



ICMR BULLETIN



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HEALTH CARE FOR THE ELDERLY

The age structure of India's population shows an unmistakable trend towards ageing. The population of India in the age group of 60 years and above, is increasing more rapidly than the population as a whole. The population of India was 844.3 million as per the 1991 census, forming 16 per cent of the world's population. By the year 2001, India's population is projected to reach 986.1 million. The number of elderly persons has also been rising since 1961. The population of India aged 60 years and above has increased from 24.71 million in 1961 to 43.98 million in 1981 and was projected to be 55.3 million in 1991. This is expected to go up to 75.9 million by the year 2001¹.

In India, persons aged 15-64 years, constitute 56.3 per cent of the total population, and those aged 65 years and above make-up 4 per cent of the population. It is expected that by the year 2001, the proportion of population in the age group of 15-64 years would increase to 63.3 per cent and to 4.8 per cent in the age group of 65 years and above. The expectation of life at birth has also increased from 41.9 years in 1961 to 54.1 years in 1981, and is expected to be 62 years by the year 2001. This will alter the age structure of the aged population and will influence their disease profile.

By the year 2020, life expectancy at birth in India will be close to 70 years — roughly the same as that of Europe's in the late 1960s. Thus, India is right at the middle of an extraordinary shift from being a young country with high mortality and high fertility, to reach the final stage of the demographic transition in a matter of a few decades.

An increase in the proportion of the elderly as a result of declining fertility, and the increase in the actual number

of persons surviving upto old age as a result of reduced mortality and increased life expectancy is observed in several developing countries. By the year 2001, India will have the highest population of elderly in the world. As people survive and live longer into later years, non-communicable diseases are more likely to increase. The diagnostic and treatment procedures for these diseases are costly. As a result, health care expenditure will rise. If the planning for such eventualities is not started immediately, the country will face a major crisis.

HEALTH PROFILE OF THE ELDERLY

The National Sample Survey Organisation (NSSO) has conducted a nation-wide survey wherein specific data related to the elderly were collected. The health profile of the elderly has been studied at the primary health centre level by the Indian Council of Medical Research (ICMR). In addition, some studies have been carried out by medical colleges/institutions on the medical and social problems of the elderly.

The National Sample Survey Organisation has studied both the urban and rural populations². The most common chronic illnesses/symptoms reported were problems in the joints followed by cough. Hypertension, heart diseases and diabetes were reported more frequently by the urban population. In the ICMR supported study conducted at the primary health centre area of Madurai, the most commonly reported illnesses/symptoms were visual handicap, pain in the joints and vague bodily pain. The commonly reported illnesses amongst the elderly in out patient departments of large referral hospitals are infections, cardiovascular diseases, neurological and nutritional disorders.

COMMUNITY-BASED HEALTH SURVEYS IN INDIA

National Survey in India

In 1986-87, a country-wide health survey was conducted by the NSSO on individuals aged 60 years and above. The main objective was to study the socio-economic status of the elderly. Fifty thousand households in 8312 villages and 4546 urban blocks were surveyed. The survey conducted by non-medical field staff had a limitation in that clinical morbidity in the aged was not always identified.

The rural population surveyed constituted 39.5 million population, and 8.74 million lived in urban areas. The sex ratio (no. of females per 1000 males) was 971 in rural area and 1032 in urban area.

Chronic illness was reported by 45 per cent males and 44.8 per cent females, the numbers being nearly the same for both rural and urban areas. Chronic diseases/symptoms included problems of the joints and other disabilities, heart diseases and blood pressure, cough, urinary problems and piles. Amongst both the populations, the most common chronic illness/symptom reported was problems in the joints (35-50%), followed by cough (22-35%). Hypertension, heart diseases and diabetes were reported more by the urban population. Physical immobility was reported more among women.

Widowhood and unemployed status were more frequent in women while economic independence, living alone and social and managerial participation were more common in men. With increasing age, employment and economic independence declined in both the sexes.

Primary Health Centre Survey

The ICMR, New Delhi, carried out a study on health care of the rural aged at Madurai (Tamil Nadu) during 1981-84³. A total of 1910 subjects (males, 664; females, 1246) were registered from an estimated number of 4656 aged persons in the area of study. Nearly 80 per cent of the subjects were between 60-70 years and 18 per cent between 70-80 years of age³. Subjects were screened for clinical health status. The most commonly reported illnesses/symptoms were visual handicap (65%), pain in joints (34%), vague bodily pain (15%), giddiness (15%), cough (10%), sleeplessness (8%), and hearing deficit (6%).

SOME SPECIFIC HEALTH PROBLEMS AMONGST THE ELDERLY

The ICMR has, during the past decade, conducted community-based studies for specific disease conditions wherein the elderly have been studied.

Cardiovascular Diseases amongst the Elderly

Coronary heart disease (CHD) has been studied through an epidemiologic study (ICMR unpublished data). In an urban survey in Delhi, the prevalence rate of CHD (using the Minnesota coding) was observed to be 7.9 per cent amongst persons aged 35-64 years. The per cent distribution of high cholesterol levels (above 240mg/dl) showed an age related trend in both males and females, being highest in the 55-64 years age group.

Blood pressure measurements were also taken in the same population. An age related increase in mean systolic and diastolic blood pressure levels was observed in both males and females. The prevalence rate of hypertension also showed an age related change, being highest in the age group of 55-59 years in males and 60-64 years in females in urban areas. In rural areas also an age related increase was seen in both sexes, being highest in the age group of 60-64 years.

Cancers amongst the Elderly

The ICMR's National Cancer Registry Project (NCRP) is collecting on a continuous basis, year-wise incidence of cancers in some selected cities and in one rural area. The data have shown that nearly 5-6 per cent elderly suffer from cancer every year⁴. While the total number of elderly with cancer by sheer numbers may be less than those with other diseases such as cardiovascular diseases, the financial and social support required for the management of these persons is formidable. Since tobacco related cancers comprise nearly a third of all cancers, a reduction in the tobacco habit would go a long way in the reduction of the disease burden.

Mental Health Status of the Elderly

The commonly prevalent mental and psychological problems facing the elderly are dementia, depression, alcoholism, drug abuse, anxiety disorders and schizophrenia. The diagnosis of mental disorders associated with cognitive impairment is complicated.

An ICMR study carried out at Madurai on 150 subjects aged 60 years and above attending OPD, revealed that psychiatric disorders in the elderly constituted two major groups viz. affective disorders and psycho-organic syndromes⁵. Forty three per cent of the study subjects suffered from depressive illness.

Ophthalmic Problems amongst the Elderly

Eye diseases are common and occur in many diverse forms. The magnitude of the problem of blindness in India was obtained through an ICMR study on blindness during 1971-74. The study highlighted that of an estimated 9 million blind individuals, more than half were blind due to cataract⁶. Another ICMR study on cataract estimated the prevalence of cataract to be in the range of 31 to 70 per cent amongst the rural population above 40 years of age⁷. A total of 7.53 million eyes have been estimated to have mature or hypermature cataract. An estimated 2.7 million eyes require surgery annually to tackle the incoming load of cataract. At present the country conducts about 1.1 million operations annually.

The Government of India launched a National Programme for the Control of Blindness in 1976. An important strategy of this Programme was the establishment of mobile ophthalmic units to undertake safe cataract surgery in eye camps.

Health facilities in rural India are often not accessible or effectively utilised. The mobile eye camps are identified as the appropriate method for providing ophthalmic facilities (including surgery) to the rural areas. The mobile eye camps have a major role to play in clearing the backlog of cataract surgery in the country.

RURAL HEALTH CARE SERVICES FOR THE ELDERLY

The high prevalence of chronic conditions among the elderly, and the functional limitations that result generate a high demand on the health services. Often the health service providers are ill equipped and ill trained to sustain adequate diagnostic, therapeutic and rehabilitative support to the elderly. Further, the existing problems of maternal and infant mortality and child morbidity demand the majority of their time and efforts.

In the study carried out by the ICMR on the utilisation of health services by the elderly at a rural primary health centre near Madurai, of the 603 elderly subjects studied

from 17 villages, 510 were observed to utilise the existing health care services.

Under the same study, the multipurpose workers (para-medical staff) at the primary health centre were trained to inform the community about the functioning of a geriatric clinic at the primary health centre. Thirty two per cent had easy access to the PHC and 56 per cent opined the treatment facilities to be adequate. Of the 134 patients taking treatment at the PHC, about 70 per cent reported satisfaction while 17 per cent expressed otherwise. The reasons for not being satisfied were inadequate availability of drugs including injectables and lack of improvement even after treatment. Seventy five per cent of the 453 subjects admitted having benefitted by the MPW's services while 13 per cent felt otherwise.

This study provided guidelines for understanding the scope and requirements for strengthening the existing health care services so as to meet the future increasing demands.

HEALTH PROMOTION AMONGST THE ELDERLY

Ageing is associated with health unless there is disease or disability. It is important not to assume all ageing to be the equivalent of disease and disability. The ultimate objective of health promotion is to maintain older people in the community with a high quality of life.

Health promotion includes health education, health maintenance and disease prevention in the backdrop of socio-demographic changes. Health for all must include equity and accessibility. In 1986 the Ottawa Charter for health promotion recommended community participation, redefining of the role of health professionals and a multi-sectoral approach towards care of the elderly⁸. At present there is a wide variation in the population on the knowledge of measures for health promotion. Adoption of preventive measures in early life would result in a better health status during adult life after 40 years.

Health programmes related to primary prevention which includes nutrition, dietary advice, no-smoking programmes, accident prevention, *etc.* need to be built into the primary health care services. Evaluation of the needs of the elderly and the alternate strategies that could be adopted by the existing health system for health promotion need to be considered. Attitudes to old people need to be changed amongst the medical and para medical staff, social workers and even the school-going children. Old age must not be considered synonymous with ill-health and liability.

References:

1. Ageing in India — Demographic background and analysis based on census materials. Occasional paper No 2. Office of the Registrar General and Census Commissioner of India, 1992.
2. *Socio-Economic and Health Characteristics of the Aged Persons* (42nd round). Report of the National Sample Survey Organisation, 1986-87
3. Venkoba Rao, A. *Health Care of the Rural Aged- Report of a Task Force Study*. Indian Council of Medical Research, New Delhi, 1990.
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5. Venkoba Rao, A. *National Task Force Study on Problems of the Aged Seeking Psychiatric Help*. Indian Council of Medical Research, New Delhi, 1987.
6. *Collaborative Study on Blindness (1971-1974) — A Report*. Indian Council of Medical Research, New Delhi, 1971.
7. *Collaborative Study on Prevalence of Cataract*. Indian Council of Medical Research and National Programme for Control of Blindness, New Delhi, 1990.
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This write-up has been contributed by Dr. Bela Shah and Dr. A.K. Prabhakar, Division of Non-communicable Diseases, ICMR Headquarters, New Delhi.

ABSTRACTS

Some Research Projects Completed Recently

Role of cytostructural alterations in cervical carcinogenesis.

The study was carried out to find out the role of alterations in various cytoskeletal proteins during the process of tumour progression in uterine cervix. The cytoskeletal proteins analysed included cytokeratins (CKs) 1, 10, 11, 13, 14, 16, 18 and 19 as well as the terminal differentiation protein involucrin. Tissue samples from a total of 180 subjects were studied. This included 60 non-malignant cervical tissue samples, 70 invasive carcinoma samples and 50 premalignant samples classified as cervical intraepithelial neoplasia — CIN I (mild dysplasia), CIN II (moderate dysplasia) and CIN III (severe dysplasia). Non-malignant samples were obtained from patients undergoing hysterectomy.

In non-malignant cervical epithelium CKs 13, 14, 18 and 19 were expressed in the basal cells while CKs 1, 10 and 11 in the spinal cells. CKs 18 and 19 were expressed intensely in endocervical cells. In precancerous lesions (CIN I, II and III), there was no expression of CKs 13, 16, 1, 10 and 11 in the basal cells. CK 19 showed intense expression in basal cells of CIN I and no expression in CIN II and III. CK 14 was found to be intensely expressed in CIN III. In invasive carcinomas, 60 per cent or more of malignant cells were positive for CKs 19, 18, 14 and 13, showing that expression of these CKs are maintained during tumour

progression from non-malignant to invasive carcinoma. CKs 1, 10, 11, 13 and 16, however, did not show intense expression in the majority of patients analysed.

Involucrin showed intense expression in the upper spinal layers of normal and inflammatory squamous epithelium. In contrast, lesions with CIN I showed a mild staining pattern in the spinal layers (both lower and upper), whereas CIN II showed mild expression in the upper spinal layer. CIN III lesions did not express involucrin. In invasive carcinoma expression of involucrin was found to be negative in 67 out of 70 samples analysed.

It may thus be concluded that analysis of expression of CKs and involucrin provides a very useful complement to the established histologic procedures for understanding tissue pathology as well as various histogenetic pathways involved in tumour development.

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Structural and functional alterations in liver during fibrosis.

The study was carried out on adult male albino rats to find out the alterations in liver functions during dimethylnitrosamine (DMN) induced hepatic fibrosis. The rate of biosynthesis and metabolic degradation and accumulation of

different types of collagen in hepatic fibrosis as also the role of trace elements during the progression of hepatic fibrosis were also studied.

Hepatic fibrosis was induced by intraperitoneal injections of DMN (1 μ l/100g body wt) on 3 consecutive days of each week for 21 days. Histopathological examination of the fibrotic liver tissue showed intense neutrophilic infiltration, bile duct hyperplasia, Mallory's hyaline within cytoplasm, apoptosis of hepatocytes, dysplasia, bridging necrosis and extreme centrilobular necrosis and fibrosis. A four-fold increase of collagen content was found in the liver tissue.

A significant increase of serum aspartate transaminase (AST), alanine transaminase (ALT), γ glutamyl transpeptidase (γ -GT), alkaline phosphatase (ALP) and lactate dehydrogenase (LDH) was found. The serum albumin levels were remarkably lowered in DMN treated animals while there was a significant increase in serum globulin levels. While an induction in the biosynthesis of γ -GT and ALP in the liver was found, the AST and ALT activities were significantly reduced in the hepatic tissue. The deterioration of liver functions and modulating enzyme activities may be contributing to an extent towards the development of hepatic fibrosis.

Study of the rate of biosynthesis and metabolic degradation of collagen in DMN induced fibrotic liver revealed enhanced anabolism and catabolism of hepatic collagen. It

was also found that the balance between synthesis and degradation was almost maintained in the early stages of DMN treatment as a self defence mechanism, but it was totally impaired in the later stages with a net result of accumulation of collagen in the liver.

Studies on the molecular characteristics of fibrotic liver collagen demonstrated a significant increase of β -chains with a notable decrease of α/β ratio after DMN administration. Reduction with β -mercaptoethanol indicated the presence of type III collagen in the electrophoretic field with a prominent increase in its level on day 21. An increase in the aldehyde content and enhanced rate of fibril formation in DMN induced liver collagen indicated a higher degree of cross linking.

Studies on minerals and trace elements during the progression of hepatic fibrosis revealed significant decrease of Ca, Mg, K, Na, Se and Zn in serum. The results indicate that exacerbation of hepatic fibrosis with ascites plays a major role in the alteration of essential elements which can further aggravate the disease.

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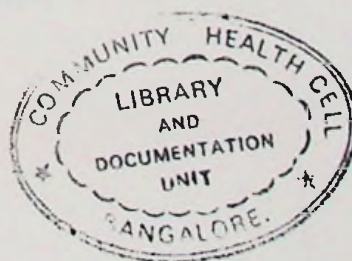
85TH ANNIVERSARY CELEBRATIONS OF ICMR

Virus diseases (other than AIDS) was the theme selected for the dissemination of scientific information to various groups of people in the month of March 1996.

The National Institute of Cholera and Enteric Diseases, Calcutta, organised an awareness programme on the subject for students of the National Medical College, Calcutta and staff of the NICED highlighting the activities of the ICMR's National Institute of Virology, Pune. The programme included a lecture on viral diseases by Dr. Manish Chakraborty, former Director, Calcutta School of Tropical Medicine, Calcutta, as well as a poster exhibition on the subject.

The Centre for Research in Medical Entomology Madurai, celebrated the 85th Anniversary of the Council and the National Science Day together on February 28, 1996 by organising a symposium on viral diseases. Apart from the lectures/discussions, the Centre also organised an exhibition and a quiz competition for school children.

The Regional Medical Research Centre for Tribals, Jabalpur, organised talks/discussions on common viral diseases at the Kundam Block of Jabalpur district. Approximately 500 individuals including women and children participated in the programme.



NATIONAL SCIENCE DAY CELEBRATIONS

The Indian Council of Medical Research and its various Institutes/Centres located in different parts of the country celebrated the National Science Day in February 1996 by organising various events like display/demonstrations, exhibitions, open houses, lectures/discussions, quiz competitions, inter-school elocution competitions, *etc.* Many of the Institutes combined these activities with those relating to the 85th Anniversary celebrations of the Council.

The National Institute of Nutrition, Hyderabad, organised an inter-school elocution competition "India can do it" on February 29, 1996 in which 50 students from 25 schools participated. Three best orators were given prizes and certificates.

The National Institute of Virology, Pune, organised a popular lecture on "Impact of poverty on public health — What India can do about it?" by Dr. P.V. Sukhatme.

The Institute for Research in Reproduction, Bombay, organised an open house for students of various science colleges of the city on February 25-26, 1996. The students were taken to different departments/laboratories of the Institute and various activities of the Institute and techniques employed were explained to them with the help of posters specially prepared for this occasion.

The Institute of Pathology, New Delhi, celebrated the National Science Day by organising scientific lectures for students from various Delhi schools and trainee nurses from Safdarjang hospital. Dr. Uma Chaturvedi, Professor and Head, Department of Pathology, Maulana Azad Medical College, New Delhi, delivered a talk on "Importance of laboratory services". Dr. Deepali Mukherjee and Dr. Bela Shah, Dy. Directors-General, ICMR Headquarters, spoke on "Malaria" and "Health hazards of tobacco consumption" respectively. The students were also given practical briefing about different activities of the Institute and techniques employed.

The Regional Medical Research Centre, Dibrugarh, celebrated the National Science Day at the Little Flower School, Dibrugarh on February 28, 1996. The programme included an exhibition on major health problems of the north-eastern region of the country, a nutrition quiz and screening of video films on malaria and nutrition. At the end of the programme a debate was organised for school children on "Industrialisation and healthy nation".

Other ICMR Institutes/Centres which celebrated the National Science Day include National Institute of Cholera and Enteric Diseases, Calcutta; Centre for Research in Medical Entomology, Madurai; Desert Medicine Research Centre, Jodhpur, *etc.*

ICMR NEWS

Meetings:

A meeting of the Expert Group on PHC Level Planning for Modified District Project on Integrated Reproductive Health Care Package was held at New Delhi on May 9-11, 1996.

Participation of ICMR Scientists in Scientific Events:

Dr. K. Vijayaraghavan, Dy. Director, National Institute of Nutrition, Hyderabad, visited Thailand to study community nutrition in the field of child development and nutrition programmes (April 22-26, 1996).

Dr. Bhanu Iyengar, Director, Institute of Pathology, New Delhi, participated in the II Locarno meeting on Neuroendocrinology at Locarno (May 5-8, 1996).

Lectures/Orations:

Dr. D.N. Rao, Addl. Professor, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi, delivered the Dr. B.K. Aikat Award (1993) Oration of the ICMR on "Tuftsin as a modulator of phagocytic and microbial functions of macrophage derived from leprosy patients" at the ICMR Headquarters, New Delhi, on April 30, 1996.

COUNCIL'S TRAINING PROGRAMMES FOR 1996-97

Leprosy

At the Central Jalma Institute for Leprosy, Agra:

- Multidrug Therapy Orientation Course in Leprosy for Medical Officers (September 9-20, 1996).

Virology

At the National Institute of Virology, Pune:

- Diploma in Medical Virology (June 1996-May 1997).

Reproductive Biology

At the Institute for Research in Reproduction, Bombay:

- Training Course on Immunoassay Techniques (June 3-15, 1996).
- Training Course on Current Trends in Management of Infertility and Reproductive Disorders (September 2-13, 1996).

Endocrinology

At the National Institute of Nutrition, Hyderabad:

- Annual Training Course on Endocrinological Techniques and their Applications (August 1- September 15, 1996).

Nutrition

At the National Institute of Nutrition, Hyderabad:

- M.Sc. in Applied Nutrition (June 1, 1996-February 28, 1997).
- Annual Training Course in Nutrition (December 1, 1996-February 28, 1997).

Occupational Health

At the National Institute of Occupational Health, Ahmedabad:

- Orientation Course on Occupational Health for Industrial Medical Officers (September 17-29, 1996).

Medical Entomology

At the Vector Control Research Centre, Pondicherry:

- M.Sc. in Medical Entomology (from August 1996; for 2 years).

Laboratory Animal Technology

At the National Centre for Laboratory Animal Science, National Institute of Nutrition, Hyderabad:

- Training Course for Laboratory Animal Technicians (June 15-July 31, 1996).
- Training Course for Laboratory Animal Supervisors (September 1-November 30, 1996).

Haematology

At the Institute of Immunohaematology, Bombay:

- Training Course in Transfusion Medicine for Blood Bank Medical Officers (August 5-October 4, 1996).
- Training Course in Blood Group Serology and Blood Bank Methodology for Technicians (August 5-September 4, 1996).
- Training Course in Advanced Haematology and Immunohaematology (September 17-October 4, 1996).

ICMR PUBLICATIONS

	Price (Rs.)
Nutritive Value of Indian Foods (1985), by C. Gopalan, B.V. Ramasastri and S.C. Balasubramaniam, Revised and Updated (1989), by B.S. Narasinga Rao, K.C. Pant and Y.G. Deosthale (Reprinted 1995)	23.00
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Diet and Heart Disease (1994, Reprinted 1996) by Ghafoorunissa and Kamala Krishnaswamy	26.00
*Depressive Disease (1986) by A. Venkoba Rao	58.00
**Medicinal Plants of India Vol.2 (1987)	136.00

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