JERIMERI BOMBAY

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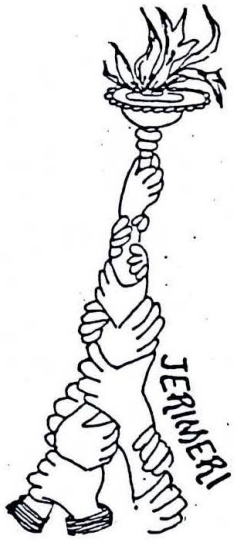
CASE STUDY # 1

ASSESSING THE ECO-HEALTH OF A SETTLEMENT IN BOMBAY



Jagruti Kendra

Preface

All over the world there is a growing concern about the effects of development. The environment is badly affected with the growth of industries, the depletion of forests and the unconcern of people who do not care for the earth.

The slum-dwellers in big cities suffer furthermore since their struggle for daily life does not permit them to give priority to their environment. Thus garbage, open drainage, inadequate facilities of water, toilets; etc. harm the individuals and the community who live in the slums.

Jagruti Kendra, a voluntary organisation situated in the eastern slums of Bombay has been conscientising the people of the area, mobilising them and gearing them for action towards a cleaner environment. During the past four years various programmes have been initiated to safeguard the interests of the slum-dwellers.

We are grateful to South-South Solidarity for funding this research project which has highlighted certain aspects of the impact of pollution on urban slums.

Our experiences and the results of the research will help us to take one more step to save our planet and its inhabitants from being destroyed.

I wish to thank the research team especially Ms Pamela Fernandes and the staff of Jagruti Kendra for their efforts in this research.

Allwyn D' Silva
Jagriti Kendra

This publication is the first of a number of case studies that was taken up on ecohealth by Jagriti Kendra in collaboration with South-South Solidarity as a way of exploring some of the urban slum problems. We have numerous other case studies looking at various other urban, industrial and rural settings in our continuing effort to understand the health and environment linkages. It is anticipated that such understanding will assist in improving the development interventions.

The ecohealth work that has been taken up by South-South over the last years in collaboration with numerous individuals and agencies is designed to go a long way to inspiring action among grassroots organisations.

May 1993

Jill Carr-Harris
South-South Solidarity

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WE WISH TO THANK THE FOLLOWING PERSONS/INSTITUTIONS.

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JAGRUTI KENDRA

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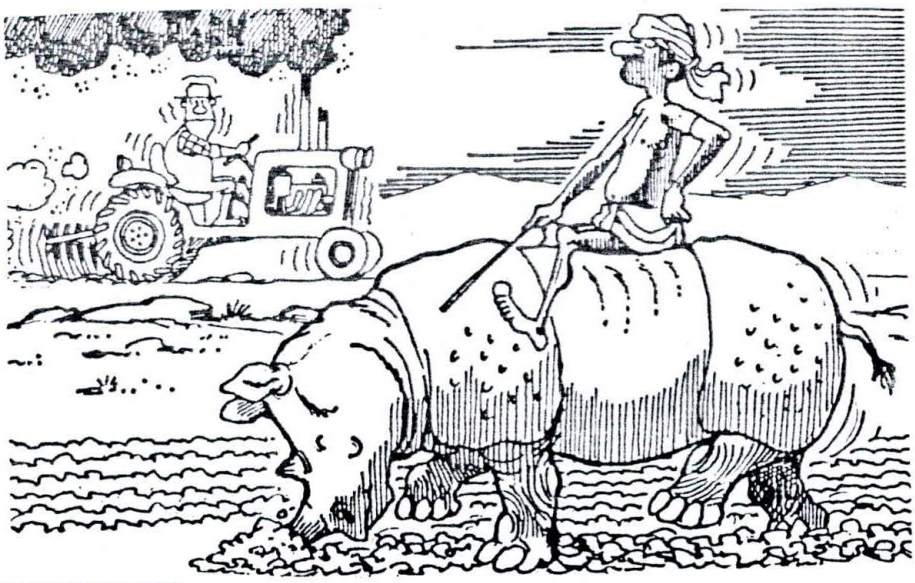
CHAPTER 1

INTRODUCTION

According to Madhav Gadgil of the Centre for Ecological Sciences, Indian Institute of Science, Bangalore, Indian cosmology estimates the diversity of living organisms at 84 lakh *yonis*. Twenty years ago biologists thought this estimate to be too high. They had described 15 lakh species and the total was believed to be less than 50 lakhs. But when they began looking carefully at the humid tropical forests they discovered species of trees different from one valley to the next, and hundreds of different species of insects in the canopy of a single tree. The total number of species is now estimated to be as high as five crores, and the population of each species is known to harbour tens of thousands of distinctive genes. The discovery of this staggering level of diversity has come just as scientists have learned to manipulate genes, to transplant them from one species to another, opening up tremendous possibilities of new technologies. It would, of course, take a decade or two before these technologies mature and begin to yield the large dividends expected of them. In the meanwhile, the biotechnology industry clearly has a stake in preserving the earth's natural diversity.[1]

Human beings have always been fascinated by the diversity of life. Hunters-gatherers celebrated it through the paintings in their caves. At the same time people have often ruthlessly wiped out life in all its diversity by using and abusing life over the ages.

Bio-diversity has of course mattered a lot to people living close to the earth. They are the peasants who must collect fuel from village woodlots to cook their daily meals and herdsmen who must graze their cattle and sheep on common lands. There are basket weavers who must collect bamboo and cane from nearby forests to earn a living and tribals who must hunt a porcupine or partridge for meat. People thus dependent on the natural resources of their own localities for their personal well being have been termed the ecosystem people.



1. The Hindu Survey of the Environment, 1992.

MAJOR OBJECTIVES OF THE STUDY

(i) Understanding the impact of pollution/degraded micro environment (such as those caused by small-scale industries, housing layouts, lack of basic amenities, etc.) and its effect on the environment and people's health.

(ii) Identifying possible health risks under such environment.

(iii) Identifying groups/population who are rendered most vulnerable by such an environment.

(iv) Building up awareness regarding problems of eco-health, which cannot be directly seen and as a result continue to grow.

(v) Initiating awareness leading to action.

(vi) Training a group of volunteers to work as a vigilant squad.

Design for Study

Since most of the information sought are related to the subjective level there is no control over the observations made. This is an exploratory study. The entire Jerimeri East, West and all the sections of various slums surrounding Jagruti Kendra will form the universe for the study. A proportionate random sample will be taken of the whole universe.This study can serve as a pilot study to plan out some action based on these findings.

Sampling Techniques

For this study it was decided to concentrate on areas which were very much affected, namely Jerimeri West (area surrounding Hanumantha *chawl*), Krishna Nagar and Tilak Nagar. The families to be studied will be those who have lived in the area for not less than a year.

Initially the sample size was set at 1,500 but only 1,000 families were studied. The selected areas were considered as representative of the universe.

Tools and Sources of Data Collection

Primary Sources

An interview schedule will be administered to the representative of the family who is not less than eighteen years of age. An interview guide will be used to collect information from groups of women/youth from different communities.

Secondary Sources

Use of literature, reports, records and a Ph.D. thesis which is maintained on this topic.

Data Processing

All open-ended questions were manually processed. The close-ended questions were coded, transferred to the master sheets and given for Electro Data Processing (EDP). Univariate and Multivariate frequency tables were derived from the data.

Limitation and Scope of the Study

Most people do not give much importance to environmental issues as long as these do not directly touch their lives. For people residing in slum colonies the question of survival is very crucial. They rarely stop to think of the environment and its rate of degradation. So it is quite likely that the pollution aspect will not be perceived by them as an important problem.

The team of interviewers were raw hands without any prior experience in data collection, except for an orientation. Hence the quality of the data collected will not be up to the standard of trained personnel.

The study is only limited to understanding the extent of the problem and does not have set parameters to measure the extent of pollution or measure the extent of the effects of pollution. Hence the results of this study can be used as guidelines for further development in this area.

Significance of the Study

This study aims at statistically re-establishing the fact and extent of environmental degradation and will lead to awareness of the environment and the need to protect it from further degeneration with a concrete plan of action.

These ecosystem people the world over have always treasured the bio-diversity of their own localities and evolved many traditions for its conservation and prudent use. But these practices of ecosystem people have been long under assault by the elite who want to make a quick profit with these resources.

The concept of growth at all costs, which governed development policies around the world until the eighties, is being replaced in the nineties with the idea of sustainable development. This is the consequence of growing evidence of the heavy price we have to pay for unsustainable consumption patterns, particularly of the richer countries. In the name of growth, fossil fuels have been burnt with abandon, chemicals harmful to the atmosphere have proliferated, poisons have been dumped on land and in rivers and oceans and natural resources such as forests have been ravaged and exploited to the point of near extinction. As a result we are confronted with the phenomenon of global warming, caused by accumulation of gases such as carbon dioxide in the atmosphere, and the depletion of the ozone layer.

According to Dr Kamala Chowdhury, former chairperson of the National Wastelands Development Board, India's poverty is closely linked with its increasing deforestation and land degradation. As much as half of the 329 million hectares (m ha) is considered degraded in one form or another. Between the seventies and eighties the satellite imagery shows tree losses at a staggering rate of 1.3 m ha a year.

IDENTIFYING THE PROBLEM

Bombay, the second largest metropolitan city in India, is the financial and business capital of the country. However, its streets are not quite paved with gold (Debi Goenka in *The Hindu*). Over half the population lives in slums, in crowded semi-permanent structures without adequate access to running water or sanitary facilities. Despite these conditions, the migration into the city and its surrounding areas continues unabated, suggesting that employment is available, especially in the informal sector which thrives alongside the formal and service sector.

Although Bombay's population continues to grow through a combination of natural factors and migration, the 1991 Census has revealed some interesting insights about the city. The estimated population of Greater Bombay has been placed at 9.91 million, more than one million less than the projections made on the basis of past growth. This means that there has been a gradual decline in the population growth rate in 1981-91 as compared to the previous decade.

Water Supply and Sanitation

According to Mr Sharad Kale, the Corporation spends Rs 30 crores a year on power for pumping water into the city.

About 67 per cent of the water is used for domestic purposes and the rest for industries and commercial activities. Though in theory the per capita water supply to the city is 240 litres per day (lpd) the pattern of distribution is highly uneven. This accounts for some fortunate areas receiving water round-the-clock while most of the city gets running water only for few hours a day. The majority of the slum-dwellers have to collect their water from public taps at fixed times. For those residing on the pavement, fire hydrants serve as a regular water source.

Health Care

Inadequate water supply with poor sanitation has taken its toll of the health of the population of Bombay. Typhoid, hepatitis and diarrhoea are common, especially during the monsoon when the water supply is likely to be contaminated. Another major killer, accounting for 16.4 per cent of deaths in the city, is the respiratory disease. Experts suggest

that the poor ambient air quality and the high level of pollutants in the air have contributed to the rise in respiratory ailments.

There has been a dramatic increase in private hospitals. Today municipal hospitals account for only 9 per cent of the city's total number of hospitals. As shortages of medical facilities is apparent, the neonatal mortality is as high as 52.5 per cent in the slums.

Housing

The sight of people living in dilapidated slums, and even on the pavements, is an eloquent statement on the acute housing problem in Bombay. More than half the population in Bombay lives in slums. An average of various estimates of the annual housing stock needs of Bombay is placed at 114,000 units for a population of 9.85 million (figure projected in 1984 for 2001 has already been exceeded). The stock generated each year by public, private and cooperative agencies is a mere 17,000 units. There are a number of reasons for the shortfall in housing including laws which discourage investment in housing such as the Urban Land (Ceiling and Regulation) and the Rent Control Acts.

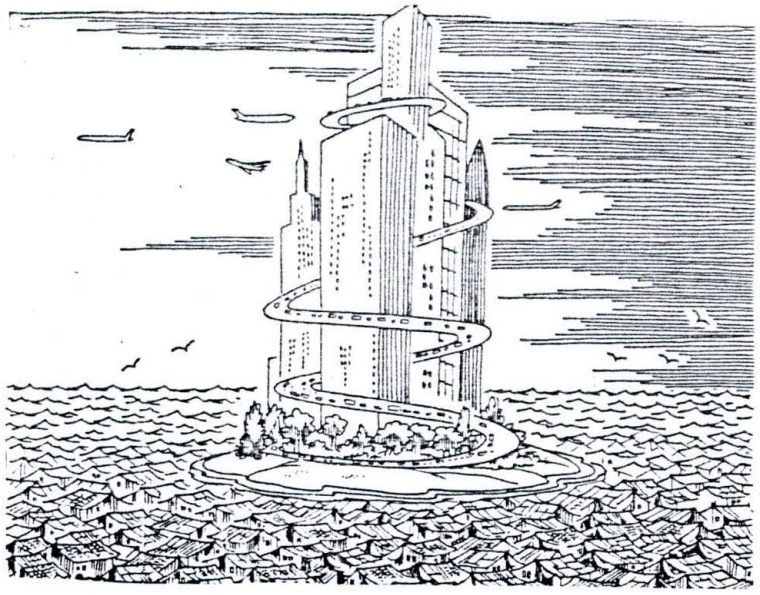
Transport

The public transport system in Bombay is oversaturated. Trains designed to carry 800 passengers each usually carry more than four times that number during the rush hours.

In ten years, the total number of motor vehicles has doubled. The vehicle population in the city now is estimated at 6.28 lakhs. While the average car occupancy in Bombay has been estimated at 1.8 persons, the average BEST bus carries upto 100 passengers in the peak hours.

CONCLUSION

In this chapter attempts are made to identify areas of action. The framework for the whole study has been outlined. In the next chapter we will examine the theoretical background of the study in greater detail.



CHAPTER 2

BACKGROUND

LOCATION

In Greater Bombay, the concentration of hazardous chemical units was found to be greatest in the eastern (central) suburbs, mainly in Municipal Wards L, M, N, S and T. Jerimeri (the area chosen for this study) is located in the L Ward. Out of the 32 identified polluting industries, 16 are in the Bhandup-Mulund area, nine in the Kurla-Ghatkopar-Vikhroli area and seven in Chembur (*Times of India*, Feb. 1989).

The residents of Jerimeri situated on the Andheri-Kurla Link Road in the L Ward are victims of environmental pollution (air, water and noise). The major pollutants are the surrounding (authorised/unauthorised) small scale and a few large industries, quarrying practices in the immediate neighbourhood, poorly maintained water and sewerage systems, open drains, inadequate toilet and sanitation facilities, poor quality and insufficient quantity of water and an open *nullah* a source for untreated industrial effluents called Mithi river which borders several *chawls* over a long stretch. This is aggravated by the noise and air pollution from the airport as well as heavy vehicles that use the Andheri-Kurla Road and along which the *chawls* are situated.

The community has its physical boundaries and covers five to six lakh population residing along the Andheri-Kurla Road within the boundaries of Sakinaka, Kurla, Ghatkopar and Sahar airport. About 30 years ago, the area comprised of forests and agricultural lands owned by the Wadias and a few Catholic families. As industries came in, the land was cleared of forest/agriculture and used to build houses for the workers. Kajupada, one of the oldest developed localities, was a forest of cashew nut trees. Formerly, the *chawls* were better planned with adequate water and sanitation. Most of the *chawls* are illegal. A vast area in Jerimeri is covered with stables (*tabelas*/ buffalo sheds) contrary to the development plans of the area.[2]

Being part of the vast sea of unauthorised dwellers in the city, having occupied land belonging to the authorities, and uncovered by protective legislation, the boundaries are open and most vulnerable to external threats of eviction and harassment. This situation is aggravated in the present context of a Bombay High Court decision to evict dwellers from land needed for development purposes as well as the eviction of tenants on Central Government premises under the Public Premises Act (*The Independent*, 7 Feb. 1991).

There are about 200 laws in India which directly or indirectly relate to environmental protection. The earliest, the Shore Nuisance (Bombay & Colaba) Act goes back to 1853 and the latest is the Environment Protection Act of 1986. Despite a multitude of legislation, constitutional directives and duties and the setting up of Pollution Control Boards all over the country, the success in curbing environmental degradation has been negligible.

2. *Source* : Adapted from the field work practicum "Inrervention on Issues of Pollution, 1991", V.V. Nadkarni (Chembur, Bombay: TISS), pp. 9 and 17.

ENVIRONMENT PROTECTION ACT

The Environment Protection Act of 1986 defines environmental pollution as:

* The presence in the environment of any solid, liquid or gaseous substance in such concentration so as to be injurious to the environment.
* Environment includes water, air and land and the interrelationships which exist among and between water, air, land and human beings and other living creatures, plants, micro-organisms and property.

Water pollution is defined as:

* Culmination of water or alteration of the physical, chemical or biological properties of water.
* Discharge of any sewage or trade effluent or any other liquid, gaseous or solid substance into the water.

This discharge may be direct or indirect and likely to cause nuisance or render such water harmful or injurious to public health or safety or to domestic, commercial, industrial, agricultural or other uses; or to the life and health of animals or plants or aquatic organisms.

Air pollution is defined as:

The pressure in the atmosphere of any solid, liquid or gaseous substance in such concentration so as to be injurious to human beings or other living creatures or plants or property or environment.

Noise pollution is defined as:

Unacceptable level of sound causing irreparable damage to the human system. Sound is a form of energy and it is measured in units called decibels (dB). The decibel scale is logarithmic; so a noise level of 90 dB would be ten times as loud as 80 dB. For example, a whisper equals 20 dB, normal speech ranges between 30-50 dB, street noises 40 dB, car engines 90 dB and a reviving jet shoots upto 150 dB. Anything above 90 dB is a health hazard. The WHO has prescribed noise limits at 55 dB during the day and 45 dB at night.

POLLUTION TRENDS IN BOMBAY IN A NUTSHELL

Noise Pollution

Despite the laws and law enforcers loudspeakers cause more noise than aircraft in Bombay. In most parts of the city noise levels range from 57 to 91 decibels when the World Health Organisation limit is 55 decibels.

Air Pollution

A study was undertaken over the last 15 years to evaluate the effect of pollution on Bombay citizens. In the city, the pollutants let out into air daily are about 2,971 tonnes of which 52 per cent come from automobiles, two per cent from the use of domestic fuels and the rest from industries.

Water Pollution

Most of Bombay's domestic sewage continues to be discharged into the Arabian Sea without being treated. An estimated 1,800 million litres of effluents (both domestic and industrial) are discharged into the Arabian Sea and the Thane Creek. Furthermore, with the Pollution Control Board failing to monitor industrial effluents, these too are discharged into the sea either untreated or just partially treated. It is not surprising, therefore, that the sea, off Bombay, has become completely unfit for any recreational use.

SOCIO-ECONOMIC FACTORS

Most of the population residing in the area comprise of migrants from Uttar Pradesh, Tamil Nadu, Kerala and Karnataka. They are mainly mill-workers. On the technical side, there are welders, turners, fitters, grinders, electricians and mechanics. A few of them are traders/ businessmen. Several of them are also engaged in services like auto-rickshaw/taxi drivers, peons, clerks or hotel workers. There are also a few pockets where rag pickers reside leading a hand-to mouth existence. The average income earned by the male bread-winner ranges from Rs 1,500 to Rs 2,000. The families in business may earn as much as Rs 5,000 while rag pickers or *naka* workers (unemployed persons who wait at street corners seeking daily wage work) may earn even as low as Rs 500 per month. The women work in mills, factories or as domestic workers and rag pickers on wages lower than men. The majority of families are nuclear or extended, comprising of an average of five to six members; the number of children are as low as two or as high as nine.

Education

A large percentage of the people have not had any formal education. Some of them were repeated failures and forced to leave school, while some were just dropouts. The reasons vary from financial constraints to the negative social influence of the environment as well as lack of upward mobility despite education.[3]

Land Ownership and Basic Amenities

Since the area has developed in an ad hoc manner, with the land ownership pattern varying from place to place, the provision of basic amenities is also ad hoc. In most cases, the residents have bought rooms in *chawls* without the necessary amenities of water, electricity, toilets and drainage. In Jerimeri West most of the houses were *kutcha*. But now over the years families who have settled over a longer period have used their meagre earnings to build brick walls replacing tin sheets and cementing the mud flooring. Narrow open drains built alongside the houses are the only signs of drainage collecting the waste water from the houses and moving towards gutters provided by the BMC. At times when no gutters are in the vicinity the water accumulates/ overflows on the land, stagnates and breeds mosquitoes. Sometimes these sewer and water pipes get deeply buried under the debris of construction. In the monsoon the *nullahs* overflow and due to water-logging in many places water enters the homes through drains.

Garbage Disposal

Every miniscule of space is being exploited so throughly that there remains no space for disposal of garbage. In some places the BMC has provided a temporary shed near the toilets or bins on open grounds. If the garbage is not removed regularly (as is the case most of the time) it becomes a pollution hazard for the residents, giving off a foul smell, breeding mosquitoes, blocking the path to the toilet especially during monsoons and forcing children or even adults to use open spaces.

Toilets

While there is a tremendous incease in the population, ratio of toilets to persons has not changed. In *chawls* on private land, the ratio is usually one toilet for ten persons; however on airport, BMC or housing board property, the ratio may be one toilet for 100 people or more.[4] In places where the *chawl* committee exists or when the landlord is reasonably concerned, the toilets are maintained on a regular basis. In other places the toilets are in a ramshackle state; water, electricity are not available and some

3. Ibid, pp. 18.

4. Ibid, pp. 18,19.

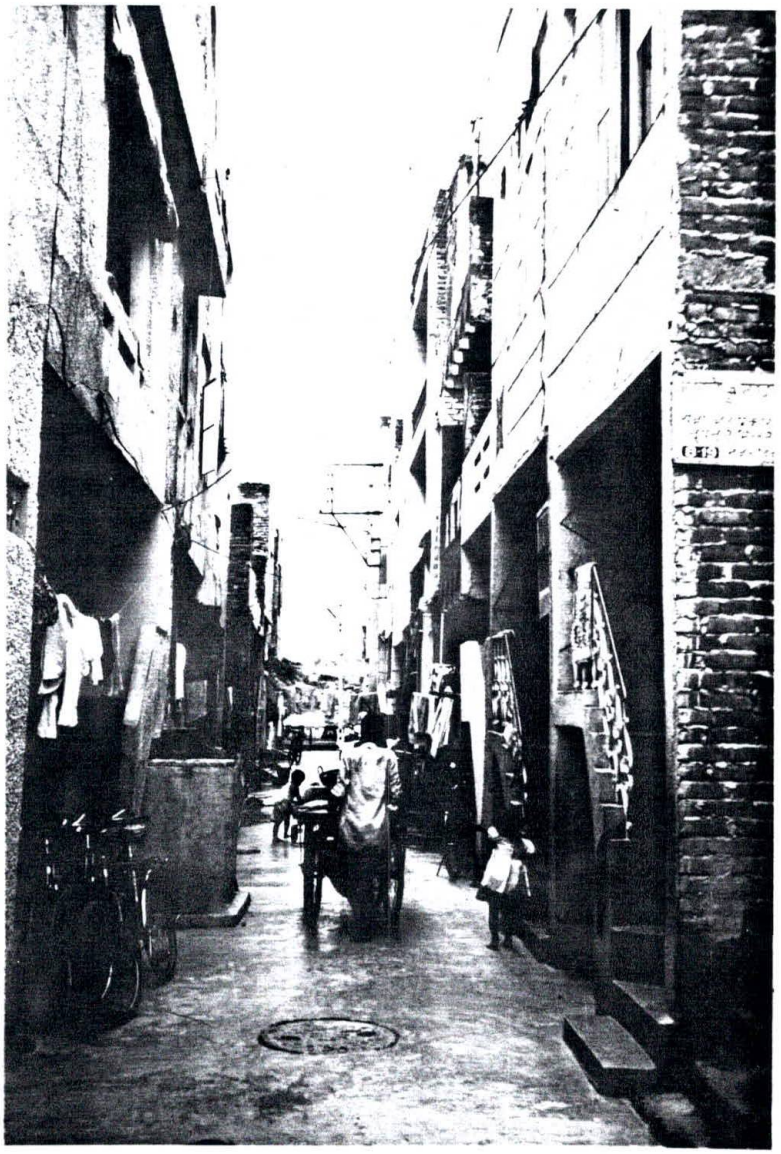
do not even possess doors; for women in particular the use of toilets is most stressful. It is also a most common sight for children to be seen sitting near garbage dumps or alongside the road path for purposes of defecation. Gastrointestinal problems are thus perennial.

Chawl Culture

The community is divided into groups formed on the basis of the local *chawls* committees. Thus a group of families residing close to each other/ having a common owner with a formal or informal leader consider themselves as a local body. Some *chawls* are small in size while others are fairly large. Some *chawls* have closed boundaries while others are open to interaction and relate easily with organisations working in the area. The pattern of leadership greatly influences the extent of permeability and vulnerability to internal and external inputs and adaptations. Certain areas are kept on guard by leaders using physical force. In several areas, the *chawl*-owners themselves keep external interventions at bay. They use threats of eviction and legal action on their own tenants who are interested in improving their living conditions. *Chawl* committees, comprising the male head of the family, are at times the cause of impermeability into the groups. The males prefer to work on their own for the welfare of the *chawl*. They do not like to be questioned, or their position threatened especially by the women. The women are thus relegated to the back seat making them feel inferior, incompetent and incapable of acting on issues.

Eviction Targets

Since the Bombay High Court orders of 7th March and 7th April 1990, the community faces a perennial dilemma.[5] On one hand the court order has removed the grant of stay on evictions for development purposes and does not favour residents who have built dwellings in slums after Ist January 1985. At the same time there exists a sense of lethargy among the people, developed over many years of empty threats.



5. Ibid, pp. 18, 19.

Hence the organisations working for slum upliftment have to use direct influence to energise and motivate the people to take some action on the issue. The elite of the city expect the slum-dwellers to lead normal lives and blame them for their personal behaviours when they are forced to live in an environment of deprivation with lack of basic amenities like adequate water supply, electricity, housing, sanitation, drainage and toilets, etc. This environment is further aggravated by the pollution of industries, vehicles (owned by the elite), accumulation of garbage and stagnant water. In such an environment how is the slum-dweller expected to live a normal happy life?

Coping Mechanisms

To deal with the stresses of such an existence, the people are observed to be coping in various ways: the men take to alcohol/ gambling; a few youth experiment with drugs. There is strength derived from belonging to political parties and identifying with or depending on local *dadas* (mafia) in the area. There are physical and mental health problems. The worst affected are women and children who become targets of assault and abuse by drunken husbands or sons. Families get disintegrated especially when the men seek extra-marital affairs, or when women are forced to seek employment outside their homes leaving infants in the care of older siblings. At times drunken fathers sexually abuse their adolescent daughters. Eve-teasing is also a common sight at street corners which are frequented by unemployed youth.

Formal or informal leadership emerges in the *chawls* and in some instances such a leadership becomes very exploitative. In most cases people end up paying for services which are their basic rights. For instance, paying the municipal sweepers for cleaning the gutters and laterines, paying the plumbers who generally install substandard water connections which have to be cleaned every three months, pay the shop-keepers in black for hoarded and seemingly unavailable goods as rations are poor in quality and quantity, pay doctors for their ill-health due to environmental pollution, the municipal health services being perceived as inadequate or inaccessible. Behavioural problems among children too are not very uncommon and family stresses and breakdowns are on the increase.

Obstacles to Convergence

There are several obstacles to convergence, their origin being endogenous or exogenous. In a few *chawls* in Jerimeri West (the land belongs to the airport authority), political parties have established committees on communal lines, for example bringing together only Maharashtrian Hindus and keeping away the other Hindus, the Muslims and the Catholics. Afraid of the bullying tactics of the party affiliates, the people are forced to remain within the boundaries and keep away from the rest of the families. Prejudices and biases against Muslim families are common; many of them live along the borders in *patra*-walled (corrugated iron sheet) huts. They are usually viewed as illiterate, dirty, indifferent and incapable of improving their surroundings and their life style. They are often ridiculed about their large families and unhygienic habits. These prejudices divide the community on religious lines.

Community's Regulation Processes

Like all migrants in the city, the people of Jerimeri and Sakinaka have settled down to form a fairly stable and dynamic social sub-system of the city. In other words this means that it fulfills locally relevant functions such as production-distribution-consumption, socialisation, social control, social participation and mutual support. These are linked to the city at large and hence these functions can be termed as partial. For instance, while the local private practitioners cater to the basic health needs, hospitalisation and other major health problems are dealt with at the Holy Spirit Hospital or other public/

private hospitals in the city. The parish school St. Jude which is a co-education school serves a 3,000 child population and apart from this there also exist private and municipal schools. However, for junior and senior colleges the students travel outside the community.

Present Status

The area which is pockmarked by the 10 x 10 and 10 x 12 low-ceilinged houses, as mentioned earlier, was agricultural and forest land in the sixties. In the development plans of the BMRDA, it was supposed to have served various purposes. Bits and pieces of the land were gradually occupied by factories and private builders with political influence, and slums were built to house the rural migrants. In fact a prominent Congress worker wielded sufficient influence to change a portion of the development plan so that he could develop certain community services, like a temple which is today a place for weddings and other functions. The reason for the stability of the community for 30 years without a major eviction threat to the residents may be considered political, as there are vested interests in the continuance of slum communities as vote banks and industries for raising political funds.

On the one hand, there is lack of a clear policy on slums built on land other than municipal land, i.e unauthorised occupation of private and Central Government land and that of other bodies such as airport authorities and the railways. On the other hand, political parties vie with each other to provide protection against eviction, for obvious reasons. In this situation of vagueness and ambivalence and a divide-and-rule policy, sporadic attempts at evictions of small clusters of houses are made. The builders make hay while the sun shines by building *chawls* to house small-scale units. A *chawl* may constitute a minimum of five rooms, with or without basic amenities, to a maximum of 30 and more. Where the owner has cooperated, the area has been declared a private slum and the BMC gives facilities; the land will be treated as BMC property and thus a deadlock faces the residents. The alternative has been to stop paying the rent and go to court. The geographical location of the *chawl* is important for it affects their life style. If the *chawl* is situated on the border of the main road, or an inner lane or a major water pipeline, the people are more likely to get affected by disruptive stimuli from external sources, as for instance, a broadening of the road, or traffic pollution (air, noise) or garbage dumping, etc. The people have then to depend on the local corporators, MLAs or the voluntary organisations like Jagruti Kendra for help.

CONCLUSION

In the initial part of this chapter various types of pollution were defined. A sketch of pollution trends in Bombay was presented in a nutshell followed by pollution aspects in the locality. The socio-economic background of the residents covered aspects such as education, land ownership, basic amenities, *chawl* culture, eviction, coping mechanisms, obstacles to convergence and community regulation processes. Finally in the latter part, the present status of the community was presented.

The next chapter will present analysis of the data.

CHAPTER 3

FAMILY (COLLECTIVE) DATA

TABLE 1

Living Conditions

Areas

Value Label	Frequency	Per Cent	Valid Per Cent
HANUMANTHA *CHAWL*	585	58.5	58.5
TILAK NAGAR	80	8.00	66.5
KRISHNA NAGAR	268	26.8	93.3
SAKINAKA	67	6.7	6.7
Total	1000	100.0	100.0
Valid Cases 1,000	Missing Cases 0		

Hanumantha *chawl* and other neighbouring *chawls* located in Jerimeri West represented the largest sample size of 585 families from a total of 1,000 families that were chosen for the study. This was followed by 268 families of Krishna Nagar, 80 families of Tilak Nagar, and 67 families of Sakinaka.

TABLE 2

Type of House

Value Label	Frequency	Per Cent	Valid Per Cent
KUTCHA	66	6.6	6.6
PUCCA	933	93.3	93.3
	1	.1	.1
Total	1000	100.0	100.0
Valid Cases 1000	Missing Cases	0	

Houses were categorised as two types: mainly *kutcha* or *pucca*. The operational definition of a *kutcha* house was a house with tin sheet walls and a mud flooring. The *pucca* house was defined as a brick structure with cemented flooring. A majority of the houses were *pucca*. Only 6.6 per cent of the interviewed sample resided in *kutcha* houses.

TABLE 3

Height of Roof

Value Label	Frequency	Per Cent	Valid Per Cent
Low	160	16.0	16.0
High	117	11.7	11.7
Medium	723	72.3	72.3
Total	1000	100.0	100.0
Valid Cases 1000	Missing Cases	0	

72 per cent of the interviewed sample resided in homes with medium height roof; 16 per cent had very low roofs and only 12 per cent had high roofs.

TABLE 4

Ventilation

Value Label	Frequency	Per Cent	Valid Per Cent
NONE AT ALL	94	9.4	9.4
One window	653	65.3	65.3
Two windows	202	20.2	20.2
Three windows	31	3.1	3.1
Four windows	18	1.8	1.8
Five windows	1	.1	.1
	1	.1	.1
Total	1000	100.0	100.0
Valid Cases 999	Missing Cases	1	

As can be noted from the table, 14 of the sampled families had no windows at all indicating improper, inadequate ventilation which is an open invitation to health problems. The maximum interviewed sample amounting to 65.3 per cent had only one window, so no cross-ventilation was possible. Just 1.8 per cent of the entire sample had five windows. This picture is very symbolic of the society at large where only

a few people have the best facilities.

TABLE 5

Ownership of House

Value Label	Frequency	Per Cent	Valid Per Cent
Sub-tenant	19	1.9	1.9
Tenant	425	42.5	42.5
Owner	556	55.6	55.6
Total	1000	100.0	100.0
Valid Cases	1000	Missing Cases : 0	

Being a slum populace most of the early settlers naturally earned ownership rights. Hence a majority of the population (55.6 per cent) fell into the owner category. However, a sizeable population of 42.5 per cent of the sample fell into the tenant category followed by 1.9 per cent in the sub-tenant category.

TABLE 6

Ownership of Land

Value Label	Frequency	Per Cent	Valid Per Cent
Don't know	85	8.5	8.5
Private individuals	829	82.9	82.9
BMC	11	1.1	1.1
State government	3	.3	.3
Central Government	72	7.2	7.2
Total	1000	100.0	100.0
Valid Cases 1000		Missing Cases 0	

It is quite obvious from this table that a majority of the people feel that the land is privately owned. This is probably due to the fact that the house or plot was purchased from an individual who was an early settler/ occupant of the area. This gives people the impression that the land is privately owned. However a quick glance once again at the Table 1 showing the different areas from where the sample was selected shows 58.5 per cent residing in Hanumantha *chawl* area/Jerimeri West which is basically Central Government-owned land. Hence the information obtained in this table is incorrect as the people are illiterate and unaware of the actual ownership of the land.

TABLE 7

Period of Residence in the Area

Value Label	Frequency	Per Cent	Valid Per Cent
Less than 5 years	174	17.4	17.4
6-10 years	250	25.0	25.0
11-15 years	199	19.9	19.9
16-20 years	169	16.9	16.9
21-25 years	93	9.3	14.8
26-30 years	30	3.0	4.8
31-35 years	16	1.6	2.6
36-40 years	15	1.5	2.4
More than 41 years	20	2.0	3.2
	34	3.4	Missing
Total	1000	100.0	100.0
Valid Cases 966		Missing Cases 34	

The majority of the population, 2 per cent and 19.90 per cent together totalling about 44.9 per cent, resided in the area for six to ten years and 11 to 15 years respectively. There was a considerable sum of 17.4 per cent who have recently come to settle down in Jerimeri since the past five years.

Another big chunk of the studied sample forming 16.9 per cent and 12.8 per cent have been residing in the area from 16 to 20 years and 21 to 25 years respectively. Hence it can be concluded that this slum colony began growing since the last 25 years. A big leap in the migrancy pattern is noted between the period of 20-23 years where the migrancy has almost tripled. Yet once again a decline in migrancy into the area has been noted by almost 31 per cent of the population six to ten years ago.

Personal Background

TABLE 8

Whether living in Bombay since birth?

Value Label	Frequency	Per Cent	Valid Per Cent
Yes	388	38.8	38.8
No	610	61.0	61.0
	2	.2	.2
Total	1000	100.0	100.0
Valid Cases 1000	Missing Cases 0		

Out of the 1,000 families studied it is plainly noted that 61 per cent are migrants whereas the rest have been residing in Bombay since their birth.

TABLE 9

If no, since when migrated to Bombay?

Value Label	Frequency	Per Cent	Valid Per Cent
Less than 5 years	75	7.5	12.9
6-10 years	130	13.0	20.7
11-15 yrs	126	12.6	20.1
16-20 yrs	122	12.2	19.5
21-25 yrs	93	9.3	14.8
26-30 yrs	30	3.0	4.8
31-35 yrs	16	1.6	2.6
36-40 yrs	15	1.5	2.4
More than 41 yrs.	20	2.0	3.2
	373	37.3	Missing
Total	1000	100.0	100.0
Valid Cases 627	Missing Cases 373		

A striking factor once again noted here is that the migratory population, tripled betwen 25 to 30 years, as also noted in the earlier Table 8. A steady increase in the migration pattern was noted upto the last five years where a stark decline of 43 per cent of the period between six to10 years was noted. This could be linked to the fact that the area is now getting overpopulated and conjested and not very suitable for living. This table showing migration pattern into Bombay reflects a similar pattern of the earlier table portraying migration into Jerimeri. So we presume that this could be the reflection of the overall migration trend in the city.

TABLE 10

Was your first home located in Jerimeri?

Value Label	Frequency	Per Cent	Valid Per Cent
Yes	390	39.0	61.8
No	241	24.1	38.2
	369	36.9	Missing
Total	1000	100.0	100.0
Valid Cases 631	Missing Cases 369		

Out of a total of 631 respondents who had migrated to Bombay 61 per cent came directly to settle in Jerimeri whereas the remaining 39 per cent had resided elsewhere before coming to live in Jerimeri.

TABLE 11

Do you like living in Jerimeri?

Value Label	Frequency	Per Cent	Valid Per Cent
Yes very much	896	89.6	89.8
No, not at all	102	10.2	10.2
	2	.2	Missing
Total	1000	100.0	100.0
Valid Cases 998	Missing Cases 2		

TABLE 12

Do you like living in Jerimeri?

Value Label	Frequency	Per Cent	Valid Per Cent
Not good	2	.2	2.3
Very polluted	17	1.7	19.4
Forced to live	20	2.0	23.3
Close to workplace	2	.2	2.3
No basic amenities	10	1.0	11.6
Toilet problem	9	.9	10.5
Water problem	2	.2	2.3
Overflowing gutters	1	.1	1.2
No choice	1	.1	1.2
No choice after marriage	1	.1	1.2
Acco. insuffi. sizewise	1	.1	1.2
Unable to say	4	.4	4.7
Majority of Muslim population	1	.1	1.2
Noise pollution	6	.6	7.0
Overpopulated	4	.4	4.7
Indus.pollution	1	.1	1.2
Water shortage	1	.1	1.2
Gar. pollution, mafia	2	.2	2.3
Health hazard	2	.1	1.2
	913	91.3	Missing
Total	1000	100.0	100.0
Valid Cases 86	Missing Cases 914		

This table lists out the negative reasons for not liking to reside in this area. Some of the reasons are: polluted atmosphere, lack of basic amenities, flooding of homes in monsoon, gutters overflowing into homes, small-sized tenements, concentration of Muslim population, noise pollution, overpopulated, industrial pollution, water shortage, garbage (solid waste) pollution, mafia influence, health hazards and financial constraints.

Out of the 86 valid cases 22 per cent pointed out that lack of basic amenities, specifically toilets, were one of the biggest constraints of residing in the area. This was followed by 7 per cent of the population who felt that there was too much noise pollution due to this place being located within the industrial zone.

TABLE 13

Water, Toilets & Health Related Issues

Do you have a water tap in your house?

Value Label	Frequency	Per Cent	Valid Per Cent
Yes	208	20.8	20.8
No	790	79.0	79.2
	2	.2	Missing
Total	1000	100.0	100.0

Valid Cases 998 Missing Cases 2

Only 20 per cent of the entie sampled population had water taps within their homes. The remaining 79 per cent collected water from private taps, membership tap connections, wells or taps belonging to other *chawls* and the slum board tap.

TABLE 14

Is your drinking water clean & clear?

Value Label	Frequency	Per Cent	Valid Per Cent
Yes, always	433	43.3	43.4
Sometimes	550	55.0	55.2
No, never	14	1.4	1.4
	3	.3	Missing
	1000	100.0	100.0

Valid Cases 997 Missing Cases 3

Of the 1,000 families studied 43 per cent got clean water at all times while 55 per cent got clean water only occasionally. 14 families of the studied sample never got clear water ever.

Although this table shows that only 57 per cent do not get access to clean drinking water, the researcher feels that this figure is very low. People generally do not know the difference between potable and non-potable water. If the water appears to be clean they feel it is good/ safe to drink. During the summer months when there is an acute water shortage, people use water from wells for drinking which have not been cleaned for years and which are otherwise only used for washing purposes. This fact was observed in several areas in the summer months when the data collection was taking place.

Muddy or bitter drinking water seemed a very common feature in Jerimeri. In fact most of them are now immune to the taste or clarity. Coloured water was available to 38.3 per cent of the studied sample. This phenomenon of the water being coloured can be attributed to the fact that a lot of industries lie cheek by jowl to the resident areas and hence waste from industries in the form of untreated chemicals, dyes, oil, etc. have percolated into the soil, seeping into the rusted old waterpipe lines or aligning with the water-table, polluting groundwater and thus all available water sources. Besides industries, in one of the areas studied, there are some buffalo stables located close to the people's homes. These stables have no separate waste disposal system and let the waste out into the roadside gutters/*nullahs* which get clogged and overflow, thus polluting the surroundings.

TABLE 15

Have you or your family suffered from health problems by consuming polluted drinking water? If yes, what problems?

Value Label	Frequency	Per Cent	Valid Per Cent
Yes	23	2.3	2.3
No	975	97.5	97.7
	2	.2	Missing
Total	1000	100.0	100.0
Valid Cases 998	Missing Cases 2		

Only a negligible section of the population amounting to 2.3 per cent felt they suffered from health problems due to polluted drinking water. Some of the health problems they suffered from were listed as cholera, typhoid, pneumonia, stomach ailments, dysentery, diarrhoea, asthma, sore throat, jaundice, colds, coughs and fevers.

TABLE 16

Do you know how or why water gets polluted?

Value Label	Frequency	Per Cent	Valid Per Cent
Yes	101	10.1	10.2
No	889	88.9	89.8
	10	1.0	Missing
Total	1000	100.0	100.0
Valid Cases 990	Missing Cases 10		

Of the entire studied sample only 10 per cent of the families were aware of the fact of how or why water sources get polluted. A lot of awareness is required to help people understand how they can personally prevent water sources from getting polluted.

Closely linked to the water situation were other basic amenities like drainage and toilets. While 87 per cent of the population availed of primitive drainage facilities, only 3 per cent of all the 1,000 families were fortunate to have toilet facilities within their residential premises. The remaining 97 per cent had to make do with common public toilets provided by the BMC, privately-owned toilets by *chawl* owners, or simply opt for open outdoor space. Of those who made use of the common toilets/ public/ private, 61 per cent felt that cleanliness was being maintained in some areas occasionally and in other areas on a regular basis by hiring a sweeper to clean it or through the efforts of the *chawl* committee.

Garbage Disposal System

TABLE 17

Do you use a dustbin at home? How do you collect and dispose garbage?
What is the garbage disposal system like in your area?

Value Label	Frequency	Per Cent	Valid Per cent
Yes	892	89.2	89.8
No	101	10.1	10.2
	7	.7	Missing
Total	1000	100.0	100.0
Valid Cases 993		Missing Cases 7	

89 per cent of the families studied habitually used dustbins in their homes. While 17 per cent used the *nullah* to dispose off their garbage, 28 per cent made use of the public dustbins while 52 per cent dumped their garbage on to the open space on the road and 1 per cent behind the house. Though people are being gradually awakened to the idea of utilising dustbins for accumulating their family garbage, the disposal system at the community level is almost non-existent in certain areas or terribly inadequate. At the local Ward Office the response to this query is that the lanes are too narrow to permit entry to garbage trucks and hence this question remains unresolved.

This situation is clearly reflected in the responses obtained from all the studied areas. At Hanumantha *chawl* 85.5 per cent said that no dustbins were provided in the area followed by 54 per cent in

Krishna Nagar and 73 per cent in Tilak Nagar and Sakinaka area.

In a few pockets of the studied areas where dustbins were being provided, the collection of garbage from these bins still proved a problem. In these areas 10 per cent felt that the garbage was collected on a daily basis, 16 per cent felt it was collected once a week, 34 per cent felt it was collected twice a week. Lastly, 28 per cent felt that the garbage was emptied only if complaints were made.

This issue of garbage is a gigantic one and priority to this problem should be taken up on a war footing. Workable schemes can be planned making the community participate and be more sensitive to the issue. They should be guided to devise simple ways of getting rid of this ever-growing problem.

Immediate Pollutants

Another severe problem common to most slum communities is the aspect of residing in close proximity to open gutters or *nullahs* and its affect on their health and living conditions.

53 per cent of our studied sample of families resided close to a *nullah* or gutter, and of these 49 per cent were badly affected by the overflowing gutter or *nullah*. This factor is a big health hazard as most illnesses stem basically from unhygienic surroundings.

85 per cent of those who lived closed to gutters or *nullahs* were hopelessly affected when these gutters overflowed and the filth entered their homes, damaging their health and personal property as well. Many families related tales of woe, when they were forced to abandon their homes practically every monsoon when the water level rose in clogged gutters and *nullahs* and overflowed into their homes.

Since most homes are constructed without much foundation, seepage of gutter water through cemented/ tiled flooring was not uncommon.

Foul smell, water seepage through the flooring, breeding of worms, germs, mosquito larvae were the experience of the remaining 15 per cent of the population.

To determine the type of pollutants in the *nullah* or gutter, the following multiple response question was posed.

Does your *nullah*/gutter contain any of the following:

Coloured water dyes	:	11%
Oil waste	:	7.5%
Paints	:	8.2%
Foul smelling, pungent odoured chemicals	:	25.5%
Garbage	:	48%
Metallic substances	:	6.4%

From the above table one is likely to conclude that the *nullahs* are not quite laden with pollutants. But on the contrary the researcher feels that lack of awareness regarding this subject was the basic limitation here. While collecting data it was observed that people had not given a thought to this area of enquiry. It was when the question was simplified and specifically asked whether the *nullah* contains this, that or the other only then did some of them give it a thought and responded as they thought fit. Some respondents were too simple and naive to understand this complex situation. The garbage however was simple and too obvious to miss, hence highlighted as the major pollutant. This was followed by the foul smelling, pungent odoured chemicals identified by the olfactory senses and the presence of coloured dyes which were picked up by the visual senses. Garbage dumped in *nullahs*/ gutters pose a big problem. On the one hand with the garbage disposal system being non-existent or inadequate, people use the *nullah* as a dumping site as this space is

considered as no man's land. Dumping serves as a landfill as the *nullah* waters get submerged with continuous heaps of garbage.

However, during the monsoons the repercussions are very bad. The water which resurfaces gets blocked from free flow, causing severe flood conditions when the water overflows. Low-lying homes get fully submerged while some are submerged partly, still forcing the occupants to vacate the premises and move to safer places. Breeding grounds for mosquitoes and disease carrying bacteria are readily available. Hence 95 per cent of the studied population is troubled by the mosquito menace almost throughout the year. Alongside all this is the overpowering presence of industries releasing smoke, gas, chemicals, dyes, wastes of all types–solid liquid and gaseous.

While 22 per cent of the families interviewed lived in close proximity to the industries which were in and around the studied areas, 41 per cent claimed that these factories were in their immediate neighbourhood. The following table shows the effect these factories have on the physical well-being of the residents. This is a multiple response query.

Surrounding Pollutants

Did you or your family members face any of the problems listed below:

Pollution Symptoms	Percentage	Persons out of 1000
Burning of eyes	22	162
Chronic cough/sore throat	16	122
Dust allergy	10	74
Respiratory illness	7.6	58
Premature grey hair	13	100
Premature hair loss	23	174
Premature deafness	1	8
Regular miscarriage	1.1	9
Chronic headaches	6	5
Total	99.7	712

This table shows that 712 persons out of 1,000 sampled amounting to 71.2 per cent have reported one or more of the symptoms that can be attributed to a polluted environment. The one problem that seems to stand out is premature hair loss. This is a quantitative problem and its effects can be seen and recognised in a measure. Next to this was the problem of burning of eyes which is again, an exceptional phenomenon and easily identified. Chronic coughs and sore throats were as high as 16 per cent; young persons suffering from premature greying of hair went upto 13 per cent. Another 10 per cent suffered from dust allergies followed by 7.6 with respiratory illness. The other occurrences which figured in small doses were premature deafness, regular miscarriages, skin diseases and chronic headaches.

What could be the cause for the symptoms experienced in the previous table? From the previous table 75.4 per cent of the interviewed sample had experienced one or more symptoms. Yet out of those affected 72 per cent were unaware that these symptoms were connected to the polluted environment in which they reside.

The remaining 28 per cent were able to state that the problems encountered stemmed from accumulated garbage, vehicular and industrial gaseous pollution, coupled with unhygienic surroundings. These persons were aware of this fact as they were informed by the doctor or as it was very obvious. Some people are educated and knowledgeable and hence were able to make these deductions on their own.

Individual (Personal) Data

TABLE 18

Value Label	Frequency	Per Cent	Valid Per Cent
Below 10	1017	22.7	22.7
11-20	1132	20.1	20.1
21-30	893	19.0	19.0
31-40	779	17.4	17.4
41-50	430	9.6	9.6
51-60	164	9.6	9.6
61-70	57	1.3	1.3
71-80	8	.2	.2
Above 81	4	.1	.1
	1	.0	Missing
	4485	100.0	100.0

Valid Cases 4484 Missing Cases 1

An overwhelming 48 per cent of the studied sample

covered the age groups between 0-20 years. Of these 47 per cent were below 10 years and the remaining 53 per cent in age groups between 11 and 20 years. This reflects that most of the families are in the early phase of growth. A total of only 5.3 per cent of the interviewed sample constituted the age group between 51 and 81 years, once again giving an indication that old age dependency is very negligible.

Gender Profile

TABLE 19

Value Label	Frequency	Per Cent	Valid Per Cent
Male	2358	52.6	52.6
Female	2126	47.4	47.4
	1	.0	Missing
Total	4485	100.0	100.0

Valid Cases 4484 Missing Cases 1

The male dominate the female by a margin of 5 per cent. So on the whole the study was well represented by both the sexes.

Education

Majority of the studied population representing 23.6 per cent fell within the middle schooling (Std. Vth -VIIth) range. Another 27.5 per cent in secondary schooling (Std. VIIIth - Xth) range, and 18 per cent in the primary schooling (Std. Ist - IVth) range. Adults who had never studied formed 11 per cent of the studied population while 8 per cent were below school-going age. A negligible count of 3.9 per cent had completed graudation while only .2 per cent made it to the postgraduate level.

Considering this information it is very likely that the persons interviewed are reflecting the educational status of the locality and hence have a poor understanding of the topic of our study and its relevance to their life and health. Their educational background would also reflect on the kind of jobs they will hold as only 10 per cent of the entire sample have studied beyond secondary school (SSC).

Occupation

TABLE 20

Value Label	Frequency	Per Cent	Valid Per Cent
Below school-going age	371	8.3	8.3
Housewife	1020	22.7	22.7
Permanently emp.	535	11.9	11.9
Temporarily emp.	607	13.5	13.5
Badli worker	12	.3	.3
Contract worker	13	.3	.3
Self-employed	230	5.1	5.1
Studying	1435	32.0	32.0
Unemployed	193	4.3	4.3
Retired	68	1.5	1.5
	1	9	Missing
	4485	100.0	100.0

Valid Cases 4484 Missing Cases 1

A major chunk of the studied population amounting to 22 per cent were housewives. Only 11.9 per cent of the sample were permanently employed. This figure is quite low considering the fact that this area is an industrial zone. However, this would also reflect on the system that prevails especially in the small-scale sector that do not fall within the purview of labour legislations. It is these units that form a major chunk of the industries here. These units also easily get away by flouting environmental regulations. An interesting fact though not surprising considering the industrial zone was that only 4.3 per cent of the studied sample were found to be unemployed. Approximately 68.8 per cent of the studied population were dependants comprising of the infants below four years, student population, the unemployed, housewives and the retired.

A majority comprising of 53.3 per cent were of single status and 45.6 per cent were married. Only 9 per cent fell into the widowed category.

MAJOR CHRONIC ILLNESSES SUFFERED DURING 1989, 1990 AND 1991

A study of chronic health disorders for three consecutive years was done to note the trend in illnesses over a three-year period.

A summary of the three years show that chronic cough, asthma, bronchitis top the list closely followed by blood pressure and tuberculosis. During the data collection it was noted that only diseases which manifested themselves through noticeable symptoms, were considered as health problems. Subtle experiences like burning of eyes, foul smells, chronic headaches, chronic colds, repeated abortions/ miscarriages, etc. were taken for granted. Only those having knowledge of ecological impact on health were able to pinpoint minute problems faced by them day to day. For many persons the question of survival is much more crucial rather than think of the consequences of being employed in mills, cement factories, quarries, or residing in polluted zones. So if the effects of the polluted environment have not been strongly highlighted through this study it is mainly due to lack of awareness for which a great deal of effort will have to be geared to create strong public awareness through rallies, exhibitions, workshops, use of mass media, etc.

TABLE 21

Causes of Illness

Value Label	Frequency	Per Cent	Valid Per Cent
Do not know	97	2.2	75.2
Allergy	2	.1	1.6
Smoking & drinking	1	.0	.8
Blood Pre/tension	3	.1	2.3
Polluted air	5	.1	3.4
Communicable disease	6	.1	4.7
Garbage	1	.0	.8
Liquor consumption	2	.1	1.6
Mill work conditions	1	.0	.8
Mosquitoes	1	.0	.8
Unclean environment	9	.2	7.0
Accident	1	.0	.8
	4356	97.1	Missing
Total	4485	100.0	100.0

Valid Cases 129 Missing Cases 4356

Of the entire sampled population 75 per cent were unable to respond to the query on cause of illness strengthening the fact that mass public awareness regarding environment should be essentially created.

Only 7 per cent were able to attribute health problems to the unclean environment and 3.9 per cent said it was due to polluted air.

TABLE 22

Period of Illness

Value Label	Frequency	Per Cent	Valid Per Cent
Less than 1 month	14	.2	10.9
1-6 months	14	.3	10.9
6 months - 1 year	17	.4	13.21
- 5 years	52	1.2	40.3
6 - 10 years	25	.6	19.4
11 - 15 years	3	.1	2.3
16 - 20 years	3	.1	2.3
Not applicable	1	.0	.8
	4356	97.1	Missing
Total	4485	100.0	100.0

Valid Cases 129 Missing Cases 4356

40 per cent of the illness of patients ranged from 1-5 years and 13 per cent were ill for a period between 6 months upto one year.

TABLE 23

Treatment Resource

Value Label	Frequency	Percent	Valid Percent
PRIVATE DOCTOR	76	1.7	58.9
MUNICIPAL HOSPITAL	19	.4	14.7
PRIVATE HOSPITAL	17	.4	13.2
MUNICIPAL & PRIVATEHOSPITAL	2	.0	1.6
NO TREATMENT	12	.3	9.3
HERBAL MEDICINE	2	.0	1.6
Om. Medi.Insurance	1	.0	.7
	4356	97.2	Missing
TOTAL	4485	100.0	100.0

Valid Cases 129 Missing Cases 4356

58 per cent of those ill reported to a private doctor for treatment while 14 per cent went to the municipal

hospital. 9.3 per cent were too poor to take any treatment at all.

Treatment Status

64 per cent of those ill were still continuing the treatment while 23 per cent had completed their treatment course. 13 per cent discontinued the treatment prior to recovering from their illness.

Response to the Pollution Problem

Have you/ your family personally experienced any of the listed environmental hazards?

The five most leading environmental hazards encountered in and around Jerimeri in order of magnitude were:

Lack of trees	:	70.8%
Garbage dumps	:	49%
Vehicular noise pollution	:	48.5%
Burning of scrap, tar, rubber, etc.	:	27%
Vehicular air pollution	:	23.7%

The other less affecting problems experienced were:

Industrial noise pollution	:	15.9%
Open drains	:	15.7%
Quarries	:	15%
Industrial gaseous waste	:	13.1%
Chemical dust	:	11.9%
Smog, mist	:	11.5%
Industrial solid waste	:	11%
Industrial liquid waste	:	10.4%
Chemical dust	:	10%

Factors influencing the visual senses were reported in higher magnitude as compared to those affecting the sense of hearing, smell or touch.

TABLE 24

Causes of Pollution

Value Label	Frequency	Per Cent	Valid Per Cent
Yes	791	17.6	17.7
No	3670	81.8	82.3
	4461	100.0	100.0

Valid Cases 4461 Missing Cases 24

Although so many pollution hazards were encountered in the environment their sources were not always known to the people. Only 17.7 per cent of the studied population were able to identify these pollutant sources.

ACTION GEARED TOWARDS POLLUTION (Individual/Collective)

Did you or the community jointly take any action on the environmental issues? What action was taken? 52 per cent of the families affected by the pollution hazards had taken some action with regards to the problems. From this it can be conlcuded that persons having knowledge about environmental hazards and its repercussions on their lives do feel the need and urge to do something about it.

Of this group that had intervened to do something about the problem 64 per cent had taken out protest *morchas* and 26 per cent had organised themselves collectively to hold meetings and discussions for a plan of action. Some had complained to the relevant authorities or got the place cleaned by organising themselves. The result of all these efforts were that 26 per cent were successful as cleanliness prevailed. For the rest either they were not fully involved to know the results or they were not motivated enough to follow up their efforts to the action phase.

To those who had not respnded/reacted to the environment issue, a query was posed whether they felt the need to do something.

Only 33 per cent felt the need for action or some cause of intervention. The remaining 67 per cent were either too complacent or not directly/severely affected by the problem.

SUGGESTIONS TO ALLEVIATING THE PROBLEM

Some suggestions came forth from families interested in alleviating the problem of pollution such as:

- Working on the prblem of garbage disposal. Organising people collectively to save the environment.
- Provision for an adequate drainage system.
- Provision for adequate water supply.
- Pressurising the BMC to action.
- Mass awareness campaign regarding the pollution problem.

Worst Victims of Pollution

While assessing the worst victims of pollution it was stated by 81 per cent of the studied sample that all individuals whether men, women or children were equally affected. 167 differed, feeling that the children were worst affected victims.

PLAN OF ACTION

Awareness regarding the organisation Jagruti Kendra which was conducting this study was as high as 57.3 per cent. The rest of the population had no knowledge or information regarding Jagruti Kendra.

Yet of the entire sample 64 per cent opted to support a campaign organised by Jagruti Kendra protesting against polluting agents.

72 per cent of the sample felt a grave need for awareness in this context to be spread. This shows a positive inclination and motivation to find out ways and means to diffuse the problem.

63 per cent were ready for personal involvement in the awareness programme which could be planned as a snowball effect to bring about awareness among friends/ neighbours in their immediate surroundings.

In response to the proposal to form areawise vigilant committees 72 per cent welcomed the idea while 49 per cent felt ready to volunteer to be on this committee. The rest of the sample studied were either apprehensive about this proposal or did not have time to make a commitment.

A similar multivariate analysis was done to compare the type and percentage of illness in each of the four areas selected for the study for three consecutive years.

It was not surprising to note that the areas surrounding Hanumantha *chawl*, which has the highest incidence of garbage pollution, these areas ranked highest with 40 to 46 per cent of various illnesses occurring in each of the three years. This was closely followed by Krishna Nagar with 42 to 44 per cent of illness, Tilak Nagar with 6 to 8 per cent and Sakinaka with 4 to 7 per cent of illness.

As for the various pollution problems encountered by the people in their respective areas of residents, a comparison was done to see the incidence of occurence.

The adjoining table reveals that Hanumantha *chawl* ranked highest in 12 out of 13 pollution encounters, followed by Krishna Nagar, Sakinaka and Tilak Nagar.

An areawise comparison of the symptoms of a polluted atmosphere were studied and the highest incidence was observed in Jerimeri West, followed by Krishna Nagar, Sakinaka and Tilak Nagar. Some of the symptoms in order of magnitude are: burning of eyes, skin ailments, respiratory, illness, premature hair loss, miscarriages, premature greying and dust allergy.

In a bivariate analysis done to study the impact of the individual's level of education with regard to their health status the following observations were noted.

Respondents falling within the category, No schooling amounting to 28.9 per cent suffered from various types of illnesses. This grouping had the highest incidence of varied health problems gradually declining as it approached the secondary schooling level. The percentage of illness dropped dramatically to negligible proportions in the graduate and postgraduate grouping. This phenomenon was commonly perceived over the three years.

Very closely related to this was the question of whether the respondents knew the causes of illness. The assumption held that higher the level of education greater would be the awareness regarding the cause of illness proved to be true. Only those respondents who had studied upto middle-school level and above were able to guage the causes of illness. None of the remaining respondents were able to determine what could be the possible cause for their illness. Their response was a plain and simple "*Do not know.*"

CHAPTER 4

MAJOR FINDINGS AND RECOMMENDATIONS

An enquiry of this nature would not be complete without a summation of the significant findings and researches, conclusions and suggestions of these findings. In this chapter therefore the research design was used for the study.

Research Design

This study was meant to be a pilot study and the design was descriptive and diagnostic. We attempted to understand the extent of industrial and environmental pollution and its effect on the health of the residents of Jerimeri by interviewing families, groups (*mahila* and youth) and doctors. We also monitored air, water pollution and noise levels.

Sampling

A pretest was conducted with a total of 13 families belonging to all the areas selected for the study. There was a slight modification in the questionnaire after the pretest.

Tools of Data Collection

Interview schedule was administered to the families and an interview guide was used for the *mahila*/ youth group interviews.

Limitations of the Study

Although initially the sample size was set at 15,000 families, it was later felt that this sample size was too vast and time consuming and would postpone the time schedule of the study a great deal. Hence after interviewing about 300 families and calculating the time taken for the same, it was decided in consultation with the sponsor (SSS) to bring down the sample size by 500 families.

Another major limitation felt was the period during which data collection was initiated. Since we began in April and continued till October, in the initial phase it was vacation time and many families were out of station. Hence the need arose to go into another area (Sakinaka) as the selected areas were already covered up.

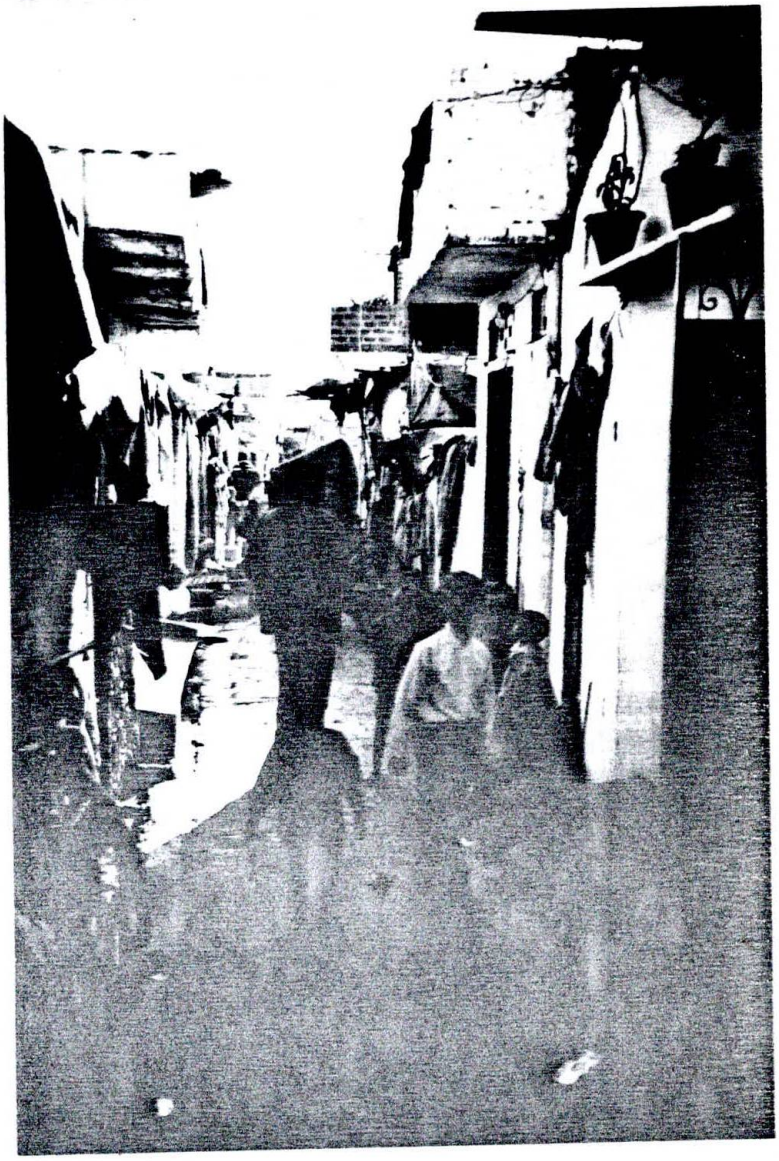
Most of the time the data was obtained from women/ youth who were the only members available at home apart from the children, when the interviewers visited the homes. Several of the women (especially those of U.P. community) were inhibited to respond to our queries either because they were never given a chance to express opinions or were afraid of the consequences from their husbands.

Very often the interviewers had to put up with mixed reactions from the people especially in the areas where Jagruti Kendra has not made contacts. Most often the women had to be coaxed and cajoled to respond to the interviewers. Since women are not exposed much to life, outside the family fringe, they did not seem to perceive pollution as a threat. Many women did not understand the concept of pollution and those who did, had a very marginal understanding of the concept. For them pollution was limited to garbage and dirty surroundings.

MAJOR FINDINGS

Living Conditions

Since only 6.6 per cent of the sampled population reside in *kutcha* houses (made of tin sheets and having a mud flooring) it is obvious that people have tried to improve their living conditions by making their huts suitable for living. These renovations have been done over the years with their meagre savings with a hope that they will not be evicted.



Yet since 42.5 per cent are tenants, they are not able to make many changes in their homes unless the landlord is cooperative.

Approximately 45 per cent of the interviewed population resided in the area for a period between six to15 years. Another 30 per cent have resided for a period betweeen 16 and 25 years. Hence one can say that the early settlers began occupying the place since the last 25 years.

Personal Background

A whopping 61 per cent of the population interviewed were migrants from other states of India.

Migration trends show a steady increase of population in the initial years, i.e. 25 years ago. However in the recent five years a stark decline of 43 per cent was noted. A similar trend is reflected at the all-Bombay level. According to Dr K Srinivasan, Director of the Indian Institute of Population Studies, Bombay, the drop in the population growth rate in Greater Bombay is compensated by a dramatic growth in the urban agglomerations around Bombay such as Vashi (New Bombay), Panvel, Nerul and Kalyan. These areas have seen massive industrialisation and a commensurate growth in housing.

For those who have resided in Jerimeri since one/two decades, these families still consider the place a good one to live in. Their major difficulty which is yet to be overcome is lack of basic amenities in particularly toilets. Some families are greatly affected by water-logging of the *nullahs* and the consequential overflow of sewage water into their homes.

Water Toilets and Health Related Issues

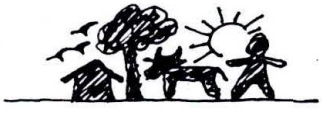
Of the interviewed sample 20 per cent had water taps inside their homes. 80 per cent had to obtain water from sources outside their homes like private tap connections, municipal/ slum board taps, wells or boring connections. Only 43 per cent obtained clean drinking water at all times. Muddy or bitter water is a common feature in Jerimeri. In fact many of the residents are immune to the taste or clarity.

Most people are unaware of the correlation between water and related illnesses. Some are not even aware of the fact that the water they consume regularly is non-potable. If it appears clean they think it is fit for consumption.

Garbage

This aspect seems to touch the lives of all the residents irrespective of their type of living conditions, the area they live in or their educational background. The problem is so vast and immense that it puts anyone in a real dilemma. Apart from the fact that very negligible sections of the community are provided with the infrastructure (dustbins/ place for depositing garbage) only in a very few places the bins were being emptied on a regular basis. Since this is a man-made problem, and it affects each and every home, a great deal of effort will have to be geared towards this issue.

Beginning on a very small scale, a scheme will have to be worked out with the local residents and the municipal cleaners as has already been done in certain areas. However, the ultimate responsibility will have to be borne by local vigilant committees. For this the social activists will have to be motivated to sustain the interests, so that long-term follow-up will be maintained.



Reflections

A vital contribution of the voluntary sector is to obtain for women their rightful place in the conduct of everyday affairs. If the centralised form of planning has left the poorest of the poor out in the cold, the women have borne the brunt of the struggle for survival. Even as the poor have been enabled to assert themselves, many NGOs at some stage have felt concerned for women and have initiated, both income generating and conscientisation programmes for them exclusively. Some groups have gone a step further and have been able to porivde for women in their plan of action. This is because of the fact that the women become the chief victims in almost all of the issues and can be motivated for a long-term action plan.

Our present life style is undergoing a drastic change. Consumerism and influence of media and advertisements force us to adopt a life style that is totally alien to our culture, for example, the type of clothes we wear from the tie around the neck to the socks and shoes on our feet. These items of clothing are unsuitable for our climatic conditions as well as our cultural environment. So even if our movements are stifled, we do not worry as we think these clothings bear a stamp of respect. In fact the more wealth an Indian acquires, the more western the person stirves to become by eating, drinking, talking and behaving like a westerner. This is very much due to the media which promotes consumerism. We buy a lot of things that the advertisers promote and get trapped in this system. For example advertisers promoting soaps portray the disadvantage of using an ordinary soap for washing one's hair. For centuries our forefathers have been using one soap for body and hair and quite suddenly this soap is shown as causing hair fall and so is considered inappropriate for washing hair. The same is the case for shampoos (for dry/normal hair) or face creams (for oily/dry skins). Each time it is the advertiser's creative streak that individualises personal characteristics and capitalises on it. Hence

we will have to consciously adopt ways of living which will enhance rather than upset the ecological balance, and we will have to rethink our concepts of development and progress. We can strive to promote a person-centred development. By this we mean that kind of development which ought to possess three basic elements:

* People should be entitled to physical necessities such as food, drinking water supply, shelter, education and health.
* They should possess and cherish human relationships which bind humanity, thereby preventing alienation.
* They should be able to live in an ecologically conducive atmosphere.

Such a development goal, perceived in today's context entails reordering of priorities, identifying new agents of change and of re-aligning political equations. Such a scheme would moderate most production and service related activities, change the means of achieving targets as well as the method of distribution. The system would aim at reaching a sustainable equilibrium rather than one which is critically linked to accelerated growth or dependent on centralised authority, and/ or a system that gives rise to dualism. A development philosophy that strives to raise moral values and focusses on person centred development, embodying aspects such as justice, equity, peace and steers away from a monolithic drive to achieve techno-economic heights, could appropriately be termed social development, as opposed to narrow economic development, is an approach which operationalises a holistic world-view, integrating different facets of society, sectors of an economy, sections of the people, regions of a land, sensitivities of a culture and constraints of technology/ ecology. In other words social development, meeting basic needs, extending opportunities, developing different human faculties and providing a just social order within an ecologically acceptable framework.

Education

The education factor is a major indicator to point out whether or not the problem of pollution which is being studied is the people's problem.

Since a large chunk of the population are illiterate or have barely studied beyond primary/middle school level, they are unable to correlate the problem of pollution with their status of health. Only a very negligible group of educated persons were able to pin down health problems to the fact that the environment was facing degradation.

Occupation

Most slums come up near upper-class colonies since many of their inhabitants survive on the services they render to the upper classes, as *dhobis*, vendors, sweepers, domestic servants, etc. They would not be able to render these services (and survive) if they were to be shfited away from the colonies, since they cannot afford the transport costs and the time required to travel. Moreover, slum women often like to work close to their houses and go home every now and then to look after their children.

In the case of Jerimeri, the slums spring up due to close proximity to workplace, generally industries.

The slum-dwellers have normally been looked upon as a problem both by the urban planners and the upper middle-class citizens, with a result that slum clearance is resorted to as a solution to keeping the city clean. The challenge, however, requires an altogether new approach towards slums and slum-dwellers, starting with a radical change in attitudes.

Looking upon slums and pavement-dwellers as a burden serves as a drag on any slum improvement programme. But deeper thinking would make it clear that they are more an asset than a liability.

Planners are also beginning to realise that squatters are economically valuable citizens who add to the gross national product by constructing their own shelter, no matter how make-shift, which saves the government a considerable amount of money; that squatters are upwardly mobile citizens in search of economic opportunity and have demonstrated high levels of enterprise, tenacity and ability to suffer acute hardships; that the informal sector in which a majority of slum-dwellers are economically active contributes significantly to the city's overall economic growth; and that they should be helped and not hindered (CSE 1985:145).

It is the slum-dwellers who provide essential services such as domestic service, rickshaw driving, hand-cart pulling, vegetable and fruit vending, plumbing, construction and other unskilled labour to the rich. They are the ones who build infrastructures such as dams, canals, factories, buildings, etc. which benefit the rich; and yet it is this same powerful group which considers the slum-dwellers as unwanted element of society.

Secondly, slums need to be viewed as an issue involving people and not merely places. They have more to do with life than physical and environmental conditions. The slum is not simply a housing problem but a complex socio-economic, cultural and political one (Shah 1983: 91-92).

Major Illnesses

Studying chronic health disorders over the years 1989, 1990, 1991 it was noted that respiratory illnesses like chronic cough, asthma, bronchitis top the list followed by blood pressure and tuberculosis.

In order to corroborate this information doctors practising in the area were met to note the health trends. According to Dr Soares of Holy Spirit Hospital who visits the health centre (Jerimeri West) twice a week, since the last three years, the major health problem faced is tuberculosis followed by gastroenteritis, respiratory illness, skin diseases and malaria. These illnesses in order of priority are directly related to the pollution in the environment. Apart from these there are also other illnesses of greater magnitude like diseases occurring out of the problems of malnutrition.

(Dr Jain who has his practice in Jerimeri East where our selected study areas of Krishna Nagar and Tilak Nagar lie has 13 years of practice to his credit. He as well as other few doctors who are recent practitioners opined that respiratory illnesses topped the list for environment related diseases and that a very high percentage of males were the victims. They also felt that pollution coupled with low socio-economic conditions were responsible for poor health conditions).

RECOMMENDATIONS

From the above-mentioned findings regarding the health situation the researcher would strongly recommend the formation of a *basti*-level cadre of health workers. The main aim in developing this group would be geared towards working on preventive and social means of tackling health issues. Most of the time the focus of all health programmes is curative rather than preventive. The effects of a degraded ecosystem can be controlled if people are aware of the correlation between this degradation with their lives. This awareness should be followed by reflection and action.

Very often it is the cultural and social practices of people belonging to different communities/ tribes that contribute to their poor health status. At times superstitions, beliefs, rituals, practices and stigma attached to various diseases make it difficult to identify and arrest illnesses in the early stage. Hence it is very essential that health education should be given prime importance with the focus being on prevention.

Ecology and awareness regarding the environment go hand in hand with the issue of health. The responsibility that rests with each of us to preserve and care for the environment so as to leave it as a legacy for future generations should be made known to the general public.

The fact that the earth's resources are limited and should not be wasted or exploited to the fullest, that there will be none left for the generations to come should be taken up as issues for discussion among *mahila*, youth and children's groups. Simple inputs on renewable and non-renewable resources, bio-degradable and non-biodegradable materials can be explained through simplified scientific experiments and used to create awareness on environment related issues. These kind of inputs can be used in Mahila Mandals, literacy groups, youth *mandals* where education or being literate is not the key issue.

In our day to day lives there are so many instances where each of us can prevent the environment from being degraded or even utilise resources sparingly so as to save them for future generations. However, due to lack of knowledge we ourselves contribute a great deal to this problem directly or indirectly by being passive observers.

We are listing below a few tips that can be put to use at the *basti* level:

What we can do about water and air pollution:

** Identify and write letters of protest to those industries or commercial establishments that indulge in irresponsible waste disposal.

** Complain to the state or central pollution control boards through signature campaigns.

** If problem is serious conduct a survey to estimate the magnitude of pollutants being released in your locality.

** Set up a cell in your area, school or montior pollution levels and to take appropriate actions to curb such pollution.

** Write articles to the local or national newspapers about the incidence of pollution in your area.

** Organise programmes in your area using slides, exhibitions, street plays, etc. to inform people about the harmful effects of pollutants, about their own role in causing pollution and their responsibility in curbing it.

What we can do about noise pollution:

** Talk to or write to residents in your neighbourhood who keep their radios, tape-recorders or television sets very loud causing nuisance to the neighbourhood.

** Organise a delegation of representatives to approach the erring party to work out solutions amicably.

** Organise programmes in school or neighbourhood to inform people about the harmful physical and psychological effects of noise and urge them to take a stand against producing avoidable noise.

** Just before or during the Ganpathi or Diwali seasons (or other noise festivals) encourage people to refrain from bursting noisy firecrackers or from using loudspeakers.

** Talk to people belonging to your own religion against the use of loudspeakers during festivals or prayer time. Encourage them to avoid using such devices.

What we can do about deforestation:

** Grow as many plants, shrubs or trees as you can.

** Take care of tree saplings that you plant. Do not let them die for want of water, sunlight or protection.

** Organise a cell in your area to protect existing trees.

** If you come to know of an attempt at tree-felling, go with your group to the site and talk to the people concerned about saving the tree(s).

** Lodge a complaint with the police about tree-felling in your area.

** Around festival times such as Holi or Dussehra withhold your support to any kind of celebration which involves the burning of trees. If possible actively oppose the destruction of trees for festival purposes.

** Plants and trees give us precious oxygen and use up carbon dioxide. Keep potted plants if possible in your house or balcony.

** Paper ultimately comes from wood. Do not waste paper. Write on both sides. Use recycled paper. Re-use envelopes with economy labels.

What we can do about life style that will promote social justice and conserve the earth's resources:

** Avoid being tempted by advertisements into buying stuff that you do not actually need or want.

** Decide what you need to buy, draw up a budget and stick to it.

** Encourage the renovation, repair and re-use or recycling of materials and products as may be appropriate.

** To save water, avoid washing things or having a bath in running water.

** Turn off lights, fans, etc. when not required.

** Use left-over soap scraps.

** Cook so as to minimise energy consumption. Turn off gas/ stove as soon as cooking is complete.

Since 64 per cent of the respondents interviewed were in favour of a campaign organised by Jagruti Kendra to protest against industries destroying the environment a long-term phase of work can be planned out. This would be initiated by a mass awareness programme, followed by reflection and action, utilising existing Mahila Mandals, literacy groups, and youth as well as children's groups at the school and *basti* level. Simply protesting without being aware of the deeper implications of the problem can be harmful. So, well organised plans, using commonly approved and enjoyable media of communications like skits, street plays, debates, discussions, workshops, songs, slogans, exhibitions should be planned to enlighten, awaken, provoke people to reflect on the issue and take a stand to act appropriately as and when the occasion arises. Children and youth should be encouraged a great deal to understand the problem in its totality and work individually or collectively on campaigns to propogate awareness.

CONCLUSION

This chapter contained the major findings and recommendations of the study. Initially the research design, sampling, tools of data collection and limitations of the study were explored. Thereafter the main conclusions based on the findings were highlighted. Finally the recommendations for the agency, the activists through the *mahila*, youth and children's groups were included.

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