष्क विकार, 9– हड्डियों में कमजोरी आदि पक्ष। लेखक द्वारा स्वस्थ वृद्धावस्था के संदर्भ में कुछ सामान्य उपाय भी सुझाये गए हैं।

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INFANT FEEDING PRACTICE IN TAMIL NADU

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ABSTRACT

The results of the present study conducted on a sample of 912 children bom during 1990-94 in Tamil Nadu revealed that only 28 per cent of mothers had practised ideal infant feeding practice. It was more among urban women (32 per cent) as compared to their rural counterparts (26 per cent). Place of residence, age at marriage, sex of the child, number of antenatal visits by ANM during pregnancy and place of delivery had a significant relationship with infant feeding practice. The study suggests to bring about an improvement in the delivery of maternal and child care services by strengthening of health education programme with special emphasis on interpersonal communication with women to improve the ideal infant feeding practices.

Infant and child health is considered as an important indiclor of the general well being of a society. During the last several decades, researchers have focussed their attention on infant morbidity and mortality, child development, etc.

Infant feeding practice is known to be a major factor affecting infant health and exclusive breast-feeding is universally regarded as the preferred practice for 4-6 months old babies. This is supported by research evidence that breast feeding not only provides the best source of nutrition to the infants but also important immunological and psychological benefits.

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The 1979 WHO/UNICEF report on infant and child feeding recommends to avoid unnecessary sedation, routine use of lactation suppressants and routine episiotomy at birth. It recommends that breast-feeding should be initiated after birth as soon as possible preferably during the first half an hour of delivery. To facilitate breast-feeding, mothers should be permitted and encouraged to keep their infants with them. Mothers should be taught to feed the infants on demand. All babies should receive colostrum.

It has been observed that the rate of growth of breast-fed infants is satisfactory up to the age of 4 to 6 months. This is so because the nutrients supplied by beast milk are sufficient to sustain satisfactory growth of the child only up to the age of 4 to 6 months and supplementary foods are necessary beyond this age.

Industrialisation and urbanisation influence mothers to shift away from the traditional practice of breast-feeding. In most of the communities, supplementary feeding is not started in time (after the age of 4 months) with the belief that breast milk is sufficient for the child. The failure to give exclusive breast-feeding and introduce supplementary feeding to infants result in the poor health status of infants and children.

The present study focussed on the infant feeding practice followed by the mothers in Tamil Nadu.

OBJECTIVES

(i) To study the existing infant feeding practice among mothers in Tamil Nadu;
(ii) To study the socio-cultural and demographic correlates of infant feeding practice and
(iii) To suggest educational strategies to improve appropriate feeding practices among mothers in Tamil Nadu.

METHODOLOGY

Data for the present analysis were taken from the Tamil Nadu Family Health Survey, conducted by the Gandhigram Institute of Rural Health and Family Welfare Trust, Tamil Nadu, during 1995 on a sample of 4,086 ever married women spread all over Tamil Nadu. Information on infant feeding pracice was collected for

all births occurred during 1990-1994. However, in order to minimize the recall lapse, information related to the last child bom during the reference period and among those who had completed one year of age at the time of interview was collected for the present study. There were 912 last bom children in the study sample who had completed one year of age at the time of interview.

The status of infant feeding practice was measured by assigning score to the answers provided by the mothers on the following aspects:

SI.No	Practice	Conditions	Score
1.	Timing of breast feeding	Immediately	3
		After an hour	2
		After a day	1
2.	Colostrum feeding	Yes	1
		No	0
3.	Duration of breast feeding	10-12 months	4
		7- 9 months	3
		4- 6 months	2
		≤3 months	1
4.	Age of introduction of solid food	4-6 months	4
		7-8 months	3
		9-10 months	2
		11-12 months	1

The maximum score of 12 for the above said aspects was taken as an ideal infant feeding practice. The scores between 8 and 12 was considered as medium and a score of 7 or below was considered as low level of infant feeding practice.

FINDINGS AND DISCUSSION

Infant Feeding practice by Place of Residence: The results presented in Table 1 show that only 29 per cent of infants were fond to have had the advantage of getting timely breast feeding, colostrum feeding, breast milk for a minimum recommended period and solid food supplement at the right age. It is generally believed that the place of residence of a mother influences her infant feeding practice depending on the chances of her exposure to different socio-cultural practices and mass media. The present study supported the view and showed a significant relationship between infant feeding practice and place of residence. Nearly one third (32 per cent) of mothers living in urban areas were having ideal

infant feeding practice as compared to 26 per cent in rural areas. However, the proportion of poor infant feeding practice was nearly the same both in rural as well as in urban areas (22 per cent in rural and 21 per cent in urban).

TABLE 1

PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND PLACE OF RESIDENCE

Status of Infant Feeding Practice	Place of Residence		
	Rural N=599	Urban N=313	Average
Ideal	25.7	32.3	29.0
Medium	52.4	47.0	49.7
Poor	21.9	20.8	21.3

(X^2 - 4.48987 DF-2 P < .10593)

The results indicated that the living environment such as exposure to mass media, access to various health care facilities and the opportunities to interact with health personnel have played a pivotal role in the infant feeding practice. It is also to be noted that contrary to the expectation that urban women are deviating from traditional breast feeding to bottle feeding, still a significant proportion (32 per cent) are continuing breast feeding for a minimum period of 12 months. Though industrialisation and modernisation have significant role in the infant feeding practice, their role seemed to have a positive impact on the infant feeding practice as evidenced from the fact that a higher proportion of mothers in urban areas were having ideal feeding practice than their rural counterparts.(Table 1).

Infant Feeding Practice by Age at Marriage: The results presented in Table 2 show that the proportion of mothers with ideal infant feeding practice increased with the increase in age at marriage. The proportion of mothers with ideal infant feeding practice increased from 24 per cent for those who got married at the age of 17 years or below to 27 per cent for those who got married at age between 18 and 19 years and 34 per cent for those who got married at the age of 20 years and above. This shows that the proportion of mothers with poor infant feeding practice decreased with the increase in age at marriage. The results indicated a significant relationship between age at the time of marriage and feeding practice.

TABLE 2
PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND AGE AT MARRIAGE

Status of Infant Feeding Practice	Age it the Time of Current Marriage			Average
	<17 N=363	18-19 N=251	20 and above N=298	- -
Ideal	24.2	26.7	33.6	28.1
Medium	52.3	51.4	47.7	50.4
Poor	23.4	21.9	18.8	21.3

(X^2 - 7.69521 P < . 10340)

Infant Feeding Practice by Educational Level of Mother. The results presented in Table 3 show that the proportion of mothers with ideal infant feeding practice increased with education up to middle standard and declined at secondary standard and above. The results indicated that there was no relationship between education and infant feeding practice.

TABLE 3

PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND EDUCATIONAL LEVEL

Status of Infant Fading Practice	Education				Average
	Illiterate N=347	Primary N=173	Middle N=155	Secondary and Above N=237	
Ideal	23.3	30.1	32.9	30.0	29.7
Moderate	53.0	51.4	45.8	49.4	49.9
Poor	23.6	18.5	21.3	20.7	21.2

(X^2 -7.35191 DF 6 P < .28952)

Contrary to earlier studies the results of the present study indicate no relationship between infant feeding practice and education. The results of the present study showed that formal education not necessarily led to ideal infant feeding practice. Education on infant feeding practice at the time of ante-natal and post-natal periods is essential for all mothers to improve the infant feeding practice:

Infant Feeding Practice by Religion: The level of infant feeding practice followed by the mothers of different religious groups presented in Table 4 show that the proportion of mothers with ideal infant feeding practice was slightly higher

among Hindus (28 per cent) as compared to Christians (26 per cent) and Muslims (23 per cent). On the other hand, a very high proportion of mothers among Muslims (32 per cent) were having poor infant feeding practice as compared to Hindus (21 per cent) and Christians (20 per cent). The results indicated that higher proportion of Muslim women were having poor infant feeding practice than the Hindus and Christians. However, the differences were not statistically significant.

TABLE 4

PERCENTAGE DISTRIBUTION OF MOTHES BY INFANT FEEDING PRACTICE AND RELIGION

Status of Infant Feeding Practice	**Religion**			**Average**
	Hindus N=809	Christians N=46	Muslims N=57	
Ideal	28.4	26.1	22.8	25.7
Moderate	50.7	54.3	45.6	50.2
Poor	20.9	19.6	31.6	24.3

(X^2 -3.98613 DF-6 P < .40789)

Infant Feeding Practice by Sex of the Child: Due to the prevailing gender bias in India, the male child is generally expected to get more care than the female child. The results presented in Table 5 reveal that a higher proportion of mothers with male child (31 per cent) were having ideal infant feeding practice than those with female child (25 per cent). The proportion of mothers with poor infant feeding practice was high, 24 per cent among mothers with female child as compared to 20 per cent among mothers with male child. There is a significant relationship between the sex of the child and infant feeding practice. The results confirmed the general belief that male children are usually getting more care than the female children.

Infant Feeding Practice by Number of Visits by ANM During Pregnancy: A significant relationship between infant feeding practice and number of visits by ANM during pregnancy has been observed, Table 6. The proportion of mothers having ideal infant feeding practice increased with number of visits made by ANM during pregnancy and vice-versa. The proportion of mothers who had ideal infant feeding practice increased from 24 per cent for no visits to 34 per cent for five or more visits by ANM during pregnancy.

TABLE 5
PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND SEX OF CHILD

Status of Infant Feeding	**Sex**		**Average**
	Male N=477	Female N=435	
Ideal	30.8	24.8	27.8
Moderate	49.7	51.5	50.6
Poor	19.5	23.7	21.6

(X^2 -4.91773 DF-2 P< .08553)

The results further indicated that the health and nutritional education services provided by the ANM during ante-natal visits to mothers had positive effect on the infant feeding practice of mothers.

TABLE 6
PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND NUMBER OF VISITS BY ANM DURING PREGNANCY

Status of Infant Feeding Practice	**Antenatal visit by ANM**				**Average**
	No Visit N=426	1-2 N=105	3-4 N=96	5 and above N=185	
Ideal	23.5	26.7	33.2	33.5	292
Moderate	50.9	52.4	45.9	53.5	50.6
Poor	25.6	21.0	20.9	13.0	20.1

(X -17.91796' DF-6 P<.00644)

Infant Feeding Practice by Place of Delivery: A higher proportion of mothers (34 per cent) who had delivered their babies at Government health centres were having the ideal infant feeding practice than those who had delivered their babies either at home or private hospitals (25 per cent each).This confirmed that there was a significant relationship between the place of delivery and infant feeding practice of mothers (Table 7).

TABLE 7
PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND PLACE OF DELIVERY

Status of Infant Feeding Practice	**Place of Delivery**			**Average**
	Home N=246	GH/PHC/HSC N=280	Private N=386	
Ideal	25.2	33.9	25.4	28.1
Moderate	56.5	44.3	51.3	50.7
Poor	16.3	21.8	23.3	21.4
Total	100.0	100.0	100.0	100.0

(X^2-10.87067 DF-4 P ≤ .02806)

The results indicated that the maternal and child-care education provided by health personnel during pregnancy/delivery has positive effect on the infant feeding practice of mothers. The health and nutrition education provided by the ANM during pregnancy helps mothers to gain more knowledge on infant feeding practice and adopt the same.

Infant Feeding Practice by Exposure of Mothers to Mass Media: In order to assess the impact of mass media on the infant feeding practice of mothers, they were asked whether they had the practice of listening to radio, watching TV at least once a week and seeing cinema at least once a month. The results presented in Tables 8 to 10 reveal that there was no significant relationship between infant feeding practice of mothers and their exposure to different mass media. However, differences were observed between those having and not, having the practice of listening to radio, watching TV or seeing cinema.

The results presented in Table 8 show that higher proportion (30 per cent) of mothers who had the practice of listening to radio were having ideal infant feeding practice as compared to mothers who were not having such practice (25 per cent) but it is not statistically significant.

TABLE 8

PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND PRACTICE OF LISTENING TO RADIO ONCE A WEEK

Status of Infant Feeding Practice	Listening to Radio		Average
	Yes N=577	No N=335	
Ideal	29.8	24.8	27.3
Moderate	50.3	51.0	50.6
Poor	19.9	24.2	22.5

(X^2 3.72616 DF-2 <.15519)

The proportion of mothers having an ideal infant feeding practice was slightly higher, 29 per cent among mothers having the practice of watching TV as compared to 26 per cent among mothers who were not having such practice but the differences were not statistically significant.

TABLE 9

PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND PRACTICE OF WATCHING TV ONCE A WEEK

Status of Infant Feeding Practice	**Practice of watching TV**		**Average**
	Yes N=534	No N=378	
Ideal	29.2	26.2	27.7
Moderate	50.2	51.1	50.6
Poor	20.6	22.8	21.7

(X^2 1.23357 DF-2 P < .53968)

The results presented in Table 10 indicated that there was no significant difference in the infant feeding practice between mothers having and not having the practice of seeing cinema at least once in a month.

TABLE 10

PERCENTAGE DISTRIBUTION OF MOTHERS BY INFANT FEEDING PRACTICE AND PRACTICE OF SEEING CINEMA ATLEAST ONCE IN A MONTH

Status of Infant Feeding Practice	**Practice of Seeing Cinema**		**Average**
	Yes N=499	No N=413	
Ideal	27.9	28.1	28.0
Moderate	50.3	50.8	50.5
Poor	21.8	21.1	21.5

X^2 08139 DF-2 P' <. .96012)

CONCLUSION

The results of the present study indicated that only 28 per cent of mothers were having an ideal infant feeding practice, 51 per cent were in the medium level and the remaining 21 per cent were having poor infant feeding practice.

In spite of a lot of improvement in the communication system and the Government's efforts to promote breast feeding and other feeding practices, it is very distressing to note the prevailing ideal infant feeding practice among the

women in Tamil Nadu. The results suggest the need for strengthening the health education programme with special emphasis on interpersonal communication with the mothers regarding the importance of infant feeding/breast feeding.

Of the eight variables examined in this study, five variables such as place of residence, age at marriage, sex of the child, number of ante-natal visits by ANM during pregnancy and place of delivery were having significant relationship with infant feeding practice.

सारांश

तमिलनाडू में 1990–94 के दौरान उत्पन्न 912 बच्चों के एक सैम्पल पर किए गये इस अध्ययन से प्राप्त निष्कर्शों से पता चलता है कि केवल 28 प्रतिशत माताओं द्वारा शिशुओं को उपयुक्त ढंग से स्तनपान कराया गया था। शिशुओं को स्तनपान कराने का यह प्रचलन ग्रामीण महिलाओं (26 प्रतिशत) की अपेक्षा शहरी महिलाओं में (32 प्रतिशत) अधिक पाया गया थां। माता द्वारा अपने शिशु को स्तनपान कराने के प्रचलन का विभिन्न घटकों जैसे आवास स्थल, विवाह के समय आयु, शिशु के लिंग, गर्भावस्था के दौरान ए एन एम द्वारा प्रसव–पूर्व किए गये दौरों की संख्या और प्रसव–स्थल आदि के साथ गहरा सम्बन्ध पाया गया था। स्तनपान कराने संबंधी अभ्यासों में सुधार लाने और अन्तर–वैयक्तिक संचार पर विशेष बल देते हुए स्वास्थ्य शिक्षा कार्यक्रम को सुदृढ़ बनाने का सुझाव इस अध्ययन में दिया गया है।

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MEAN BLOOD PRESSURE VALUES OF 3-17 YEAR OLD CHILDREN IN AN URBAN AREA

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ABSTRACT

A cross-sectional population based study was conducted in Chetla, urban health centre area of Calcutta in order to determine the normative data on blood pressure values of children (3 to 17 Years). 600 apparently normal children (300 males, and 300 females) distributed equally in 15 age groups were selected through cluster sampling technique. Mean systolic blood pressure (SBP) values in male children were 96.63 mm Hg and 120.87 mm Hg at 3 and 17 years respectively. Mean SBP values for female children were 95.93 mm Hg and 115.10 mm Hg at 3 and 17 years respectively. Mean diastolic blood pressure (DBP) values for males were 62.37 mm Hg and 79.57 mm Hg and mean DBP for females were 62.70 mm Hg and 75.20 mm Hg at the corresponding ages respectively.

Arterial blood pressure values follow a normal or a log-normal distribution in the population, and so the disease entity. Hypertension has been considered to be a quantitative deviation from the norm. But what is the norm? For adults, an arbitrary cut-off point at 160/95 mm Hg has gained fairly widespread international acceptance. In the paediatric age-group, however, the situation is different Although it is realised that essentially hypertension has its beginnings in childhood but long-term prospective studies on children are lacking.

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Blood pressure values increase progressively through childhood and adolescence and so a single normative value cannot be applied to the entire paediatric age-group. Moreover, the entire range of distribution of blood pressure values varies from population to population both in adults and children. Although the US Task Force had proposed percentile value of blood pressure in children, based on studies conducted in the USA and the UK but those values may not be applicable to all children of the world.

The present study was conducted on 3-17 year old normal children in an urban area of Calcutta in India with an objective to find out blood pressure values of normal children.

An extensive search revealed six related studies in north and south India and abroad but no study has so far been conducted in Eastern India. An international review of blood pressure studies in children cited only three qualifying studies from the entire South-East Asian region[15]. The main objective of the present study was therefore to derive the normative-data on blood pressure values of children in an urban area of Calcutta.

METHODOLOGY

The study was carried out in the Chetla urban health centre area of All India Institute of Hygiene and Public Health, Calcutta.

Sample Size Determination

In order to estimate the sample size the following formula was used.

$$N = \frac{Z^2 S^2}{L^2}$$

Where N = Sample size, S= 10 mm Hg, approximate standard deviation of systolic blood pressure observed in different population samples in children.

L = 4 mm Hg (allowable error limit of estimate)
Z = 1.65 (Value of Z if standardized normal distribution at 90 per cent confidence limit)

The 90 per cent confidence limit was chosen because clinically it is important to identify the hypertensive only, viz. approximately the upper 5 per cent of the distribution. Therefore, a one tailed hypothesis was sufficient.

Putting these values in the formula we get N = 17.02, approximately 20 subjects in each year of age and sex. Accordingly total sample size was calculated to be 600 because the study was planned to conduct in either sex in the age range from 3 to 17 years that is 30 age-sex sub-groups in all.

Sampling Technique

The entire population was divided into 20 clusters. The cluster sampling technique was adopted for selecting sample respondents. The clusters were divided into groups of households. Each cluster was entered with a random start. In each cluster 1st household was randomly selected, then households were visited in order of listing as was followed in UIP survey. One male and female subject from each single year age group was selected from each cluster as soon as the first contact was made. The study design was such that there were 300 male and 300 female subjects divided equally in 15 (3-17 years) age groups.

Data were collected with the help of a pre-tested two-part schedule through interview and physical examination by one observer (ASB) at the subject's home. Age was ascertained whenever possible through verification of the birth certificate and recorded in completed years as on the last birthday. The study was cross sectional and observational in nature.

Blood pressure was measured with a standard mercury sphygmomanometer (Diamoon; IS 3390).Standard techniques of blood pressure measurement were used[5,17]. Three readings were taken at five minute intervals and their mean was taken as the subject's blood pressure. All readings were taken with the subject in sitting position. Almost all the blood pressure recordings were made on the left arm. The child cuff was used when upper arm length was 20 cm or less and the adult cuff otherwise. For analysis, the systolic blood pressure (SBP) was taken as the Korotkoff phase 4 sound (K-4) in children 3-11 years of age and the Korotkoff phase 5 (K-5) sound in adolescents 12-17 years of age.

FINDINGS AND DISCUSSION

The mean values with standard deviations on SBP and DBP by age and sex are shown in Tables 1 and 2. The mean SBP in male children (Table 1) showed a rising trend from 96.63 to 102.57 mm Hg from 3 to 5 years: From 6 to 11 years it showed an undulating trend i.e. a fall followed by a rises. Overall, from 3 to 11 years the mean SBP increased from 96.63 to 102.58 mm Hg i.e. an average increase of 0.66 mm Hg per year. From 12 years onwards the mean SBP in male adolescents showed greater increases every year, that is, an average increase of 2.87mm Hg per year. Overall, the mean SBP in male increased from 96.63 mm Hg at 3 years to 120.87 mm Hg at 17 years, an average increase of 1.62 mm Hg per year.

TABLE 1

MEAN AND STANDARD DEVIATION OF SYSTOLIC AND DIASTOLIC BLOOD PRESSURES BY AGE IN MALE CHILDREN

Age (years)	Mean SBP (mm Hg)	S.D.	Mean DBP (mm Hg)	S.D.
3	96.63	12.10	62.37	10.78
4	98.87	10.70	63.83	10.59
5	102.57	12.19	70.77	9.17
6	102.13	13.31	70.77	10.11
7	101.23	13.04	70.43	12.03
8	96.40	9.91	69.90	10.49
9	96.00	9.67	69.37	8.42
10	98.63	8.28	73.47	8.19
11	102.58	12.29	74.23	11.76
12	103.63	11.93	69.00	11.42
13	108.00	7.49	73.33	7.79
14	110.73	11.50	74.73	7.83
15	113.07	9.13	76.43	7.43
16	116.93	10.74	77.70	7.26
17	120.87	10.28	79.57	8.67

SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; S.D: Standard Deviation

The mean DBP in male children changed from 62.37 mm Hg at 3 years to 79.57 mm Hg at 17 years, an average increase of 1.15 mm Hg per year. From Table 2, the mean SBP and DBP values showed a more undulating trend in female children (3-17 years) than in male children. The mean SBP changed from 95.93 mm Hg at 3 years to 115.10 mm Hg at 17 years, an average increase of 1.28 mm Hg per year. The DBP values changed from 62.70 mm Hg at 3 years to 75.20 mm Hg at 17 years, an average increase of 0.83 mm Hg per year. In either case the rate of change was smaller than that of males.

TABLE 2

MEAN AND STANDARD DEVIATION OF SYSTOLIC AND DIASTOLIC BLOOD PRESSURES BY AGE IN FEMALE CHILDREN

Age (years)	**Mean SBP (mm Hg)**	**S.D.**	**Mean DBP (mm Hg)**	**S.D.**
3	95.93	9.35	62.70	11.05
4	105.53	14.26	73.03	10.34
5	103.53	10.78	74.60	7.81
6	98.57	10.78	68.97	9.08
7	93.97	9.28	65.10	9.07
8	96.80	10.65	68.73	10.01
9	101.87	13.38	72.60	10.12
10	99.13	10.70	68.63	9.53
11	102.90	8.96	71.43	7.88
12	106.97	9.73	71.90	6.82
13	111.23	12.60	72.30	8.31
14	113.23	12.76	78.30	9.40
15	108.57	10.80	69.80	8.77
16	115.23	7.59	76.57	8.26
17	115.10	9.95	75.20	7.25

SBP Systolic Blood Pressure; DBP Diastolic Blood Pressure: S.D: Standard Deviation

The mean values of SBP and DBP in male and female children of the present-study were compared with other Indian studies. SBP of male children in the present study showed a more undulating trend in the younger age groups (3-10/11 years) as compared to the other Indian and international studies. For instance, Brotons et al in their pooled analysis showed an, almost linear increase of male SBP from 100.6 mm Hg at 6 years to 107.5 mm Hg at 11 years. The female SBP curve/in their study showed a similar pattern up to the age of 11/12 years. A study on Allahabad children showed an undulating trend in male SBP between 8 and 11. years (from 108.35 mm Hg to 107.53 mm Hg) and again between 13 and 15 years. A rise was also shown in the pooled mean values of male SBP provided in the second US Task Force report e.g. 93.5, 90.8 and 94.3 at 3,4 and 5 years respectively.

TABLE 3
COMPARISON OF STUDIES BY AVERAGE ANNUAL INCREASE OF MEAN BLOOD PRESSURE

	Average Annual Increase of Mean Blood Pressure (mm Hg /Year)			
	Male SBP	Male DBP	Female SBP	Female DBP
PRESENT STUDY 3-17 Years	1.62	1.15	1.28	0.83
LAKSHMANUDU et. al. 10-17 Years	2.20	1.71	2.05	1.49
AGARWAL et. al. 3-15 Years	1.18	0.95	1.45	0.77
AGARWAL et. al 5-15 Years	1.73	1.23	1.63	1.22
BROTONS et. al. 6-18 Years	1.69	0.64	0.85	0.65
WHO, TRS 0-20 Years	2.00	0.50-1.00	1.00	0.50-1.00

SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure

In the adolescent years, however, the male SBP values showed a sharper rise. The trend was similar in all the studies. The exceptions were a dip in male SBP values after 13 years in the Allahabad study, a relative flattening of the curve after 17 years in the study by Brotons et al and relatively lower male SBP values in Vellore urban children. The patterns for female SBP and female DBP in different studies were similar. It should be noted that in all the Indian studies except the

present study, the diastolic blood pressure was recorded as the Korotkoff phase 4 in all age groups.

The rates of average annual increase in different studies and a WHO technical committee report are presented for comparison in Table 3. The study by Lakshmanudu et al having been conducted on adolescents showed the highest rates of increase. If we exclude this study, the range of average annual increase of male SBP is from 1.18 mm Hg to 2.00 mm Hg. The same for female SBP is from 0.85mm Hg to 1.63 mm Hg.

CONCLUSION

The general trend of a slow rise or even an undulating pattern of mean blood pressure is shown in the pre-adolescent years. The adolescent years are characterised by a sharper rate of increase of blood pressure values especially SBP in both sexes. The SBP curve for male showed flattening out after 17 years and the SBP curve for females showed a decline after 16 years in both the present study and the international pool.

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सारांश

कलकत्ता के चेतला शहरी स्वास्थ्य केन्द्र के अन्तर्गत विविध जनसंख्या वर्गों में संचालित इस अध्ययन के माध्यम से 3–17 वर्ष के बच्चों के रक्तचाप संबंधी मानक आकड़ों का आकलन करने का प्रयास किया गया था। क्लस्टर सैम्पलिंग तकनीक के माध्यम से 600 सामान्य बच्चों(300 लड़कियां तथा लड़कों) का चयन किया गया था तथा उन्हें समान रूप से 15 आयु वर्गों में विभाजित किया गया था। लड़कों में तीसरे वर्ष तथा सत्रहवें वर्ष में हदय–प्रकुंचन रक्तचाप का माध्य मूल्य क्रमशः 96.63 एमएम. एचजी और 120.87 एमएम.एचजी पाया गया था। इसी प्रकार लड़कियों में तीसरे तथा सत्रहवें वर्ष में हृदय–प्रकुंचन रक्तचाप का माध्य मूल्य क्रमशः 95.93 एमएम,एचजी और 115.10 एमएम.एचजी पाया गया था। समान आयु वर्गों में लड़कों के हदय–प्रसरण

रक्तचाप का माध्य मूल्य क्रमशः 62.37 एमएम.एचजी तथा 79.57 एमएम.एचजी पाया गया था, जबकि लड़कियों में हृदय–प्रसरण रक्तचाप का माध्य मूल्य क्रमशः 62.70 एमएम.एचजी तथा 75.20 एमएम.एचजी पाया गया था।

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DEVELOPMENT OF A SCALE TO ASSESS MATERNAL AND CHILD HEALTH AND FAMILY PLANNING KNOWLEDGE LEVEL AMONG RURAL WOMEN

A. K. sood * and B. K. Nagla **

ABSTRACT

This paper presents a tool specifically developed for assessing the knowledge of rural women in Rohtak district of Haryana regarding maternal and child health. This tool can also be used for (i) identification of high risk women groups in the community by the programme managers as well as by the researchers; (ii) quantitative analysis of the relationship between various decisions making variables and the knowledge level of women regarding MCH and FP and (iii) impact evaluation of the IEC programme on the knowledge of women. regarding maternal and child health.

In India, women 15-45 years of age and children under 15 years of age together constitute nearly 65.0 per cent of the total population of the country and considered to be a vulnerable group. They suffer from sicknesses and their death rate is comparatively high. This could be prevented by simple interventions most of which have been made available through the existing health care delivery system in the country. The child survival and safe motherhood programme launched in the country in. 1992, and the reproductive and child health programme, launched in the country in 1997, specifically attempt to deliver the services to mothers and children in, the rural areas. The impact of such programmes on the knowledge-levels of the potential beneficiaries needs to be monitored closely and can be measured quantitatively by an appropriate scale. Therefore, an attempt is made in this study to develop a scale suitable to measure

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the knowledge of rural women regarding MCH and FP. This information could be utilised by the health planners and managers in delineating the high risk areas of low knowledge in the communities for making special efforts to implement the programme.

Efforts were made in the past in defining the concept of modernity. Efforts were also made to use the modernity score for utilisation of services from various developmental programmes. Mc Kinlay (1973) lists six sets of important factors such as economic causes, socio-demographic characteristics, geographic location of health services, organisational behaviour, socio-psychological and socio-cultural variations to understand the differences in utilisation of health care services. Modernity has also been defined as an aggregate of certain personality-cum-attitudinal traits and facilitates individual growth and development with social responsibility. It also makes the individual an effective agent for socio-economic and political development. Now economic and political development is being increasingly recognised due to the concern for man and his well being. This is the main pursuit of modernity. Sahay M. and Singh A.K. (1989) have related health modernity with socio-economic status and educational level. It was also observed that modernity makes a person more progressive and open-minded and thus, enables him to take more rational view of things and brings about changes in his value system.

Individual modernity is negatively related to the fertility behavior of women. Modem values that may be cultivated among women through adult education programmes and exposure to mass media. Several authors have related modernity to level of education, exposure to mass media, place of residence, type of occupation, openness to change, orientation towards time and readiness for new experience. Studies on awareness of various developmental programmes revealed that poor had limited knowledge of developmental and welfare programmes. The awareness and contacts with officials of these programmes are also less among the disadvantaged Moreover, their exposure to mass media is also less. The attitude of the people towards the programmes plays an important role in acceptance and adoption of change. The way people interpret the programmes and their predisposition towards these programmes are regarded as important determinants. People usually perceive the changes in villages in terms of the facilities which fulfill their needs. The present tool, therefore, can be useful in assessing the knowledge level of women which will help the programme managers in identifying and concentrating resources on the

selected segment of the population,

METHODOLOGY

Development of the Tool

In this study, the statements, both positive and negative, were prepared in relation to maternal and child health care, family planning beliefs and cultural practices based on the discussions held with local workers and women in the study area.

A five - point Likert type of scale was used for scoring each statement (fully disagree, disagree to some extent, could not decide, agree to some extent and totally agree). Each positive statement was given a score of 5 for total agreement and 1 for total disagreement, while in case of the negative statement a score of 5 was given for total disagreement and 1 for total agreement. In all, there were 21 statements related to child-care, 6 to maternal care and 10 to family planning. There were 10 positive and 27 negative statements. These statements were prepared, considering the simple interventions developed by the UNICEF for MCH and family planning. The maximum possible score was 185. Each item measured a specific concept related to MCH and family planning.

Statements

(i) Child Care

1. The initial breast-milk is dirty secretion and this causes loose stools in newborn.
2. Up to 1 year of age mother's breast-milk is sufficient for the child and there is no need to introduce top - feeds for the child.
3. When mother is sick, she should not feed her breast-milk to the child as it may harm the child.

4. Those mothers who deliver by operation should not breast -feed their newborn children.

5. A woman does not conceive for sometime if she continues to exclusively breast-feed her child.*

6. Those women, who exclusively breast-feed their children, loose their figure.

7. The powder milk fed to infants with bottles is more health producing than the breast-feeding.

8. At 4-6 months of age, the mother should introduce top feeds for the infant because mother's milk is insufficient to meet the needs of the baby.*

9. If cereals are started early for child, its tummy would come out.

10. A 3 year's old child should be fed 5-6 times a day.*

11. After sickness, the child's diet should not be increased so that his internal systems get rest.

12. Young children should not be weighed frequently to avoid 'evil eye'.

13. A one and a half months old child is too young and so no injection should be given.

14. When a child has mild diarrhoea, cough or fever, he can be immunised.*

15. Measles are due 'to the Goddess and so the child should not be immunised with measles vaccine.

16. When child's chest moves very fast it means that child is having Pneumonia.

17. When a child develops Pneumonia, Cotton and Cloths should be wrapped around his chest.

18. When a child develops Pneumonia, he should not be given excess of water and fluids, otherwise his cough would increase.

19. Diarrhoea in children is a minor problem and there is no need for mother to be afraid of.
20. When a child develops diarrhoea, his intake of food/fluid should be restricted so that his intestines get rest.

21. The diarrhoea in children can be prevented by using clean water and clean foods.*

(ii) Maternal Care

1. If a woman has her pregnancy before 18 years of age, it may cause damage to her or her baby's health.*

2. If a woman takes rest during pregnancy then she would have difficulty during delivery.

3. If a pregnant woman has some problem during pregnancy, only then she should consult ANM or Doctor, otherwise there is no need to consult them.

4. The Iron Folic Acid Tablets are Hot so if these are consumed during pregnancy they may cause harm to the baby.

5. The pregnant woman should take the normal diet there is no need to consume special food items during pregnancy.

6. The delivery should be conducted in inner portion of the house, so that mother does not get exposed otherwise her health would suffer.

(iii) Family Planning

1 If a woman is having female children repeatedly, she should allow her husband to marry again.

2 It is mandatory to have a male child in the family for the religious rites and peace of soul.

3 Those children which are born with 3 years or more interval are healthier then those born at 1-2 years interval.*

4 Two children are enough in the family but these should be born within 3-4 years of marriage so that the upbringing of children is convenient.

5 Children are gift of God, so it is not proper to check their births, even if there are many children in the family.

6 The sex of baby is dependent on father and not on mother.*

7 If needed, the unwanted pregnancy should be aborted through drugs or surgery.*

8 To continue the family it is must to have a boy in the family, so one must have a boy even when there are many girls in the family.

9 Use of birth limiting methods disrupts the pleasures of married life.

10 With Vasectomy operation, the man gets weakened and his sexual performance goes down.

* Indicates positive statement

Child Care Score _____

Maternal Care Score _____

F.P. Score _____

Total Score _____

Item Analysis

The items were framed in Hindi using local dialect and vernacular terms. Sixty local women, having children below 6 years of age, were requested, in the selected four villages to express their agreement/disagreement after carefully reading/listening to the statements. No explanation or clue was given to them. Data collected were scored and classified based on the total

score obtained by the 60 women. Q_1 (first quartile) and Q_3 (third quartile) values were estimated. Women with a score of less than Q_1 and women with a score of above Q_3 were labeled as low scorer and high scorer respectively. Item difficulty index and item discrimination index for each item were calculated using the formula as given below:

Item Difficulty Index	Correct Responses + Correct Responses in High Scorer in Low Scorer = ---------- X100 Total Number of High and Low Scorer
Item Discrimination Index	Correct Responses - Correct Responses in High Scorer in Low Scorer = ---------- X2 Total Number of High and Low Scorer

The items with difficulty index between 30-70 and discrimination index more than +0.25 were considered satisfactory. The difficulty index and discrimination index for each item are given in Table 1. Twenty nine items were found to be satisfactory and rest 8 were revised and reframed.

TABLE 1

DIFFICULTY INDEX (Dl) AND DISCRIMINATION INDEX (DSI) VALUES FOR DIFFERENT ITEMS, USED IN TOOL TO ASSESS MCH AND FP KNOWLEDGE OF WOMEN

Item No.	Dl	DSI
I. Child Care		
1.	70.0	0.60
2	63.3	0.60
3.	46.6	0.80
4.	60.0	0.40
5.	20.0	0.13
6.	36.7	0.26
7.	76.6	0.25
8.	0.6	0.32

9.	36.6	0.73
10.	66.6	0.26
11.	36.6	0.33
12.	63.3	0.73
13.	46.6	0.66
14.	40.0	0.26
15.	69.6	0.46
16.	96.6	0.16
17.	10.0	0.06
18.	36.4	0.40
19.	43.3	0.60
20.	68.3	0.33
21.	70.0	0.26
II. Maternal Care		
1.	70.0	0.23
2	6 0.0	0.80
3*.	0	0
4.	70.0	0.60
5'.	50,0	-0.20
6.	30.0	0.33
Family Planning		
1.	83.3	0.06
2.	13.3	0.13
3.	63.3	0.33
4.	50.0	0.33
5*.	30.0	0.06
6.	70.0	0.40
7.	30.0	0.33
6.	33.3	0.33
9.	40.0	0.40
10.	33.3	0.33
* Items were revised.		
Satisfactory Item, D.I. = 30.0 - 70.0%, D.S.I. = Above + 0,25		

Reliability of the Tool

Reliability refers to the internal consistency and stability. It indicates the extent to which the test would give similar results when repeated under same conditions. Reliability was measured with Kuder - Richardson Formula. A tool with value of more than 0.30 is considered reliable. The values for maternal care, child-care, family planning and total items were. 0.36, 0.84, 0.51 and 0.85 respectively. Hence the tool was considered reliable.

$$\text{Kuder - Richardson Formula} = 1 - \frac{x\,(k-x)}{(SD)^2 \times k}$$

Where x = Mean Score of Group
k= Maximum Score

$(SD)^2$= Variance.

Validity of the Tool

Validity of a test is the extent or degree to which the tool measures what it is intended to measure. The content validity refers to the validity of items. The items included had all the relevant maternal and child health care themes in the context of the simple MCH interventions. Three experts in the area of community medicine assessed this and the final tool comprised only those items, which were considered valid by at least two of the three experts.

The concurrent validity was ascertained by correlating the scores from each sub-scale with the scores of the total scale. The Karl Pearson's Correlation Coefficients for maternal care, child-care and family planning sub-scales were 0.748, 0.911 and 0.804 respectively. The high correlation supports the concurrent validity of the tool used.

Field Testing of the Tool

A field testing study was carried out in Beri block of Rohtak district in Haryana. The 15 villages with subcentres were grouped into four categories, considering their distance from the PHC Dighal. There were 3 villages located within 5 Kms. distance; 5 between 5-10 Kms; 2 between 10-15 Kms. and 5 more than 15 Kms. from PHC Dighal. One sub-centre village from each of these four categories was selected by a simple random sampling technique. Thus, villages of Dandhalan (0.6 Kms.), Wazirpur (7.5 Kms.), Jahajgam (12.5 Kms.) and Achej (19.6 Kms.) were selected. The sampling unit consisted of women, with children less than six years of age, who were most likely to utilise the MCH and FP services. From the four selected villages, a list of households with women having children less than 6 years of age was prepared based on the updated family records available with the local Anganwadi workers. And one fourth of the women with children below 6 years of age were included in the study by taking every fourth women using systematic random sampling technique. A total of 163 women were included in the study.

The knowledge score of women was related to variables like education of woman, husband and head of family, socio-economical status and exposure to mass media.. The 3rd, 5th, 7th, 15th, 25th, 50th, 75th, 90th, 93rd, 95th and 97th percentile values were also calculated.

FINDINGS

Table 1 gives the difficulty index and item discrimination index for various items included in the tool.

General Profile

Out of 163 women included in the study, 47 per cent had formal schooling, 90.8 per cent of their husbands had formal schooling and 23 per cent belonged to under- privileged communities. Nearly 64 per cent of the women were from joint families.

The percentile distribution of the knowledge score of rural women is given in Table 2. The 50th percentile values for maternal care, child-care and

family planning were 18, 76 and 34 respectively. The average total score of rural women was 125.58 and it ranged from 69 to 161.. The modal value was 121 and median score was 127 (Table 3). There was significant positive correlation between total MCH and family planning score of the women and education of husband (0.2834) and exposure to mass media (0.3825) (Table 4). The mean score for-maternal care, childcare and family planning was higher among women living in villages near health institutions as compared to those in the far off villages(Table 5). The percentage of high scorer women was also higher in nearby villages as compared to the far off villages (Table 5).

TABLE 2

PERCENTILE DISTRIBUTION OF MCH AND FP SCORE OF RURAL WOMEN

Percentile	Percentile Value of Score in Maternal Care	Child Care	FP.	Total
3rd	10	45	19	91
5th	10	51	22	96
7th	14	55	22	97
15th	14	63	27	108
25th	14	68	30	113
50th	18	76	34	127
75th	22	82	37	138
90th	23	90	41	147
93rd	24	90	42	149
95th	25	93	42	153
97th	26	93	44	157

DISCUSSION

The mean knowledge score for maternal care, childcare and FP were 18.46, 73.98 and 32.24 respectively. The average total score was 125.58 and it ranged from 69 to 161. The modal value was 121 and median was 127. The Karl Pearson's correlation coefficient was calculated between knowledge score and other variables like education of the women, her husband and head of the family and exposure of women to mass media. The childcare score was positively and significantly correlated with education of women, education of husbands and

TABLE 3

MEAN VALUES OF MCH AND FP SCORE OF THE RURAL WOMEN

	Knowledge Score of Women In			
	Maternal Care	**Child Care**	**FP.**	**Total**
Mean	18.46	73.98	32.74	125.58
S.D.	3.34	11.62	4.78	16.45
Range	8-26	43-95	17-46	69-161
Median	18.0	74	34	127
Mode	18.0	77	30	121

TABLE 4

CORRELATION COEFFICIENT BETWEEN RESPONDENT'S EDUCATION, SOCIO-ECONOMIC STATUS, EXPOSURE TO MASS MEDIA AND MCH AND FAMILY PLANNING

Variables X	Correlation Coefficient			
	Maternal Care Score	Child Care Score	FP. Score	Total Score
1. Education of Respondent/Women	0.0695	0.2836*	0.0686	0.2085
2. Education of Husband	0.2065	0.2932*	0.2209	0.2834*
3. Education of Head of Family	0.1370	0.0439	0.0261	0.0083
4. ©Socio-economic Status	-O.0786	0.0417	0.0873	0.0336
5. Exposure to Mass Media	0.4380"	0.3083*	3387*	0.3825"

One tailed test *p<0.01, **p<0.001,

@= SES scale developed by Udai Pareekh & 6. Trivedi for rural areas was used

exposure of women to mass media. The FP was also significantly correlated with exposure of women to mass media. There was a significant positive correlation between total MCH and FP score of the women with education of husband (0.2834) and exposure to mass media (0.3825). The mean scores for maternal care, childcare and family planning were higher among women living in villages near health institutions as compared to those in the far off villages. The relations of various variables affecting knowledge level have also been validated in the study.

TABLE 5

THE COMPARISON OF KNOWLEDGE SCORE OF WOMEN LIVING IN NEARBY VILLAGES (A), WITH THOSE OF THE FARTHEST VILLAGES (B)

	Mean Score of Women at A N=129	B N=34	Student's-t test
1. Maternal Care	19.6(3.3)	15.3(3.5)	<0.05
2. Child Care	74.7(11.7)	74.3(10.8)	<70.05
3. Family Planning	34.3 (5.4)	31.2(3.7)	<0.05
4. Total Score	127.7 (16.6)	121.1(14.3)	<0.05
5. High Scorer (%)	30.5	6.8	>138
6. Low Scorer (%)	19.0	35.3 55.8	<113
7. Score > Mean (%)	56.2	2.9	>125.07
8. Score > Mean (5)	26.2		>141.0

A-Villages Dandhalan, Wazirpur and Jahajgam
B-Village Achej.

CONCLUSION

This tool, developed specifically to assess the knowledge level of rural women in the context of maternal, and child health, can also be used for identification of high risk women groups in the communities by the programme managers and researchers. The programme managers can thus focus their efforts on reaching out to such groups and also can evaluate the impact of IEC programmes on the knowledge levels of women groups in the communities. The researchers in community health can also use this tool to quantitatively analyse the relationship between various decision-making variables and knowledge level of women in the area of MCH.

Lkkjk'k

इस लेख में हरियाणा राज्य के रोहतक जिले की ग्रामीण महिलाओं के मातृ एवं शिशु कल्याण संबंधी ज्ञान का आंकलन करने के लिए विशेष रूप से विकसित एक मानक (स्केल) पर चर्चा की गई है। इस मानक का प्रयोग निम्नलिखित के लिए भी किया जा सकता हैः 1. कार्यक्रम प्रबन्धकों और अनुसंधानकर्ताओं द्वारा समुदाय में उच्च जोखिम वाले महिला–समूहों की पहचान करने हेतु, महिलाओं के मातृ एवं शिशु स्वास्थ्य संबंधी ज्ञान के स्तर और विभिन्न निर्णायक विभेदकों के बीच पारस्परिक संबंधों का मात्रात्मक विश्लेषण करने हेतु, तथा 3. मातृ एवं शिशु स्वास्थ्य के बारे में महिलाओं की जानकारी पर सूचना, शिक्षा एवं संचार कार्यक्रम के प्रभावों का मूल्यांकन करने हेतु।

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