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EDITORIAL

THE PROBLEM OF THE AGED

Human body is, the most wonderful machine which the Nature has ever ordained but like all other machines it also wears out with use and time and hence the question is what is and what should be its span. It differs from country to country and race to race, the average expectation of life at birth varying from about 40 to 75 years in current estimation. Several factors which seem to operate in this matter are climate, race, heredity, food, tradition, national income, standard of living, prevalence of disease, standard of environmental sanitation, knowledge nnd practice of health, quality of medical and health services etc. It is true that in the Western countries as in Russia people live long years, some reaching even 150 years ; in India too, there are records of long span of life in certain individuls for others to emulate them.

Although ageing is a natural and inevitable process in the living the condition of oldness can be considerably delayed and premature death averted to lead a longer average span of life as we have now partially succeeded to achieve in India. Better knowledge and application of health measures resulting in reduction of infant, maternal and general death rate and improvement of environmental conditions have increased our expectation of life at birth from 32 years in 1931 to about 54 years in 1975 and it is on its way to improve further in future. Such a condition is highly desirable but it is accompanied by a series of problems e.g. national, social (community and familial) and personal (physical, psychological and socioeconomic). These may be briefly referred here.

(a) *National*—With reduceed death rate and almost untouched birth rate there has been an alarming population growth with consequences now well discussed and well-understood by the people.

(b) *Social*—Aged persons can be real handicap to the family and society due to financial inadequacy, idle role in family and community, breakdown of joint family system.

(c) *Personal*—Sudden drop of income following retirement may leave the person with unfulfilled responsibilities like education and marriage of sons and daughters absence of shelter ete. Progressive physiological deterioration of body functions, frequent illness due to old age diseases, viz diabetes, polyuria, high blood pressure, asthma, heart trouble, cataract and partial blindness and deafness, and tuberculosis and paralytic conditions etc. There is also reduction of mental functions along with that of physical activities. Sometimes there is nervous breakdown and psychological set back arising out of financial difficulties and sense of neglect. In a recent survey in Calcutta and suburbs 72 percent of persons between 60 and 65 years received no pension, 66 percent had no provident fund, 16 percent had no reserve money and 36 percent had little money; 48 percent were underfed and many of them were living practically unattended. In this connection the readers are referred to the two recent books one entitled "Our Elderly" by Dr. J. D. Pathak of Bombay and the other "The problem of the Aged" by Col. Barkat Narain of New Delhi both of which are intended to direct our attention to the problem and need for community action. Both have been reviewed in this journal (2 & 3).

In fact, Geriatric Medicine is a growing science although it was wellknown to the ancient Indians who prescribed various remedies like Kaya-Kalpa and yogic exercises and dietetic regime. If the society is to make a suitable response to the members of the ageing population it will have to look at the problem from the following view points: (1) extension of age of retirement whereever possible. (2) creating an environment where unattended old people may remain as useful member of the society or family : 3) providing facilities and services for those in whom ageing process leads to malnutrition, disease, social isolation and personality deterioration; (4) establishment of public and private guidance and treatment clinic; (5) provide recreational and religious discussion centres to keep them mentally engaged and cheerful; (6) introduction of gerontology and geriatric studies and training courses in medical colleges; 7) enactment of a legislation on the lines of British law of National Assistance Acts of 1948 to overcome financial dependence on friends, relations and even sons and daughters which is often very vexing. Some countries provide old age pension but this may not be possible in our country under the present circumstances but certainly suitable plans can be made to help them financially in return of some types of services. After all, the society should remember*.

"Youth gives you vigour and the old knowledge and wisdom".

S. C. Seal

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3. Barkat Narain (1979) "Problem of the Aged" Skin Institute of public science charitable Trust. New Delhi. Reviewed in I. J. P. H. **23**

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GERIATRICS

Col. Barkat Narain*

Geriatrics is a branch of Gerontology and medicine which is concerned with all the aspects of the health of the aged—preventive, clinical, remedial and rehabilitative service.

Gerontology may be defined as a scientific approach to all aspects of ageing, i.e. health, sociological, behavioural, economic, environmental, etc. It is a multi-disciplinary field.

Ageing is a universal process and should be regarded as a normal biological phenomenon. From the biological and psychological points of view, ageing starts with a slow degeneration process of bodily organs and is characterised by a reduction in the ability to adapt to environmental changes and to the stresses of living. Responses to stress are slower and the elderly need much time to adjust in psychological states. No one knows when old age begins. Biological age is not identical with one's chronological age. The process of ageing varies with individuals and even in the same individual different organs age at different periods. Some begin to look old at 50 while others look young at 65 and 70. For statistical purpose the chronological age of 60 and above is considered as old age. This is the accepted old age for social security and pension schemes.

Ageing is a global problem

For individual human beings, the 20th Century has meant a major increase in the life expectancy particularly in the more developed countries. Prior to 1950s, there was hardly any data on life expectancy available for many of the developed countries and practically none for the developing countries. The past decades have witnessed gradual, and in some cases dramatic, increase in the life expectancy of people in some of the regions of the world (see table No. 1). This achievement has been due to the improvement in socio-economic conditions, improved public health and preventive services and advances in medical technology.

Increase in life expectancy has brought about a demographic increase in the ageing population of the world. The projected continuous reduction in gross reproduction rates and continued increase in life expectancy in all regions of the world will result in increased ageing of the world population in the near future as shown in table No. 2.

In most countries, the phenomenon of ageing in human population is having a profound effect upon the structure and functions of the family, the work force and economic

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policies, the goals and organizations of health and social services and the policies and practices of the Government.

Extent of the problem in India

The problems connected with old age are relatively new in India as in most of the developing countries. Untill recently, the concern of the scientists in the medical profession was largely limited to the promotion of health and prevention of diseases of the vulnerable groups consisting of infants, pre-school and school age children and the expectant and the lactating mothers. The health and the social and economic needs of the young in growing population were all absorbing.

This limitation of interest was the heritage of a time of relatively short life expectancy when a small protion of the population servivived beyond the middle age and the group above sixty was scarcely visible. It posed very few, if any, general social problems. Furthermore, the life style of the early period was such that the role and care of the aged required minimum intervention from agencies outside the family. In India, as part of the social and cultural pattern, it was considered rhe duty of the family to minister to the needs of the elderly relatives. The old people were, in many families and are still, held in great respect.

With improvement in socio-economic conditions and health services, these is a reduction in infant mortality and early childhood through immunisation, control of infectious and contagious diseases, eradication of small pox and continued efforts to eradicate malaria and control of other insect—borne diseases. As a result, there has been an increase in the life expectancy from 27 years in 1947 to about 53 years today. The family welfare programme has also contributed to this increased life expectancy. This has brought about a gradual increase in the population of people 60 years of age and above. (see Table No. 3).

Implication of increased longevity

Longevity has an implication on the structure of the family. When the elderly were few, there was a place for them in the social structure of the community. Past values and traditions supported older persons in the family and the community.

As a result of industrialisation a large number of educated and technically trained persons from the rural areas are moving away from the villages leaving the elderly persons behind. Those who are anxious to take the elderly people with them, find it difficult to do so because of the limited accommodation and a feeling that the new physical and social environment may not suit the elderly people. Moving to new environment means adaptation to new and unfamiliar physical conditions which is difficult for the elderly.

The other implications relate to the changing health needs of the elderly persons. Such needs and conditions differ significantly from those of the young. With increased longevity there is a related increase in the chronic illness and long term disability requiring new approaches to medical care and delivery of health and social services. Special efforts will have to be made for health and social manpower requirements and training for meeting the health and social needs of the ageing

population. Finally, there are special implications with regard to the economic security, housing, health services, education, transportation and facilities for recreation.

Health problems of the aged

Health problems of the aged are an integral part of the social and economic mileu of the community-proverty being the basic factor. Illnesses in the elderly are manifested by a variety of physical and psychological symptoms. These diseases are generally of a long term nature which had been neglected in the middle age or even earlier.

Morbidity and mortality rates are higher in the elderly persons because of low resistance and lack of adaptability to the changing environmental conditions (physical and social), to the stress of living and the degerative changes that have been taking place in the human system organs. The elderly have a higher threshold of putting up with pain and minor disabilities and seldom complain much. The sedentary nature of their living and reduced activities mask the early symptoms of cardiovascular and pulmonary diseases and certain other ailments.

The most common diseases resulting in disability and incapacity are the cardiovascular and cerebrovascular, respiratory and diseases of the locomotor system. There is an increase in the incidence of malignancy, diabetes and accidents in the elderly person. In addition, they may develop infection of the urinary tract, renal calculi, enlargement of the prostate, glaucoma and cataract. There is reduced effectiveness of perception, vision and hearing.

Aged patients may also display some psychiatric disturbances, largely somatic in origin and frequently reversible.

Preventive health services

In the conventional sense the phrase 'preventive service' means immunisation of infants, pre-school and school age children, maternity and child health and improved enviromental sanitation. Nutrition is a very important factor in promotion of health and prevention of diseases. So far Geriatrics is the last area to be associated with preventive means in the minds of the majority of the physicians, yet prevention is not only most important when dealing with elderly people, but it can actually be a life saving factor in the aged patients.

In the aged, prevention is seldom primary, i. e. total prevention of disease, but mostly secondary, i.e. prevention of deterioration of the existing conditions. Objectives of preventive health care for the aged are :

(1) To preserve, as far as possible, the physical health of the individual as age advances ;

(2) To maintain their mental health ; and

(3) To preserve their social standing.

The objectives can be achieved by means of (a) health education, and (b) routine health check-ups.

(a) *Health Education*

If affects the elderly in promoting and maintaining health and preventing physical and mental ill heath and disability. Many problems of ageing can best be taken care of

if health education is imparted to them in their middle years. They should be told about healthy living, mental health, dental health, proper nutrition, prevention of accidents, proper use of leisure and how to prepare for retirement and old age. Health education is also of great value in making people aware of the existence of health service and its utility. The general public has to be educated to accept that increase in the aged population is a natural consequence of improvement in the social and health services and that old people have a rightful place in society.

(b) *Routine health check-up*

It is a valuable medium for health education and for early detection of disease and its treatment. Health examination should start as soon as possible from the age of forty-five. At that time it has a great value, not only as a means of detecting incipient diseases, but as a basis for health promotion. Thorough physical examination includes blood pressure readings, ECG, X-rays, complete urine, stool and blood tests. In doubtful cases, sugar tolerance test, blood chemistry, liver and kidney function tests are also essential. In the elderly persons scanning for malignancy is a must.

These tests combined with personal and family history can reveal if the person has hypertension or diabetes or a tendency towards diabates. Early stages of any degerative disease, which the elderly persons will be prone to can be found out at this time. Early detection and prompt treatment can cure the malady or prevent further deterioration.

Routine health check-ups act as extension technique in creating health consciousness and a desire for healthful living in the young and the elderly persons.

Nutrition

One of the major problems of old age is nutrition. There is enough data available to indicate that with advancing years changes occur in biochemical and physiological characteristics, tissues and cells which impair their functions. Changes in the intestinal mucosa impair the absorption of nutrients. As a result of these factors dietary deficiencies may occur. Due to loss of teeth and ill fitting dentures consistency of food for the elderly persons should be suitable for mastication. An element of roughage in the food is necessary to maintain bowel movement and counteract the tendency towards constipation.

Adequate fluid intake must be maintained especially during summer. Water can be consumed in the form of milk, butter-milk, nimbo pani (lemon water), fruit juices, etc.

There is a reduction in energy metabolisms in the e derly due to loss of tissue and reduced activity. Therefor, the calories intake in the elderly persons over 60 years should be about 25% less than those for normal adults, i.e. about 1800 for male and about 1600 calories for female in temperate climate. There should be no decrease in other nutritional needs like protein, fat, etc. but there is a special need for adequate amount of vitamins, especially 'C' and 'D', calcium and iron. Care should be taken so that the elderly do not get over-weight.

Prevention of accidents

The incidence of accidents increases in old age. Such accidents generally result in fracture, mostly of the pelvic and the head of the femur. Osteoporosis is considered to be one of the major causes.

To prevent these accidents, houses and other facilities should be designed to provide optimum safety and convenience for all age groups, including disabled persons. Special attention should be paid to the construction of floors, stair-cases and bath rooms. The floors and steps of stairs should be non-slippery. Carpets, rugs or other floor covering should be fixed in such a manner that there is no danger of tripping. Bath rooms and stair-cases should be provided with hand-rails. This will give support to the aged person when moving about in the bath room or climbing the stairs. Tables, chairs and other furniture in the room should be so arranged as to provide free movement without the risk of hitting against them. The rooms should have good lighting and ventilation. A dim light should be kept on to assist the elderly to go to the toilet or move about at night or in the dark.

Falls

Apart from the accidents, the elderly persons are prone to falls due to a number of reasons, such as dizziness caused by anaemia, low blood pressure or high blood pressure and arrhythmias. Certain normal movements like bending the head backward or turning it suddenly to one side can result in a fall. Taking aspirin to relieve aches and pains, sleeping pills or drugs for high blood pressure may cause 'vertigo' which may also result in a fall.

Those who have had an attack of dizziness or a fall may be constantly apprehensive of insecurity and fear. It is advisable to consult a physicien for treatment and reassurance in such cases.

Exercise

It is essential that the elderly person should have a regular programme of some form of physical activity and exercises compatible with the physical and temparamental status of the individual. Exercise improves blood circulation and helps to preserve the muscle tone. It is good for mental and social health. Recreation and hobbies are necessary to avoid boredom and prevent the aged from getting lonely, particularly those who are living alone.

Rehabilitation

It is an integral part of medical care. W.H.O. has defined rehabilitation as "The combination and coordinated use of medical, social, educational and vocational measures for training or re-training the individual to the highest possible level of vocational ability. Rehabilitation of the aged patients is most important to boost their physical, emotional and mental attitude and gives them confidence to look after themselves. This improves their social status.

Research

Research is basic to formulation of plans and implementation of programmes and services.

In the developed countries research is going on in the field of biometry, sociology, demography, health, psychology and economics as related to the elderly group. Research centres in Gerontology have been set up in many universities and medical institutions. It may be necessary to organise multi-disciplinary research involving the disciplines mentioned above.

Evaluation

It is useful to learn whether the correct assessment was carried out to identify the social and health needs of the elderly group, and if the staff had the correct attitude and skills to perform their duties properly, such assessment will help to formulate suitable training programmes. Evaluation helps to determine which programmes should be continued with or without modifications.

It is also essential to evaluate if the existing agencies, infrastructure and resources were adequate for the programme and if they were fully utilised.

In fact, evaluation is necessary if the complex process of providing social and health services for the aged has to be administered efficiently, effectively and economically.

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Table—I

Expectation of life at birth in selected countries of the world

Country	Year	Age in years		Total
		Male	Female	
1. Egypt	1961	51.6	53.8	52.7
2. Ethiopia	1970-75	36.5	37.6	38.1
3. Kenya	1970-75	48.3	51.7	50.0
4. Mauritius	1974	61.9	67.3	64.6
5. Nigeria	1970-75	39.4	42.6	41.0
6. Sudan	1970-75	47.5	49.9	48.6
7. Brazil	1970-75	58.5	64.4	61.5
8. Canada	1973	69.5	77.0	73.3
9. Mexico	1972	61.0	69.0	63.0
10. U. S. A.	1973	67.6	75.4	71.5
11. Afghanistan	1970-75	39.9	40.7	40.3
12. Bangladesh	1970-75	35.8	35.8	35.8
13. Burma	1970-75	48.6	51.5	50.1
14. India	1971-76	50.1	48.8	49.5
15. Indonesia	1970-75	46.4	48.7	47.6
16. Iran	1970-75	50.7	51.3	51.0
17. Iraq	1970-75	51.2	54.3	52.8
18. Japan	1973	70.9	76.3	73.6
19. Malaysia (West)	1969	63.8	66.7	65.3
20. Nepal	1970-75	42.2	45.0	43.6
21. Pakistan	1970-75	49.9	49.6	49.8
22. Philippines	1970-75	56.9	60.0	58.5
23. Singapore	1970-75	67.4	71.8	69.6
24. Sri Lanka	1970-75	66.3	69.3	67.8
25. Thailand	1970-75	55.4	60.8	58.1
26. France	1973	69.5	77.3	73.4
27. Germany (GDR)	1967-70	68.9	74.2	71.6
28. Germany (FRG)	1973	67.8	74.4	71.1
29. U. K.	1970-72	68.9	75.1	72.0
30. Yugoslavia	1970-71	65.3	70.1	67.7
31. Australia	1970-75	69.3	75.6	72.5
32. New Zeland	1970-75	68.9	75.2	72.1
33. U. S. S. R.	1970-71	65.0	74.0	69.5

Source : 1. Demographic Year Book, U. N. 1973
2. World Health Statistics Annual Vol. 1, 1973-1976 W. H. O.
3. Population Council Report No. 2 (7th Edition, October 1975, New York)

Table—2

Population estimates for 1970 and projections 1985 and 2000 by major regions

	Year	Total Population	In thousands Population 60 yrs and over	% of the total population
World Total	1970	3,631,696	290,697	8.0
	1985	4,933,463	406,759	8.2
	2000	6,493,642	584,605	9.2
More developed regions	1960	1,090,297	153,741	14.1
	1985	1,274,995	188,602	14.8
	2000	1,453,528	231,105	15.9
Less developed regions	1970	2,541,501	137,024	5.4
	1985	3,758,468	218,474	6.0
	2000	5,040,114	353,917	7.0

Source : Population Division, Department of Economic and Social Affairs, U. N. General Assembly (Working Paper No. 37—December 1971).

Table—3

Census		Million	% total populatiotion
1961	60 yrs and above	21.5	4.9
1971	do	28.6	5.2
1976 (midesti mate)	do	32.1	5.3
1981 (esti-mated)	do	37.1	5.5
1986 (projec-tion)	do	43.4	5.9
1991 (projec-tion)	do	51.2	6.4

Source : Registrar General of India (1976).

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URBAN AGED POPULATION—A SOCIAL STUDY

Dr. S. K. Mehrotra[1], Mr. D. N. Pandey[2] and Dr. S. B. Dabral[3]

Introduction

Since independence achivements of modern medicine have enhanced the life span of Indian people through the control of major communicable diseases and improved social conditions. Thus it has brought to the forefront the social, medical and psychological problems of the aged people. Although ageing is a normal, inevitable biological phenomenon but no one knows, when old age begins, and the details of the disabilities incident to the ageing process. So far in India only one rural based community study on social medical problems of the aged people was carried out by Baldeo Raj et al (1970). Hence in this study the social and medical problems confronted with, urban aged people has been studied.

Material and Methods

For the study a survey was carried out among the aged persons (55 years and above) in the registered families of the urban health centre, Loha Mandi of the department of Social and Preventive Medicine, Medical College, Agra. Through door to door visit to these elderly persons during January to May, 1975 their social data e. g. age, sex, marital status, religion, occupation, literacy status, nature of family, economic status etc. and morbidity status were recorded on a predesigned schedule. A total of 178 aged persons representing 6.88 percent of the total population were studied.

Observation

The aged population (55 years and above) constituted nearly 6.9 percent of the total registered population (2586) of the Urban Health Centre, out of which 53.4 percent were males and 46.6 percent were females.

Majority (34.3%) of the persons were in the age group of 60-64 years with predominance of females over males, while in other age groups males were more than females (Table 1).

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Table—I

Distribution of age and sex

Age Group (Year)	Sex				Total		Percent age of total Population
	Male		Female				
	Number	Percent	Number	Percent	Number	Percent	
55-59	24	25.3	20	24.1	44	24.72	1.7
60-64	29	30.5	32	38.5	61	34.27	2.4
65-69	16	16.8	10	12.1	26	14.61	1.0
70-plus	26	27.4	21	25.3	47	26.40	1.8
Total	95	53.4	83	46.6	178	100.00	6.9

84.8 percent were Hindus followed by 13.5 percent Muslims and 1.7 percent Sikh. Regarding the marital status of these aged 99.5 were marrid, including 22.5 percent widow, 11.8 percent widower and 0.50 percent were bachelor.

Among the aged population only 38.7 percent were educated and rest of them (61.3%) were illiterate. As a whole literacy level was much higher among males (54.7%) than females (20.9%) and among the educated ones again males had higher qualifications than females.

Table—II

Sex-wise economic status of aged population

Income group (Rs) per capita/month	Sex				Total	
	Male		Female			
	Number	Percent	Number	Percent	Number	Percent
Below—25	16	16.8	1	14.5	28	15.7
26—50	30	31.6	33	59.7	63	35.4
51—75	22	23.2	16	19.3	38	21.4
76—100	13	13.7	15	18.1	28	15.7
101—plus	14	14.7	7	8.4	21	11.8
Total	95	53.4	83	46.6	178	100.00

The largest aged population (35.4%) fell in the income group of rupees 26.50 per capita per month while the smallest one (11.8%) was having rupees 101 and above as per capita income per month. As a whole more than 50 percent of the geriatric population had per capita income less than Rs. 50 per month (Table II). The average per capita income in males and females was Rs. 57.5 and Rs. 54.6 respectively.

All the females were housewives while amongest males maximum (32.6%) were labourers followed by businessmen (24.2%). The remaining were service holders (12.6%), pensioners (16 8%) and 13.7% were unemployed.

Nearly 72 percent of the elderly population were living in joint families while the remaining were in nuclear families. More than 52.0 percent of the aged were dependent on family members for their livelihood.

Approximately 43 percent aged population showed illness during the period of survey. Amongst these sick persons females suffered more (73.7%) than males (26.3%). The respiratory tract infections (bronchitis, emphysema, asthma etc.) other than pulmonary tuberculosis cases were maximum (31.6%) followed by skin infections (15.8%) and diarrhoeas and dysenteries (14.5%), nutritional deficiencies (11.8%) and miscellaneous group (10.5%). The miscellaneous group includes helminthic and parasitic diseases, viral fever, probably dengue (five cases) and accident (1 case).

Table—III

Sex-wise morbidity of aged population.

Morbidity	International code No. W.H.O. 1967	Male		Female		Total	
		Num.	%	No.	%	No.	%
1. Dysenteries and diarrhoeas	004, 006 & 009	3	4.0	8	10.5	11	14.4
2. Tuberculosis	010-019	2	2.6	3	4.0	5	6.6
3. Nutritional deficiencies	260-269	1	1.3	8	10.5	9	11.8
4. Ocular lesions	077, 360 & 374	—	—	4	5.3	4	5.3
5. Respiratory diseases	490, 493, 518 & 519	7	9.2	17	22.4	24	31.6
6. Skin infections	680-686	3	4.0	9	11.8	12	15.8
7. Arthritis and Rheumatism	710-715	1	1.3	2	2.6	3	4.0
8. Miscellaneous	061, 126, 133 & 882	3	4.0	5	6.6	8	10.5
Total		20	26.3	56	73.7	76	100.00
Percentage of total aged population			21.0		67.5		42.7

Discussion

In India urbanisation, industrialisation and increasing life span has enhanced the community health problems particularly of the ageing population and requiring therein the community assistance to fight its triple evils of proverty, loneliness and ill health. The aged population (55 years and above) has increased from 7.87 percent (Census, 1961) to 8.24 percent (Census, 1971) while in this study 6.9 percent were aged beiug maximum i.e. 2.4 percent of the population in the age group of 60—64 years which is in accordance with the 1971 Census population e.g, 2.61 percent. Aged males were more than aged females against 8.9 percent males and 8.18 percent females of 1971 census. The observed sex ratio of 874 females per 1000 males is slightly higher than 1971 Agra Corporation census sex ratio of 833 per 1000 males ; 84.8 percent geriatric persons were Hindus which is in accordance with the 1971 census were 88.09 percent in Urban areas of Agra (Chandresehar, 1972). Amongst the aged population 99.5 percent were married including 22.5 percent widows and 11.8 percent widower, whicd is almost similar to 1971 census figure, the respective percentages being 97.92, 29.34 and 10.15 (India, 1975). 38.7 percent aged people were literate which is higher than India's literacy rate of 29.0 percent (Census, 1971). Literacy and higher educational qualifications were obviously more in males than females. 51.1 percent geriatric cases were of low economic status having per capita income less than Rs. 50/- per month. More than 52.0 percent aged were dependent on their family members, the majority being represented by the female aged as they had no source of income. Amongst males 30.1 percent were either unemployed or on meagre pension.

The morbidity status of these aged people revealed that 42.7 percent had some illness during the period of study, the illness rate being higher in females than males. Beldeo Raj et al (Loc. cit) also found 52.2 percent disease prevalence rate amongst the aged population in a rural area of Lucknow but however, they observed illness rate more in males than in females. The morbidity pattern of the studied geriatric population showed that the majority i.e. 31.6 percent persons had respiratory tract infections other than pulmonary tuberculosis followed by skin infections (15.89%) and diarrhoea and dysentery (14.5%) while Baldeo Raj et al (Loc. cit) found major illness to be helminthic infestations (28.0%), ocular lesions (27.4%), arthritis (17.1%) and respiratory illness (15.2%). This difference may be due to the long period of study confined to urban registered families.

The psychological stresses and strains and impacts of urbanisation and industrilisation was not much in the studied population because 72.0 percent aged people were in joint families and were taken care of by their offsprings. There was no frank case of mental disorder.

Summary

Aged population amongst the registered families of urban health Centre, Loha Mandi, Agra were 6.9 percent, the majority being males of 60-64 years. Nearly 95.5 percent were married and more than 60.0 percent were illiterates. Approximately 52.0 percent were of low socio-economic status and dependents. 42.7 percent aged people had some

morbidity, predominantly respiratory illness, skin infections, diarrhoea and dysenteries. Psychological disorders were not observed.

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CONTROL OF CHOLERA EPIDEMIC ARISING FROM PAINGANGA PROJECT, MAHARASTRA, 1977

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Introduction

The Painganga Project in Maharashtra consists of construction of a dam and canals on the Painganga river. The project is situated near the tri-junction of Yeotmal, Parbhani, and Nanded districts, the river forming the boundary between Yeotmal and Parbhani districts. The nearest taluka headquarters are Pusad in Yeotmal district, 38 km to the north and Kalamnuri in Parbhani district, 18 km to the east of the project.

In February 1977, about 2,500 labourers were employed by different contractors on the project work, and resided with their families in temporary hutments scattered on both banks of the river near the site in an area of about 10 sq. km. They used water from wells in the vicinity and also river water partially stagnated because of a temporary bridge over the river. Constructed latrines were not available for this population and the river banks were used for defecation. In adddition to this population, about 2,500 individuals comprising of employees of the Irrigation and Power Department and their families resided in a colony on the Yeotmal side of the river. The water-supply to this colony consisted of piped chlorinated water from a well. No Medical Officer was stationed at the project site to provide health care to this population.

The Medical Officer I/C Civil Dispensary, Kalamnuri, was informed on 17th February 1977 that cholera/gastro-enteritis cases had occurred at the project site and that two deaths had already taken place. The Medical Officer immediately rushed to the site along with the Medical Officer I/C Primary Health Centre, Masod, who happened to be visiting him, to investigate the report, and to start anti-epidemic measures. Subsequently other officers visited the site for control of the epidemic. The mesures taken for control of this epidemic and the results obtained have been reported as they are likely to be of interest to those who may have to shoulder the responsibility of containment of such an epidemic.

Material and Method

A rapid epidemiological investigation of the reported outbreak was carried out. Arrangements for treatment of the patients

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were made at the project site. Stool samples in V.R. fluid and rectal swabs in Alkaline Peptone were sent to the laboratories for bacteriological diagnosis. Measures were taken to ensure safe water supply and to break the transmission at the site. Different authorities were notified of the outbreak.

On realization that a large number of labourers have fled from the site due to fear of cholera, the villages and districts of their origin were found out. The health authorities of these areas were notified, and the district authorities were requested to take steps for conferring legal powers necessary to control the epidemic. Surveillance teams were formed to keep under observations the villages/areas andthe labourers migrating there to prevent/detect/manage cases of cholera by taking immediate suitable measures.

Results and comments

Results of Epidemiological Study :

A rapid analysis of the situation led to the view that the epidemic was water-borne and was probably caused by consumption of river-water stagnated on the upstream side of temporary bridge. Residents of hutments consuming water from this source reported occurrence of gastro-enteritis, while none occurred in the residents of the colony supplied with piped chlorinated water. Attacks were recorded in both sexes and at all ages. A child who had visited the project site for half a day, had consumed stagnant water while eating food brought with her, had immediately gone back to her native village and started having severe gastro-enteritis three days later, and thus provided additional circumstantial evidence.

Clinical and bacteriological diagnosis

Clinical examination of patients showed severe dehydration and other manifestations typical of cholera. Bacteriological examination of a sample taken from the stagnant pool of water did not show presence of *V. cholera*, but showed that it was unfit for human consumption, with the presence of 1800+ coliform organisms per 100 ml. Stool samples and rectal swabs were positive for *Vibrio Cholerae* (El tor) of Hikojima, Inaba and Ogawa serotypes.

Management of cases in Isolation Ward

An isolation ward was started in the rest-house at the site with the staff of 5 medical officers, 6 nurses, 2 sanitary inspectors, 2 block level supervisors, 3 vaccinators and 5 attendents. Adequate stock of all necessary equipment, drugs and rehydration fluids were provided. Concurrent disinfection was carried out using 10% phenyle. Out-door treatment facilities for the popu'ation resident at the site were also provided. The distribution of patients admitted to the ward according to the district of their origin is shown in Table I, All of these patients were staying at the site in the period of previous one week.

Table I

Attacks and deaths due to cholera in Isolation Ward, Painganga Project, according to villages and district of origin

District	Number of villages of origin	Attacks	Deaths
Yeotmal	35	105	5
Parbhani	23	54	2
Nanded	4	6	—
Osmanabad	1	2	—
Akola	1	1	—
Total	64	168	7

Provision of safe water-supply

Police constables were posted round the clock at the stagnant pool to prohibit the use of this water. A survey at the site revealed the presence of several wells in use which were all insanitary. Samples of water were not collected from wells, for bacteriological analysis but daily disinfection of these wells with bleaching powder was started. When supprise checks revealed that some samples had no residual chlorine while some samples showed super chlorination, Horrocks test was performed and chlorination at a proper dose twice daily was ensured. Tankers were used for safe, chlorinated water for workers working on the construction of dam and canals extending for about 5 km on the left bank and 7km on the right bank. Sanitary Inspectors and other staff were given ortho-toludine reagent and were instructed to carry out checks to ensure that there was development of a distinct yellow colour in treated water, as demonstrated to them.

The weekly market held on sundays at the site was not banned in view the inconvenience to the population. However, precautions were taken to minimise chances of transmission of infection. A special sanitary squead was posted to ensure provision of safe water supply, anti-fly measures, and protection of edibles from exposure.

Control of Centrifugal Spread

As soon as the cholera epidemic broke out at the site, a large number of labourers fled in panic and started going back with their families to their original villeges. The main challange was to prevent/detect/control the centrifugal spread of cholera from the site to these villages spread over an extensive region by the migrating population. Information collected from the various subdivisional officers and contractors at the site revealed that the labour strength had dwindled daily from about 2600 on 14.2.1977 to about 1,200 by 21.2.1977. Enquiry regarding the villages of origin of the labours revealed data presented in Table I.

Coordination

The area of control operations thus extended over at least three districts, under the jurisdiction of Deputy Director of of Health Services of two public health circles. A Control Centre for activities in Yeotmal district was established at the Project site and that for Parbhani district at Kalamnuri, and a close contact was established between the two. With frequent communication and meetings, the whole control operations were coordinated in such a way that a senior officer was continuously in command of the total operations.

Notification

As requested by the district authorities the Government of Maharashtra declared on 28.2.1977 under section 16(1) (a) of the Hyderabad Infectious Diseases 'Act (Act XII of 1950) that Parbhani and Nanded districts were threatened with cholera and appointed the respective District Health Officers as Cholera Controlling Officers, with special powers conferred on them. Similarly on 25.2.1977, under section 2(1) of the Epidemic Diseases' Act (Act III of 1897), Yeotmal district was declared as threatened due to cholera.

Surveillance

For prevention and early detection of cholera in migrating labourers and other population, villages and areas likely to be visited by them and river-side villages were kept under surveillance. For this purpose, surveillance teams were formed, 6 in Parbhani district covering 34 villages and 6 in Yeotmal district covering 48 villages. Each team was led by a Medical Officer, and other members generally consisting of 2 auxiliary nurse midwives and 2 vaccinators. A separate vehicle was provided for each team. Team members were to visit villages according to schedule given to them and contact the Sarpanch and Police Patel in each village. They were then to ascertain if any attack/death due to cholera or gastro-enteritis, had occurred in the village, in which case *a panchnama* was to be carried out. The Medical Officer was to start anti-cholera inoculation work with the help of A.N.M. and ensure disinfection of wells with the help of vaccinators. Every evening the team-leaders of Parbhani district were to report to Kalamnuri and those from Yeotmal district were to report to the project site.

From 10.3.1977, the surveillance was intensified further in Parbhani district, by addition of 10 Medical Officers, 4 Sanitary Inspectors, 4 Malaria Inspectors, 16 Malaria Surveillance Workers, 16 Vaccinators and 12 A.N.M. The additional paramedical staff, instead of forming mobile teams, was posted at the villages where cases had occurred. Medical Officers were posted in four selected villages with all provisions necessary for management of cholera. On some occasions, domiciliary treatment of patients with intravenous infusions was also arranged. The District Health Officers, Nanded, was informed about the names of villages from which some labourers had come to the site and was requested to take anti-cholera measures.

It was noticed during the surveillance that cases of cholera had occurred in 37 villages of Yeotmal district and 27 villages of Parbhani district, including some villages from where no one had gone for works at the project. The distribution of the cases according to the method of detection and residence at the time of occurrence is shown in Table II. Table III shows the time-distribution of cases treated at the site and of those detected during surveillance, according to dates of onset.

Table—II

Cholera cases and deaths occuring at Painganga Project and detected in surveillance

District	Number of villages reporting cases	Population of villages reporting cases	Number of cases			Number of deaths	Case fatality %
			treated at Project site	detcted in surveillance	Total		
Yeotmal	37	44, 445	105	174	279	18	6.5
Parbhani	27	40, 522	54	44	98	6	6.2
Nanded	—	—	6	—	6	—	
Osmanabad	—	—	2	—	2	—	
Akola	—	—	1	—	1	—	
Total	64	81, 967	168	218	386	24	6.4

Table III

Onset of cholera cases occurring at the project site and cases detected in surveillance

Period	Cases occuring at Project site	Cases detected in surveillance	Total Cases
14-16 Feb	3	—	3
17-19 Feb	2	2	4
20-22 Feb	68	8	76
23-25 Feb	37	23	60
26-28 Feb	32	31	63
1-3 March	14	92	106
4-6 March	11	95	66
7-9 March	1	1	2
10-12 March	—	6	6
13-15 March	—	—	—
Toal	168	218	386

It is evident from Table III and Graph 1 that the occurrence and subsidence of cases at the site is followed a few days later by occurrence and subsidence in the surrounding areas of Yeotmal and Parbhani district as detected by surveillance. Stool samples from some of the cases detected in surveillance were positive for *V, cholerae*.

Protection of Water Supply :

In the villages covered by surveillance, daily disinfection of water was ensured by the visiting teams with the help of local residents. In the villages where running water formed the source, the place from which water was to be collected was fixed and a person was posted at that place with freshly prepared solution of bleaching powder, for addition of a few drops to the pots. Occurrence of cases indicates transmission before disinfection of wells was started, or food-borne and contact spread of cholera.

Anti Cholera Inoculations :

The surveillance teams also carried out the work of giving anticholera inoculations, and more than 1,15,000 inoculations were carried out at the site and the villages under surveillance.

Control of Fairs :

Two fairs, each drawing about 25,000 persons, were due in the vicinity of the site in two adjacent talukas of Parbhani district. The Executive Magistrates on request banned the fairs under section 17 of the Hyderabad Infectious Diseases Act, 1950, in view of the risk of dissemination of cholera.

Publicity :

All the labourers and their families were informed through their contractors and leaders to use treated water only and to report for treatment at the earliest in case vomiting/ diarrhoea developed. The residents of villages in the vicinity were similarly informed through tehsildar, police patel and gramsevaks.

Conclusions :

On occurrence of an outbreak of cholera at a project site, a large number of labourers panicked and started migrating back to their original villages. An appreciation of the potential danger of centrifugal spread of cholera enabled anticipatory measures to be taken. Coordinated control operations with mobilization of resources, formation of surveillance teams and promt containment measures, enabled control of the epidemic at the site as well as in the surrounding area.

Acknowledgement

Many individuals participated in the control operations. We must mention the contribution of Dr. P. B Adhange, District Health Officer and Dr. M. V. Pandit, Assistant District Healt Officer, Parbhani, and Dr. W. G. Hadole, District Health Officer, Yeotmal. Dr. B. L. Deshmukh, Assistant District Health Officer, Yeotmal, was I/C Isolation Ward and provided valuable information. Dr. V.P. Misale, Medical Officer I/C Civil Dispensary, Kalamuri, initiated the control measures. The bacterial isolations were made at Public Health Laboratories at Aurangabad and Nagpur, and Microbiology Department Medical College, Aurangabad.

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CHOLERA IN RAJASTHAN

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Introduction :

The geographic distribution of cholera has considerably changed ever since the introduction of El Tor vibrio. Certain states of India, which were free from the disease have become endemic foci whereas seven to ten states used to report cholera prior to appearance of El Tor in the country. The state of Rajasthan, till 1960., was considered as non-endemic area for cholera (Seal, 1960[1], Patnaik and Kapoor, 1967[2]), and in the event of an outbreak the disease was considered to be imported from other endemic states or countries and from fairs and festivals.

Material and Method :

The present study is based upon the observations and the activities of the State Cholera Combat and Cholera mobile teams and the records of the Medical & Health Directorate of Rajasthan. It highlights the current status of cholera and extent of the problem in the state for the period 1968 to 1977. It also presents some of the observations of he cholera control programme which has been initiated in collaboration with various medical colleges of Rajasthan, in the year 1972-73. The diagnostic criteria till 1974 for labelling a case as cholera was that in an outbreak even if few stool samples were found to be positive for cholera the entire outbreak was labelled as cholera outbreak taking a safer attitude for containment action and was documented accordingly. In the surveillance component of the programme stool samples of all cases of acute gastroenteritis and cholera are being bacteriologically confirmed since the year 1975.

Observations :

Morbidity and Mortality

The number of notified cases and deaths due to acute gastroenteritis and cholera in Rajasthan during the years 1968 to 1977 are depicted in Table No. 1. It is observed from the table that the state of Rajasthan experienced three outbreaks of cholera in the decade. In the year 1973, outbreak of cholera was recorded in district Bundi, in 1974 in district Udaipur and in 1977 in district Dungarpur. In these outbreaks the districts reported about 100 cases of cholera.

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Table—I

Notified cases and deaths due to acute Gastroenteritis and Cholera in Rajasthan during the decade (1968-1977)

Year	Acute Gastroenteritis			Cholera		
	Cases	deaths	case fatality rate/100	Cases	deaths	case fatality rate (%)
1968	4623	179	3.87	28	3	10.71
1969	8822	479	5.42	42	7	16.66
1970	4353	130	2.98	—	—	— —
1971	5728	110	1.92	1	0	— —
1972	9323	145	1.55	340	18	5.29
1973	5969	95	1.59	83	4	4.81
1974	5161	136	2.63	720	13	1.80
1975	13674	193	1.41	45	2	4 44
1976	4748	113	2.37	4	3	12.50
1977	2965	126	4.24	257	9	3.53
Total	65,396	1,706	2.60	1540	59	3.83

On further analysis of the data the case fatality rate during the decade for acute gastro-enteritis was observed to be 2.60 percent, and for cholera 3.83 percent. The case fatality rate for cholera and acute gastro-enteritis for the years 1968 to 1972, and 1973 to 1977 were compared, the later period denoting the cholera surveillance programme.

The average case fatality rates were 6.8 and 3.17 in the years 1968 to 1972 and 2.74 and 2.038 percent in the years 1973 to 1977 for cholera and acute gastroenteritis respectively. The cholera surveillance may be one of the factors responsible for the changes in the case fatality rates.

Seasonal Variations

The seasonal trend of cholera in Rajasthan was typical in nature. The seasonal index has been worked out for a period 1973 to 1977 (Sen Gupta, S.K. 1975[3]). The peaks were noted in the months of June and September. The seasonal index for cholera for the country and Rajasthan was almost in consonance as most of the cases occurred in the months of May to October showing the peaks in the months of August and October (Table No. 2).

Table—2

Seasonal Index in Incidence of Cholera in Rajasthan

Months	Rajasthan (1973-77)	India (1964-74)
January	— —	76.00
February	— —	65.34
March	76.46	62.40
April	— —	94.28
May	15.93	98.90
June	579.82	101.30
July	47.79	112.40
August	91.33	157.13
September	327.08	124.60
October	41.41	141.55
November	13.80	88.80
December	6.38	77.30
	1200	1200

Districts Affected

The number of districts reporting cholera improved with the launching of cholera surveillance programme since 1972-73. In the years 1973 to 1977 as many as 20 districts of the state reported acute gastroenteritis and 10 districts reported cholera cases out of 26 districts of Rajasthan, in the quarter ending September (Table 3).

Table—3

Districts Reporting Acute Gastroenteritis and Cholera in Rajasthan During the years 1973-77

Quaters	1973		1974		1975		1976		1977	
	AGE **	Cholera	AGE	Cholera	AGE	Cholera	AGE	Cholera	AGE	Cholera
I Ending March	12	1	12	—	9	—	11	—	11	—
II Ending June	18	1	17	2	16	1	14	3	15	4
III Ending September	14	1	11	5	17	5	20	5	14	10
IV Ending December	15	1	12	—	13	4	13	1	9	4
Total districts involved the years	22	3	19	5	20	8	23	7	23	11

* Total No. of districts in Rajasthan 26
** ACUTE GASTROENTERITIS

Although cases of acute gastroenteritis were reported earlier. the notification of cholera cases improved after the programme of surveillance was adopted. During the last five years of the cholera surveillance programme i.e., (1973-77) number of cholera reporting districts showed a constant rise as in the year 1973 only 3 districts reported cholera while in the year 1977 11 districts reported cholera in Rajasthan.

In the earlier decade only 6 districts notified cholera incidence (Sharma, R. et. al.[4]) It was further observed that the number of districts reporting cholera incidence for one year was eight, for two years five, for three years one (Banswara), for four years two (Udaipur and Jaipur), and continuously for five years only one district reported namely, Ajmer. Four districts namely Bharatpur Bundi, Dungarpur and Kota showed appearance of cholera for the first time during the year 1977, in the surveillance period. From the figure it is obvious that the cholera remained confined to the south east part of the state. Therefore it may de assumed that cholera has entrenched in the district of Ajmer which reported it for all the five years. The area is well connected with road and rail and is a seat of national and international fairs like 'Pushkar' mela and 'Urs' fairs. This possibly explains the persistence of cholera in Ajmer and propogation in the adjacent districts However further detailed studies are needed to confirm such a belief.

Endemicity of cholera

The endemicity of cholera in the state was determined by calculating the persistence level for each district which was measured by the number of weeks during the preceding 5 years (1973 to 1977) during which one or more cholera cases were reported, and this is expressed as percentage of total weeks during the period. (Sen Gupta S. K. 1975[5]).

$$PL = \frac{\text{No. of reporting incidence}}{\text{Total No. of weeks during 1973-77}} \times 100$$

The PL so worked out for each district is depicted in Table No. 4. The highest PL was recorded (6.94) in two districts namely Jaipur and Udaipur while four districts had the PL less than one. Six districts of Rajasthan reported PL below two, districts reported below three and nine districts had not reported any incidence of cholera.

Table—4

Percentage level of Cholera in the Districts of Rajasthan

Districts	Persistence level
Ajmer	2 31
Alwar	2.69
Banswara	1.92
Bharatpur	1.15
Bhilwara	0.38
Bikaner	1.15
Bundi	0.38
Chittorgarh	0.38
Churu	1.54
Dungarpur	2.31
Jaipur	6.94
Jhunjunu	3.08
Kota	1.15
Sawai Madhopur	1.15
Sikar	1.15
Tonk	1.15
Udaipur	6.94
*Remaining districts	Nil

*The districts, Barmer, Ganganagar, Jaiselmer, Jalore, Jhalawar, Nagaur, Pali and Sirohoi reported nil incidence of Cholera for the period 1973-77.

Serotype of cholera vibrio

Table No. 5 shows serotype of *vibrio cholerae* isolated during the period 1975 to

Table—5

Serotype of Cholera Vibrio isolated during 1975-77

Year	AGE cases	Stool samples examined	Percent	Cholera cases	Percent	Serotype I	O	H	UN	*
1975	13674	682	4.98	45	6.89	26	16	—	3	
1976	4748	690	14.53	24	3.48	5	16	1	5	
1977	2965	2437	82.19	257	10.54	27	30	—	200	

AGE : Acute Gastroenteritis

I : Inaba

O : Ogawa

H : Hikojima

UN : El Tor for further not classified

* : Classical cholera vibrio not found.

1977. It is recently that medical colleges in state of Rajasthan have started bacteriological confirmation of cholera cases except S. M. S. Medical college where it was done previously also. For phage-typing isolated strains are sent to the Director W. H. O. International Referral Centre at CALCUTTA. There has been a marked rise in number of specimen examined over the years, 4.9 percent in the year 1977. Only El Tor vibrio has been isolated replacing classical cholera vibrio.

The first case of El Tor was isolated in the year 1968 in Rajasthan. (Sharma. R. et al[5]) and thereafter all the stool samples, subjected to bacteriological confirmation showed El Tor as causative agent.

Conclusions

The state of Rajasthan has been categorised as non-endemic area for cholera and cases earlier reported have been labelled as imported. However from the observations recorded it is seen that cholera has now established its foothold in the state of Rajasthan.

The characterstics of the El Tor vibrio namely, its adaptability and ability to survive in environment and causing sub-clinical and ambulatory cases might also be responsible for persistence of cholera in Rajasthan, as in the other endemic parts of the country.

Finally this study points to the fact that there is indeed a great need for the surveillance of the disease in the state as there is in other parts of the country, which are endemic for cholera. This certainly requires strengthening of referral Public Health Laboratories, education of the health staff for prompt notification of cases and collection of specimen samples, beside other detailed epidemiological investigations, in addition to the usual measures of prevention and control.

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We are very thankful to the Medical and Health Directorate of Rajasthan specially to Dr. B. K Mitra and Dr. O. P. Khattar, Dy. Directors of Medical & Health Services Rajasthan, for allowing us to utilize the needed available information for this study.

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CHEST DISEASES AND TUBERCULOSIS IN A SLUM COMMUNITY AND PROBLEMS IN ESTIMATING THEIR PREVALENCE

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Introduction

Considerable ill health and deaths in the community are caused by respiratory diseases, especially acute infections[1]. Aside from this reason, the problem of respiratory diseases needs more attention from public health workers, also in the context of tuberculosis control Diagnosis of pulmonary tuberculosis at the general health institutions from among the chest symptomatics attending them is a key activity under India's National Tuberculosis Programme (NTP)[2]. This is also supposed to satisfy the needs of the symptomatic patients attending these health institutions. Utilisation of general health institutions by chest symptomatics, which has direc bearing on tuberculosis case finding at these institutions, depends largely on adequacy of relevant services there. However, of the total new out-patients aged 10 years and more attending a general health institution, about 7% are reported to have chest symptoms, nearly 6% of these symptomatics being cases of tuberculosis[3]. Thus, even if the general health institutions are equipped to diagnose and treat all tuberculosis cases from among the attending chest symptomatics, about 94% of the remaining chest symptomatics are still not adequately dealt with, diagnostic facilities for non-tuberculosis respiratory diseases being scarcely available at these centres. It is possible that they receive some kind of treatment, though it cannot be said that majority of them are satisfied. If on the other hand the community situation is considered, of the total chest symptomatics of 7 days or more duration comprising 11.1% of the entire community, only about 1.6% are reported to be cases of tuberculosis[4]. Thus, whether in the community or at a general health institution, majority of the chest symptomatics suffer from non-tuberculous conditions and without adequate provi ion for satisfying their needs, may find the visit to a health institution unrewarding. In order to plan

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for providing proper relief of chest symptoms through the general health institutions, information on the extent and nature of various respiratory diseases prevalent in the community is necessary. Presently, knowledge on these is meagre, owing to complex nature of a study required to diagnose respiratory disease through a community survey.

The National Tuberculosis Institute (NTI), in an attempt to develop a methodology for conducting a study for prevalence of chest diseases and tuberculosis in a community, undertook a survey in a slum area in Bangalore city. The material in respect of the paediatric age group (0-14 years) from the study has already been reported[5]. The objective of this report is to study the following among the population of the slum area :

1. The proportion of various kinds of sickness.
2. The problems of estimating the prevalence of different chest diseases including pulmonary tuberculosis in the community.

Methods

The study was conducted with the collaboration of the Church of South India (CSI) Hospital, Bangalore where facilities for investigation and diagnosis of chest diseases were available. The slum area in question was selected, as it was one of the areas adopted by the CSI hospital for rendering comprehensive medical care and the services were virtually free of cost to the patient.

Initial examination

The entire population of the slum was registered on individual cards and each person was advised to attend the health centre of the CSI hospital located in the area. At the centre everybody was questioned for presence or absence of symptoms pertaining to any system and subjected to a miniature (70 mm) X-ray chest. X-rays were interpreted by two readers independently at NTI, as normal or abnormal. Children in 0-9 years were, in addition, tuberculin tested with 1 TU RT 23 and the reactions were read after 72-96 hours. Persons with indurations of 10 mm and over diameter were considered tuberculin positive.

Further investigations

Persons with chest symptoms and/or with any abnormal shadow on chest X-ray at the time of initial examination were eligible for further investigations. In addition, all children in 0-4 years age, who were tuberculin positive and/or malnourished were also eligible for these. Further investigations consisted of the following :

a) Soon after initial examination : (i) two sputum specimens were collected from each of the eligibles, spot and overnight (OV), on house-to-house visits. From persons unable to bring out sputum, two laryngeal swabs were obtained. The sputa were examined by direct smear microscopy. Sputum specimens as well as laryngeal swabs were cultured for Mycobacterium tuberculosis followed by identification and drug sensitivity tests on positive cultures ; (ii) detailed clinical examinations of eligibles were carried out by Medical Officer (MO) at the local centre followed by blood, urine or stool examination prescribed by the MO.

b) After 6-8 weeks of initial examination : those who were sputum negative at the earlier examination, had the following additional investigations at the local centre : (i) fresh clinical examination by the MO ; (ii) a 70mm X-ray of chest ; (iii) two samples of sputa, collected and examined as before.

c) Special investigations and review : if the MO, on the basis of these investigations and earlier ones, was unable to come to a diagnosis in the case of some persons, he would refer them for diagnosis to a consultant panel at the CSI hospital. The panel was composed of a thoracic surgeon, a paediatrician, a physician, a radiologist and a tuberculosis specialist (epidemiologist, NTI). Facilities for special investigations like clinical assessment by concerned specialists, bronchoscopy, bronchography, tissue biopsy, ECG, etc. were provided for at the paediatric and respiratory clinics of the hospital on the advice of the consultant panel. The cases were further reviewed by the panel and in the light of the results of all the findings, the final diagnosis was made. In a case where the special investigations advised by the consultants could not be undertaken, a likely diagnosis was ultimately made by them on the basis of clinical examination, sputum and X-ray investigations, each carried out twice at an interval of 6-8 weeks.

Persons who needed specialist care, hospitalisation or any kind of treatment were provided with the same by CSI hospital, as and when required.

Material

Age and sex distribution of the entire slum population is given in Table 1. Material in respect of 1537 persons in the age group 0-14 years, has already been reported[5]. Coverage for clinical examination, X-ray and sputum tests were high ranging from 93.5 to 81.2% (Table 2) except in paediatric age group where spntum examination coverages were low, for reasons given in the earlier report[5]. Of the persons who were referred for the opinion of the consultant panel, 67 (62.6%) in paediatric age group and 57 (55.9% in age group 15 years and over required by it to undergo special investigations. Of them 88% and 47.4% respectlvely could be persuaded to undergo the investigations. In Table 3 is presented distribution of the special investigations ordered, large X-ray of chest being the single investigation most frequently asked for.

Table 1

Registered population by Age and Sex

Age Group	Male	Female	Total
0- 4	329	296	625
5-14	474	438	912
15-24	248	263	511
25-34	241	220	461
35-54	337	285	622
55+	82	100	182
All	1711	1602	3313

Table—2

Coverage of Examinations

Age Group	X-ray		Clinical		Sputum		Special Investigations		
	Eligible	Examined %	Eligible	Examined (I exam)* %	Eligible	Examined %	No. referred for consultant panel review	No. referred for special investigation (% of col. 8)	Investigated (% col. 9)
1	2	3	4	5	6	7	8	9	10
0-14	1537	91.9	531	96.4	531	58.0@	107	67 (62.6)	88.0
1 +	1776	81.2	508	91.7	508	93.5	102	57 (55.9)	47.4
All	3313	86.2	1039	94.1	1039	75.4	209	124 (59.3)	69.4

*Coverage for II examination 90.8, 82.6, 86.7 per cent in 0-14, 15 + and all ages respectiveiy.

@Coverage 92% in 5-14 year age group.

Table—3

Distribution of special investigations ordered by consultant panel

Age Group in yrs.	No. of persons referred for special investigations			Number of special investigations ordered**					
	Single investigation	More than one investigation	Total	Large X-ray of chest	Specialist assessment@	ECG, X-ray of other systems or chest fluoroscopy	Bronchoscopy and Bronchography	Lymph gland biopsy	Blood, sputum urine stool exam.
0-14	45	22	67	38	26	4	8	5	14
15+	43	14	57	18	34	4	12	1	8
Total	88	36	124	56	60	8	20	6	22

**Figures in each of the cells not mutually exclusive

@Either at cardiac or respiratory or paediatric clinics

Results

Symptoms

In all, 2841 persons were questioned for presence or absence of symptoms. Of 1408 in age group 0-14 years 668 (47.4%) and of 1435 in age group 15 years and over 759 (51.6%) reported to have sickness of any kind (Table 4). Prevalence of sickness in 15 years and over age group increased with age and was the highest in those aged 55 years and over.

Table—4

Sickness by age

Age	Persons questioned	No. reported sick
0-14	1408	668 (47.4)
15-24	421	191 (45.4)
25-34	361	169 (46.8)
35-44	318	174 (54.7)
45-44	178	107 (60.1)
55 & over	155	98 (63.2)
Total	2841*	1407 (49.5)

*14 persons X-rayed were not questioned.
Figures in bracket indicate percentages.

Table 5 presents sickness by systems, each sickness occurring alone or along with others. Thus, a person having sickness pertaining to more than one system is shown in more than one cell. It is seen that respiratory system symptoms were the commonest in all the age groups. The prevalance of sickness by respiratory system symptoms in age group below 34 years and above. Its rate of increase with age wasalso higher in older age groups i. e., in population 35 years and over.

In age group 15 years and over population, sickness pertaining to other systems like skin, nervous system, etc. considered jointly, was the second largest group (Table 5). These

Table—5

Prevalence of sickness* by systems among persons questioned**

Age group	Symptoms pertaining to @				
	Resp. system	G. I. system	Fever alone	ENT	Others
0-14	398 (28.3)	82 (5.8)	44 (3.1)	24 (1.7)	50 (3.6)
15-24	123 (29.2)	25 (5.9)	4 (1.0)	5 1-2)	65 (15.4)
25-34	109 (30.2)	38 (10.5)	16 (4.4)	5 (1.4)	62 (17.2)
35-44	117 (36.8)	19 (6.0)	6 (1.9)	12 (3.8)	70 (22.0)
45-54	75 (42.1)	15 (8.4)	3 (1.7)	3 (1.7)	42 (23.6)
55+	66 (42.6)	6 (3.9)	2 (1.3)	10 (6.5)	47 (30.3)
Total	888 (31.3)	185 (6.5)	75 (2.6)	59 (2.1)	336 (11.8)

*Each sickness occurring alone or along with others. Figure in each of the cells not mutually exclusive.

**Shown in Table 4.

@ Of 1073 children in 0-9 year age 223 had mal-nutrition. For others, information not collected.

Figures in bracket indicate percentages.

showed increasing proportions with age and in 55 years and over group it had come closer (30.3%) to the proportion of respiratory systems (42.6%), than in any other age group.

Radiological abnormality of chest

Among 1413 persons X-rayed in 0-14 years, 64 and of 1442 persons X-rayed in 15 years and over age group 81 had any radiological abnormality in chest (Table 6). The

Table—6

Prevalence of respiratory radiological abnormality by age

Age Group	Number X-rayed	Number with respiratory radiological abnormality
0-14	1413	64 (4.5)
15-24	425	16 (3.8)
25-34	361	16 (4.4)
35-44	320	15 (4.7)
45-54	181	19 (10.5)
55+	155	15 (9.7)
Total	2855	145 (5.1)
5+	2282	117 (5.1)

Figures in bracket indicate percentages

proportion of persons with radiological abnormality in age group 45 years and over was significantly higher than that in the younger age groups.

Respiratory system abnormality

Persons who had radiological and/or clinical evidence of respiratory system involvement with or without symptoms, were classified to have "Respiratory System Abnormality" and are presented in 4 broad categories (Table 7) as active tuberculosis, inactive tuberculosis shadow, pneumonitis and other non tuberculosis conditions. This was done since final etiological diagnosis could not be made in a proportion of cases who failed to undergo special investigations (Table 2). Nevertheless, broad categorisation on the basis of initial and follow up examinations could be arrived at by the consultant panel. Upper respiratory infections and heart diseases have not been presented in the report. Excluding 14 persons who were not questioned for symptoms though X-rayed, of the remaining 2341 persons (Table 4), 172 were diagnosed to have respiratory system abnormalities with or without X-ray lesion (Table 7). Details of 71 children aged 0-14 years found to have respiratory system abnormality are already presented[5]. Among 1433 persons in age group 15 years and over, 101 were found to have repiratory system abnormality of any kind.

Of total 172 persons diagnosed to have respiratory system abnormality in all ages, 130 (75%) had non tuberculosis etiology : 104 with pulmonary radiological abnormality and 26 without (Appendix Table). Another 13 persons were diagonsed as having active pulmonary tuberculosis : 6 sputum positive and 7 sputum negative radiologically active

Table—7

Age-wise distribution of respiratory system abnormality* with or without X-ray lesions

Age group	Active Tuberculosis			Other non TB			Total
	Sputum pos.	Sputum negative X-ray active	Inactive tuberculosis shadow	Pneumonitis X-ray abnormal	X-ray abnormal	X-ray@ normal	
0-14	—	5	3	52	4	7	71
15-24	—	—	4	10	2	3	19
23-34	1	—	6	5	3	—	15
35-44	1	—	5	8	1	4	19
45-54	3	1	5	7	4	1	21
55+	1	1	6	4	4	11	27
Total	6**	7	29	86	18	26	172
+	6**	4	27	63	18	22	140

*Persons having radiological and/or clinical evidence of respiratory system involvement with or without symptoms.

@Not included in Table 6.

**One, without X-ray abnormality, not included in table 6.

disease. The remaining 29 of the total persons with respiratory system abnormality were classified to have inactive tuberculosis.

Of the 1 5 persons with respiratory radiological abnormality in all ages, 12 (8.3%) and of the 172 persons with respiratory system abnormality, 13 (7.6%) were diagnosed as (Table 7) having active pulmonary tuberculosis (sputum positive and negative).

Prevalence of sputum positive cases in the population 5 years and over in age, on the basis of two collections at the time of initial examinatton (Table 6 and 7) was 0.26% (6 of 2282 persons X-rayed); prevalence of total active pulmonary tuberculosis (sputum positive) being 0.44% (I0 of 2282 persons X-rayed.)

Discussion

The study of prevalence of chest diseases in a community is operationally difficult. For such a study, services of a well equipped cardio respiratory clinic should be available. An area was therefore selected for this study which was under comprehensive health care of the Church of South India (CSI) hospital and

necessary diagnostic facilities were available there. Still, all the special investigations advised could not be carried out, since a substaintial proportion of persons (30.6% of eligibles), who were asked to undergo them failed to do so. This was inspite of considerable efforts made by field investigators of the NTI and Medical Officer and Social Workers of the CSI hospital responsible for providing comprehensive health care in the area. The factor of non-cooperation underlined the feasibility of applying complicated diagnostic methods to the community, without which diagnosis and estimation of chest diseases were difficult to obtain. In contrast, necessary investigations and their coverages for establishing the prevalence of respiratory tuberculosis were adequate. Thus, 86.2% of the eligibles underwent X-ray investigation, 86.7% clinical examination, both at the area centre and in 75.4% of the eligibles sputum collections could be made on house-to-house visits. The somewhat generous criteria of eligibility for sputum examination in age group 0-4 years was responsible for overall lower coverage for sputum examination. Had the eligibility for sputum examination been uniform for all ages, the coverage would have been over 90%[5].

The problem of arriving at final etiological diagnosis in a sufficiently large number of eligibles could not be overcome in a study of this nature, where accurate diagnosis of various conditions was dependent on application of complicated special investigation tools to a large community. In view of the low coverage (47.4%) for the special investigations among persons aged 15 years and more, prevalence of different chest diseases in the community are not presented in the study. Instead, these diseases are presented in 4 broad categories (Table 7).

It is also pertinent to point out that of the 1,039 persons clinically examined by the Medical Officer of the local centre, 209 (20.1%) were referred to a panel of specialists for diagnosis of chest diseases and 124 59%) of those referred, needed special investigations (Table 2 & 3). The above data, in a way, highlights the operational problems and the nature of services and resources required for proper diagnosis of chest diseases.

Prevalence of chest symptoms as well as others in this study was considerably higher than that obtained from the community surveys in rural areas by house-to-house questioning[4,6]. A possible reason could be that the population in the present study belonged to an urban slum. But the more likely reason could be methodological differences between the present study and those referred to above. The method of symptom elicitation by doctors at a centre set up in the slum with the prospect of X-ray and other investigations on the spot, might have led to higher symptom elicitation in this study.

Symptoms pertaining to respiratory system was commonest in all the age groups in the area under study (Table 5). Similar finding was reported from rural areas too[6]. Overwhelming proportion of persons with respiratory system abnormalities (92.4%) as well as of those with radiological abnormalities in chest (91.0%), had conditions other than active pulmonary tuberculosis. This underlines the size of the problem of non-tuberculous chest diseases in th area. If situation as this prevails in the rural community as well, adequate services are needed in the general health institutions to cope with it. The ability of the general health institutions to deal with chest symptomatics in general

and those with utilisation of the existing services by the chest symptomatics. This assumes importance in the contest of India's National Tuberculosis Programme[2], as success of tuberculosis case finding depends on increased utilisation of the health institutions by the chest symptomatics in the community.

It may be interesting to discuss the feasibility of diagnosis of chest diseases at the peripheral health institutions in rural areas. It is true that 145 of the 172 persons with respiratory system abnormalities in this study (Table 7) were diagnosed to have such conditions as pneumonitis, and active or inactive pulmonary tuberculosis, which are possible for a centre to identify if facilities of clinical, sputum smear and blood slide examinations along with X ray chest are available. These investigations were routinely made available to be the single special investigation asked for most often (Table 3). Whereas, X-ray chest was thus found to be the most relevant investigation vis-a-vis chest diseases, provision of this facility at all the peripheral health institutions is not practicable and response of symptomatics on referral to the district centre for X-ray is reported to be meagre[3]. Again, some of the other chest diseases as bronchiectasis, chronic bronchitis, emphysema, malignancy, pulmonary fibrosis etc., taken together, would constitute a sizeable group, which will not be easy to diagnose in the peripheral health institutions in a long time to come. Symptomatic relief after clinical assessment of the patients attending such institutions remains, therefore, the only answer for the present. Awareness, in the mean time, is growing for the need of research in developing simpler health technology to diagnose and treat chest diseases, especially applicable in rural areas[1].

Whereas in this study, prevalence of sputum positive cases (2.6°/00) on the basis of two samples in population aged 5 years and over (Tables 6 & 7) was similar to that found in Bangalore city in 1955-58 (2.4°/oo)[7,8], prevalence of sputum negative active tuberculosis was comparatively lower. This could be attributed to a different criteria of diagnosis adopted in this survey. For example, in the present study, diagnosis of first survey sputum negative active or inactive pulmonary tuberculosis was made by the panel of consultants on the basis of results of all investigations taken together, including those of subsequent follow up with X ray and sputum or other examinations. Compared to this, generally reported prevalence rates of sputum negative active pulmonary tuberculosis[7,8] are based on a single X-ray interpreted by two independent readers and an umpire and two sputum examinations only. Hence possibility of over diagnosis[9,10] of radiologically active sputum negative pulmonary tuberculosis was minimised in this study.

Summary

1. The entire population of a slum area of Bangalore city, comprising of 3313 persons was registered, questioned for symptoms and offered chest X-ray at a centre located in the slum itself. Those, who had any chest symptom and/or X-ray abnormality, were offered detailed examinations, namely, clinical examinations, repeated examinations of sputum for tubercle bacilli, and further chest X-rays.

2. Of the total 2855 persons X-rayed and/or questioned, 1039 needed detailed examinations and about a fifth of the latter required referral to a consultant panel for diagnosis of chest diseases. Further, about 60% of those referred to consultants needed special investigations. Thus, the study of

prevalence of chest diseases in the community needed considerable facilities and were operationally difficult. It is envisaged that similar problems will also be faced if peripheral dispensaries are to make proper diagnosis of chest diseases, due to the need for referral of large number of patients and provision of complicated diagnostic facilities at the referral hospitals.

3. The study seeks to quantify the problem of chest diseases and tuberculosis in the slum community. Largest proportion of the sick persons were found to have complaints referable to the respiratory system. Of the persons diagnosed to have any respiratory system abnormality, more than 90% had non tuberculous chest diseases, mostly pneumonitis ; and only 7.6% had active pulmonary tuberculosis.

4. It is concluded that in the community under study, the size of the problem on non tuberculous diseases of the chest and operational problems in their diagnosis were considerable.

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Appendix Table

Diagnosis of other non-TB conditions (other than pneumonitis)

Diagnosis	Basis of diagnosis			
	X-ray abnormality		X-ray	Normal
	With detailed investigation (a)	With initial & follow up (b)	With detailed investigation (a)	With initial & follow up exam. (b)
Bronchiectasis	5	2	—	—
Non-specific pulmonary scar	5	1	—	—
Emphysema	3	1	1	1
Malignancy	1	—	—	—
Tropical eosionophilia	—	—	4	—
Bronchial Asthma	—	—	4	4
Chronic Bronchitis	—	—	2	5
Acute bronchitis	—	—	3	2

(a) Special investigations on advice by consultant panel.

(b) Initial X-ray, sputum & clinical exam. followed up by repeat of these investigation after 6-8 weeks.

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A STUDY OF THE SPONTANEOUS ABORTIONS IN RURAL COMMUNITY

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Abstract

The present paper deals with the application of a probability distribution model to the data on the number of spontaneous abortions occuring to females in rural community.

Introduction

An abortion is usually described as the interruption of pregnancy before the foetus has attained viability i.e. before it has become capable of independent existence which is usually before 28 weeks of pregnancy (Potts, 1975). The abortion may be spontaneous or induced. Occurence of spontaneous abortion in a community is a problem for health, haemorrhage, psychological disturbances, attendant hazards etc. In the community, certain families are bound to have abortion any time during their fertile period. Since the occurence of spontaneous abortions to a female may be thought to be a rare event and the risk of abortion may vary from female to female, it is supposed that a negative binomial distribution may describe this situation. It is applied to the observed distribution on number of spontaneous abortions obtained from the General Health Survey of Chiraigaon Block (Rural) Varanasi, 1968-69.

Material and Methods

A systematic random sample of ten villages was selected from the 1961 Census lists of the Chiraigaon Block of the Varanasi district. The sample consisted of 1553 households. Information pertaining to only those females whose husbands were still living at the time of survey was recorded as the age at widowhood was not elicited. Adopting the questionnaire method, information on age, marital status, total number of children born and alive, total number of abortions and still births were recorded upto the date of survey. The sample consisted of 1880 females (whether they were within or beyond their reproductive age periods) with the history of at least one pregnancy. The distribution of the number of spontaneous abortions to females obtained in this survey is also given in table 3 of Rao *et al* (1972), where it is not mentioned that the distribution is on spontaneous or on induced or on both types of abortions. In fact distribution is on spontaneous abortions.

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A detailed report regarding this survey is in progress and would be published elsewhere.

Results and Discussions

The analysis is based on the information from 1880 females. For completeness, the assumptions and the other details of the distribution are given below :

(i) The number of spontaneous abortions to a female is a random variable and follows the poisson distribution i.e.

$$P[Y=y]=Py\,(t)=\frac{e^{-t}\,t^{y}}{y} \qquad (1)$$

for $y=0,1,2,\ldots\ldots$ and $t>0$

where Y denotes the number of spontaneous abortions, t the risk parameter and P stands for probability.

(ii) The risk parameter varies from female to female and follows the type III distribution, i.e.

$$f(t)=\begin{cases}\frac{a^{n}}{\sqrt{n}}\,e^{-at}\,t^{n-1}\,;\ a>0, n>0 & (2)\\ 0\,;\ t<0\,;\ t\leqslant o\end{cases}$$

Under the above two assumptions, the marginal probability distribution function of Y is given by

$$P[Y=y]=\frac{a^{n}}{\sqrt{n}\ y}\int a^{-(1+a)t}\,t^{y+n-1}\,dt$$

$$=\binom{-n}{y}\,p^{n}(-q)^{y} \qquad (3)$$

where $p=\frac{a}{1+a}$ is the probability success and

$$q=1-p=\frac{1}{1+a}.$$

The distribution (3) is the negative binomial distribution with parameter (n,p) where the probability generating function of this distribution is given by

$$Py\,(s)=(Q-Ps)^{-n}\ ;\ s=0,1,2\ldots\ldots\ldots(4)$$

Where $P=\frac{q}{p}$ and $Q=\frac{1}{p}$

so that $Q-P=1$.

Thus from equation (4), we can compute the probabilities corresponding to 0, 1, 2..... spontaneous abortions occuring to a female. The estimates of the parameters are obtained by the moment estimate method and hence the expected number of females corresponding 0, 1, 2..... spontaneous abortions are worked out and are presented in Table 1.

Table—1

The observed and the expected number of spontaneous abortions in rural females with the history of at least one pregnancy

Number of abortions	Number of Females	
	Observed	Expected
0	1771	1763.3
1	68	78.3
2	21	22.7
3	10	8.5
4	4	
5	2	7.2
6	1	
Total	1880	1880.0

$X^2=3.949$; d. f. $=2$; $P<.05$

To see the goodness of fit, the X^2- test is applied for this situation. For applying this test, some last cells are grouped. The computed value of X^2 is not significant at the five present level ($X^2=3.949$, d.f. $=2$ and $P<.05$). If similiarity between observed and expected

frequencies is a criterian for the suitability of a model, the fitted probability distribution is a reasonable approximation. That is, the negative binomial distribution is a good fit for such data. It is, however, important to note that the negative binomial distribution is obtained on other sets of assumptions also. One way to obtain it is the compound pession process as obtained here; and the second way to find it is the Polya Process (see Chiang, 1968) where risk parameter depends on the past history of the process and follows the type III distribution. In this way, we have two very different mechanisms on the micro level which give rise to the same behaviour at the macro level.

However it is clear from the findings that the pattern of spontaneous abortions to the females is described well by the negative binomial distribution at least for such situations. If the existing characteristics of a community is changed, it may not be claimed the 'good fit' of such a distribution. Because the parameters involved in a model vary from community to community, region to region and individual to individual.

Conclusion

In the present study the number of spontaneous abortions to females in a particular rural community and the expected number of spontaneous abortions obtained from the negative binomial distribution are more or less similar. The difference is not statistically significant. Thus the distribution may help in checking the validity of the observations obtained in other surveys that are made in a similar communities as under this study. If the observed incidence of abortions happens to be more than expected, perhaps some disease process prevalent in the community (where the distribution holds goods) is responsible for it.

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ANALYSIS OF TETANUS NEONATORUM CASES ADMITTED IN A HOSPITAL DUING 1976-77

P. Jagetiya[1] and B. Bhandari[2]

Introduction

Tetanus neonatorum is one of the major health problems in developing countries. It is a common cause of neonatal death, second only to prematurity/low birth weight (Shah and Udani, 1969). Health education about the disease can be useful measure to prevent this disease in the community, contents of which can only be correctly formulated after an appraisal or the epidemiological factors prevailing in that locality. The present study was undertaken to find out the various epidemiological factors responsible for the disease.

Material and Methods

The study was carried out in the department of Pediatrics, R.N.T. Medical College Udaipur from July, 1976 to Aug., 1977. Sixty-two cases were observed.

A detailed fully structured proforma was developed and pretested. All questions were posed to the attendant with the patient, who in majority of cases was the female relative of the mother looking after her during puerperal period.

Observations

Age and Sex Incidence

The maximum number of the cases (41 cases or 66.1%) were 4 to 9 days old ; 20 cases (32.1%) of 10 to 15 days old and there was only one case who's age was 18 days at the time of admission. Males predominated in the present series with a sex ratio of male to female as 2 : 1.

Seasonal Variation

The maximum number of cases were seen during the humid weather (Table No. 1) i.e. during July to August. Sporadic cases were seen throughout the year.

Table—I

Seasonal Incidence of Tetanus neonatorum

Months	No. of cases	Percentage
July to Oct.	40	64.4
Nov to Feb.	16	25.8
March to June	6	9.6
Total :	62	

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Socioeconomical and Cultural Factors

Education of the Father

Fathers of the 29 cases (46.1%) were illiterate, 17 (27.4%) had secondary and 14 (22.5%) primary education, while in 2 cases they were graduates.

Occupation of the Father

As shown in Table No. 2 maximum cases occurred in the families whose fathers were either farmers (29.0%) or labourers (19.9%). Others were professional workers (Teachers and Clerks) salesman and transport workers. In 10 cases fathers were belonging to unrelated or unidentifiable occupations according to international standard classification by International Labour Organisation and U.N.O.

Table—2

Incidence in Relation to the Occupation of Fathers

Occupation of the Father	No. of cases	Percentage
Labourers	12	19.4
Farmers	18	29.0
Professional (Teacher & Clerk) Unrelated and unidentifiable Occupation	10	16.1
	10	16.1
Transport worker	3	4.8
Salesman	9	14.5
Total :	62	100

Income of the Father

In the present study 54.8% of fathers belonged to the income group Rs. 200-400/ month, 25.8% to income group below Rs. 200/ month and 19.3% to income group 400 and above per month.

Incidence in relation to locality and place of delivery

Maximum number of cases (44 cases) were brought from the rural area in vicinity of the Udaipur. The rest of the cases belonged to urban locality. In this series all cases were delivered at their home under the supervision of untrained traditional birth attendants except in one case where delivery was conducted by midwife.

Instruments used for cutting of the cord

Various house-hold instruments were used for cutting of the cord (Table No. 3) Razor blade was used in 56.4% cases, other instruments used were kitchen knives, sickle and scissors without any sterilization.

Table—3

Various Instruments used for cutting of the Cord

Instruments	No. of cases	Percentage
Blade	35	56.4
Kitchen Knives	18	29.0
Sickle	7	11.2
Scissors	2	3.2

Substance used for cord dressing

It was observed that use of boiled ghee or oil was used most commonly for the cord dressing (Table No. 4). No cord dressing was done in 27 cases and talcum powder was utilized in 3 cases.

Table--4

Distribution of cases according to the various substances used for cord dressing

Cord dressing done by	No. of cases	Percentage
Boiled ghee or oil	32	51.1
Talcum Powder	3	4.8
No dressing	27	43.5

Discussion

Tetanus neonatorum is one of the common causes of mortality and morbidity in developing countries. This is attributed to environmental as well as socioeconomic and cultural factors (Marshall, 1968, Gupta et al. 1977).

The highest incidence was during July to Oct. Similar observations were made by Jaffari (1966), Nigam et at (1974), Suri et al. (1976) and Gupta et al. (1977). Increased incidence during these months could be because of increased number of births taking place during these months. Most of the cases in present study were belonging to the families where fathers were uneducated, and manual workers, having very low income. These factors bear indirect relation to the high incidence of the disease in these families. Bhakoo et al. 1976, Suri et al. 1976 and Urmila Lakhanpal (1974) also made similar observations.

Marshall (1968), Athavale and Pai (1968) and Majumdar (1971) observed that cord is cut with various house-hold instruments without any sterlization and many odd things are used for cord dressing all these play a vital role in the increased chances of the infection. We are also in close agreement of these workers.

Summary

In this study an attempt has been made to elicit the various socioepidemiological factors related to the high incidence of tetanus neonatorum. It is observed that various well established practices like cutting of the cord with unsterlised instruments, use of harmful materials for cord dressing and poor utilization of existing M.C.H. services need modification. It is essential for health workers to have some knowledge of these practices to carry out their activities satisfactorily in their areas.

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GENERALISED VACCINIA—A CASE REPORT

K. K. Datta[1], R. S. Sharma[2], V. K. Kaushik[3] and R. S. Misra[4]

Generalised vaccinia is a rare complication following smallpox vaccination.[1,2]. But in view of the eradication of smallpox from India and from the rest of the world, generalised vaccinia as a complication following smallpox vaccination has assumed a great importance.

Generalised vaccinia occurs in two forms. Much the rarer condition is seen in persons with previous healthy skin and is probably associated with a delayed antibody response to vaccination. The other form of generalised vaccinia occurs in patients with active or quiescent skin diseases, especially atopic dermatitis, and is known as eczema vaccinatum, the condition which is often called Kaposi's varicelliform eruption.

On receipt of the information from the district health authority Alwar to investigate a suspected case of small-pox, a boy aged 2½ months admitted in General Hospital Alwar, the authors visited the hospital on 19th April 78.

As per the history, the boy named Kaka aged 2½ months Hindu Male from village Ghari-Dhaneta, was admitted to General Hospital, Alwar on 15th April 1978, with huge swelling of the left arm and eruptions all over the body. The boy was given smallpox primary vaccination on 22nd March, 1978. On 1st of April, 78 eruptions all over the body appeared and there was enormous swelling and inflammation at the site of the vaccination.

On examination, the patient was running slight fever and had distribution of eruptions, more or less akin to the ordinary type of smallpox. Lesions were at the same stage of development and were like umbilicated pustules. The left arm where vaccination was given, was highly oedematous with confluent eruptions all over the left arm (Figure 1).

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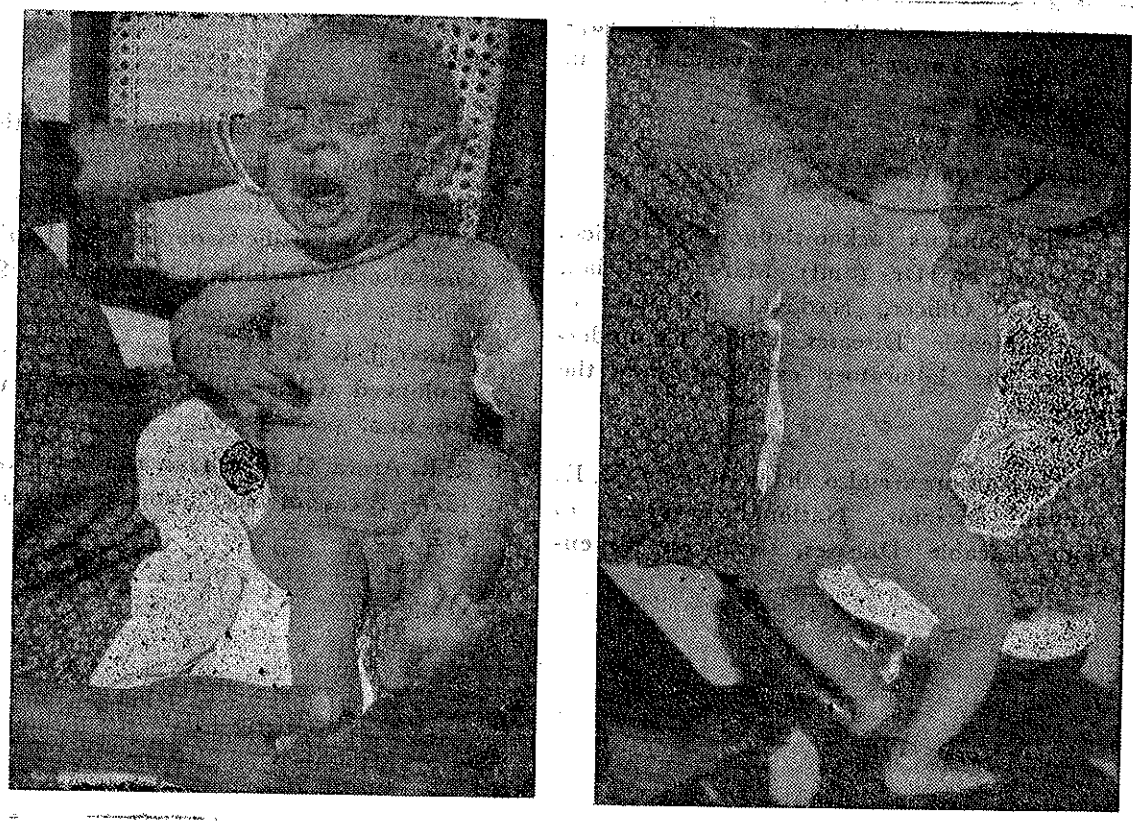

Fig.—I

The child was restless and was having signs of mild broncho-pneumonia. The vesicular fluid was sent for virus isolation to National Institute of Communicable Diseases, Delhi and it confirmed the presence of vaccinia virus. The case died on 22nd April 1978. The boy belonged to a family of farmer having six members (father 52, mother 42, four brothers aged 14, 12, 8 and 6 years). On the same day of vaccination i. e. on 22nd March another five children were also vaccinated in the same village with the same batch of vaccine, but they were all successfully vaccinated. The village belongs to the Primary Health Centre Nowgong, which reported last case of smallpox on 11.5.72. One interesting feature was that one of the relations of the child (grand daughter of the uncle of the child), also died of similar illness following smallpox vaccination at the age of 3 months in 1972.

The first case of vaccinia in India was reported by Sarkar & Chatterjee[3].

Recently Arora[4] et al reported a case of vaccinia from Delhi. The child was vaccinated on 11th July 1974, in England prior to their departure for India and the child developed eruptions all over the body on

20th July and the child was detained at the palam airport on arrival on 21st July. Eruption appeared after 9 days of vaccination in both the cases.

Acknowledgement

The authors acknowledge the services rendered by Dr. (Smt) Mary Sebastian, Research Officer, National Institute of Communicable Diseases, Delhi, for undertaking the laboratory examination of the material.

The authors are also thankful to Dr. R. K. Sanyal, Director, National Institute of Communicable Diseases, Delhi for his encouragement.

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BOOK REVIEW

VIth Annual Report (1977-78) of the Gujrat Cancer & Research Institute, Ahmedabad.

T. B. Patel

This is the sixth annual report of the Institute at Ahmedabad doing very useful national work on the diagnosis and treatment of cancer. The Institute has at present 350 beds of which 60 are earmarked for research. During the last 5 years the number of cancer cases treated was 23,540 (male 67.7% and famale 32.3%). Oropharyngeal cancer had the highest proportions—42 5% followed by that of cervix 10.4%, lung 8.05%, oesophagus 7.64%, breast 5.93% and miscellaneous 25.5% in that order. In 1977 alone out of 8891 cases registered 5180 were diagnosed as cancer with 7.0% mortality. It has a well equipped laboratory and arrangement for X-ray, MMR, and Mammography, Radio-therapy (deep X-ray, Caesium 137, and Co—60 + theration 730). In brief, the report gives a good analysis of the activities of the Institute and of the very useful work done in India.

S. C. Seal

Problems of the Aged

By Col. Barkat Narain, published by the Skin Institute and Public Services Charitable Trust, N Block Greater Kailash—I, New Delhi, 110 048, Price—Rs. 10/-.

With reduction of death rates and improvement of health, there has been a major increase of life expectancy in India. This along with population explosion had led to the increase in the number of aged people with consequent rise of the problem of geriatrics. The problem has been further augmented by the change in the social structure and family life in the country following the breakup of joint family system with their attendent socio-economic and psycho-social repercussions.

Col. Barkat Narain's efforts to deal with the problem by bringing out this handbook has been both timely and helpful to those who are now badly in need of remedies for their troubles. He has given an insight into the varied ranges of the problem namely physical, biological, physiological and social aspects in 25 small chapters and suggested methods of rehabilitation and correct management for nutrition and other remedies. In fact, his wealth of knowledge and experience as a Health Administrator for the past half a century has been best utilized to handle the problems in a rational manner. It is also highly desirable that health services should include Gerontology as a specialised discipline and should necessarily be included in the curriculum of the training of doctors. This book will be undoubtedly found handy and helpful to all concerned and particularly to this ageing population.

S. C. Seal

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NOTES & NEWS

10th International Conference on Health Education

Experts from over 40 countries will meet for the 10th in a series of conferences held under the auspices of the International Union of Health Education to be held in London from September 2nd to 7th, 1979. The theme of the conference, expected to be the largest ever global gathering of its kind, will be Health Education in Action—Achievements and Priorities. There will be three themes—PUBLIC POLICY—the integration of health education in national planning; HEALTH EDUCATION IN YOUTH—preparation for parenthood, pre-school training, primary and adolescent education and HEALTH EDUCATION METHODS, both in terms of general methodology issues and specific problems. Speakers will be drawn from all five continents and will include the Director-General of the World Health Organisation. Full detai's of registration are obtainable from :—The Conference Centre, 43 Charles Street, London W1X 7PB.

ASSOCIATION'S NEWS

It is a great pleasure to inform our members and readers that the Indian Public Health Association has been selected to host the 3rd International Congress of the World Federation of Public Health Associations, Geneva. This selection has come through a secrete ballot election where India got the highest number of votes.

It is most likely that the International Congress will be held in February/March, 1981 at Calcutta. Incidentally, 1981 also happens to be the Silver Jubilee Year of the Indian Public Health Association. Active cooporation and help from all members of the Associated are solicited.

P. N. Khanna
General Secretary

OBITUARY

Dr. S. L. Verma M.B.B S , M.S., D.P.H., F.C.C.P., F.I.C.A., F.I.P.H.A.
(Past President, Indian Public Health Association)

Dr. S. L. Verma, Director General, Railway Health Services (the last post he was holding at the time of his death) and lately President of the Indian Public Health Association, passed away suddenly on January 10, 1979 prematurely at the prime age of only 56 years. By his death the Railway has lost one of the most active, efficient, progressive and popular medical Director General ever engaged in the Railway Health Services, and also to the profession of Health Services in General. He contributed immensely to the development of the Indian Railway Medical and Health Services and he has to his credit a long list of improvements initiated by him. He framed the syllabus for Refresher courses for medical officers of the Indian Railways, reviewed and revised the contents of the accident relief medical equipment, introduced Operations Research Techniques on the delivery of health services in the Railway hospitals and health units. As a CMO of the Eastern Railway he built the Orthopaedic unit at Howrah and its extension to the field of prosthesis manufacture. Perambur and the best surgical units of the railways received his personal attention. According to Dr. A. L. Goswami his success to build up the medical services of the Eastern Railway was a matter of envy for all other railways, His tackling of the sanitation of "*Kumbh mela*" leading to no fly breeding was a great achievement. Though originally a veteran Surgeon, his whole philosophy had undergone a complete metamorphosis after his training in D P H at the All India Institute of Hygiene and Public Health, Calcutta and he devoted a large part of his energy in developing preventive aspects

and "*Community Health*" in railways. He was in fact, considered as a professional wizard in the Railway Health service as, it was through his relentless efforts and necessary work that other services were brought to the level of desired recognition. While posted at Lumding in 1948 where the professional facilities was only primitive, his zeal and initiative enforced by the efforts of his colleagues and subordinates turned this "penal station" into a pilgrimage for health services.

He took up public health work with so much enthusiasm and sincerety that he was unanimously elected to presidentship of the Indian Public Health Association and Indian Railway Officers' Federation. He was largly instrumental in the suggestion to build a federation of all associations concerning the different aspects of public health. As Surgeon-in-Chief of St. John's Ambulance Association he revised the dress regulation. Among his unfinished work is the problem of Railway Track Sanitation under the aegis of W H O and the National Environmental Engineering Research Institute, Nagpur.

Dr. Shantapharan Lal Verma, son of an officer of the Traffic Department of the old G.I.P. Railway, was born on July 27, 1923 at Satna, Madhya Pradesh where he had his school education. He passed his Intermediate from the Ewing-Christian College Allahabad and M.B.B.S. from the King George's Medical College, Lucknow and also M.S. from the same college in 1947 ; he obtained his D.P.H. from the All India Institute of Hygiene and Public Health, Calcutta in 1959 being declared as the best student of the year with award of a gold medal. He had also undegone a postgraduate training in Plastic Surgery. He started his professional career in August, 1948 as a direct recruit to the Divisional Medical Officer of the Indian Railways at the age of 25 years and was posted to Assam Railway at Lumding. In 1953 he was transferred to the N.E. Railway and was promoted as CMO in July 1961. After a period of 10 years he was appointed as the Director of Health Services in the Railway Board and was elected to the post of Additional Member Health and ex-officio Additional Secretary to the Government of India in March 1975. His post was redesignated as Director General, Railway Health services which he was holding till his day of demise, January 10, 1979. In his early career he was known as "angry young man" uncomferable, firebrond hardly compromising with what he considered the correct step." He was a hard worker and never spared himself at any time till death.

He was a great success in his professionel career and his merit was widely recognized. He was elected to the fellowship of Indian Public Health Association (FIPHA), International College of Angiology, USA (FICA) and the College of Chest Physician, (FCCP). In the St. John's Ambulance Association he was holding the top-most assignment of Surgeo-in Chief from 1974 till death. He was also associated with the following Associations or Societies : National Council of Bharat Scouts and Guides. Association of Plastic Surgeons of India and Indian Association of Occupational Diseases. He also served in various Committees namely, Surgical Instrument Development Committee, Central Committee of

Food Standards, National Malaria Eradication Committee, Smallpox Eradication Advisory committee, Family-Planning Education Consultative Committee, Project Committee on Infective Hepatitis, Advisory Committee of Trachoma Control Project. He was also the titular representative of the Indian Railways to the International Organisation of Railway Medical Union (UIMC).

He wrote several scientific papers on public health and wanted to bring out a book on First Aid and another on Importance of Home Nursing and Primary Wound care under the cegis of the St. John's Ambulance Association. He was a likeable and loveable person with capacity to win friends of all he came in contact with either in the Railway Services or outside. His death has been mourned by all His loss is hardly reparable. His ideals and life's mission are worthy of emulation by others. May his Soul rest if peace !

Editor

N. B. This obituary is a summary of the notes sent by Dr. N. K. Sinha, Deputy Adviser (Health) of the Planning Commission, Yojana Bhavan, New Delhi and Dr. A. L. Goswami, C. M. O. South Eastern Railway, to both of whom the Editor wishes to offer his grateful thanks.

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Sd/- A. K. Chakraborty

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